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Higher School of
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CONFERENCE BOOK

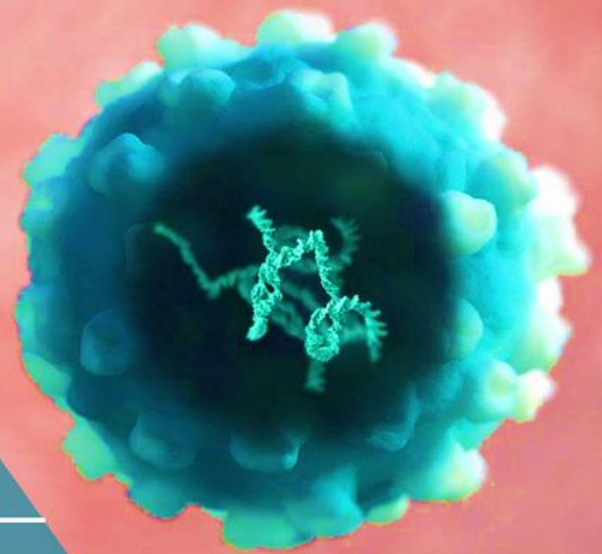
3rd International Conference

BIOSCIENCES 2019

Biotechnology and Cancer

December
7th - 8th, 2019

Oran, Algeria



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3rd International conference
Biotechnology and Cancer

BIOSCIENCES 2019

International Conference on Biotechnology and Cancer (ICBC)
Oran, Algeria, December 07-08, 2019

Dear Conference participant,

It is with the greatest pleasure that I welcome you to the International Conference on Biotechnology and Cancer (ICBC).

ICBC is the third international conference "Biosciences19", it is a part of the "Biosciences" conference series initiated by the Higher School of Biological Sciences of Oran. Ever since its foundation, "Biosciences" conference has attracted numerous Algerian and international researchers interested in biotechnology advances. After shedding light on "Biology professions" during the first conference in 2017, and the "Enzymatic Engineering and Production of Metabolites" during the second version last year, Biosciences conference is focusing this year on another interesting and hotly debated subject which is "Biotechnology and Cancer". The latter has raised endless questions over the last decade and is now a strategic field that occupies a privileged position in research system from all over the world. Major and ongoing advances in cancer research have greatly contributed to cancer diagnosis and development of new oncotherapy approaches including biotechnology and gene engineering which have considerably increased the cure rate and are improving life expectancy for incurable diseases. The 3rd Biosciences Conference, is an opportunity to bring under the same roof biologists, practitioners as well as health professionals from diverse backgrounds. All talks and presentations planned will be illustrating and discussing innovative research. Workshops and debates are also scheduled to encourage knowledge sharing and to explore achievements in the field of cancer biotechnology.



Pr .Djamel Saidi,

Head of the Higher School of Biological Sciences of Oran (HSBSO).

Under the high patronage of the Minister of Higher Education and Scientific Research

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BIOSCIENCES 2019

PROGRAM

Saturday, December 7, 2019

08h00-09h30 **Registration of participants**

OPENING SESSION

- 09h30-10h00 - Speech of the Head of HSBSO, **Pr. SAIDI**.
- Speech of the head of the Thematic Research Agency in Health Sciences, **Pr. N. AOUFENE**.
- Speech of the president of the Medical Oncology Society of Oran (SOMO), **Pr. BOUSSAHBA**.
- Speech of the president of the organizing committee: **Pr. BABA HAMED**.

PLENARY CONFERENCES

PLENARY 1: Chair and Session Rapporteur: **Pr. AOUFENE**

10h00-10h30 **Pr. Z.A. FOUATIH**
Apport du réseau national des registres du cancer au plan national cancer 2015-2019

10h30-11h00 **Dr. J. ROBERT**
Oncogénèse et progression des cancers

11h00-11h30 Coffee break and Poster session I

Chair: Pr. BOUDJEMA

Pharmacogenomics /Oncogenomics

Rapporteurs: Dr. BENAYAD- Dr. MAHDJOUR

Novel approaches in cancer therapy

Rapporteurs: Dr. BOULENOUAR-Dr. BENYETO

PLENARY 2: Chair and Session Rapporteur: **Pr. BOUSSAHBA**

11h30-12h00 **Pr. F. BEREKSI-REGUIG**
Tumeurs neuroendocrines

12h00-12h30 **Dr. A. MEGAIZ, Pr. A. BOUSSAHBA**
Actualités sur l'immunothérapie dans le cancer bronchique

12h30-13h00 **Pr. M. MEDJAMIA**
Rôle du pathologiste dans les testings moléculaires en cancérologie et expérience du service de Pathologie de l'hôpital militaire régional universitaire d'Oran

13h00-13h30 **Pr. I BITAM**
Apport des nouvelles technologies en Oncologie

13h00-14h30 Lunch break

PLENARY 3 : Chair and Session Rapporteur: Pr. BABA HAMED

14h30-15h00	Pr. A. AZIOUNE Les biotechnologies et l'écosystème national
15h00-15h30	Pr. M. ARIBI Tumor antigen cell lysate-pulsed classically activated M1 macrophages for vaccination against cancer
15h30-16h00	Dr. S. DJOULAH Bioengineering/IA et Oncologie, des métiers d'avenir pour les biologistes
16h00-16h30	DEBATE
16h30-17h00	Coffee break and Poster session II Chair: Pr. I BITAM <i>Immunotechnology and cancer immunotherapy</i> Rapporteurs: Dr. BOUGHRARA - Dr. MOGHTIT <i>Cancer epigenetics / Nanotechnology in cancer treatment</i> Rapporteurs: Dr. ILIAS - Dr. RAHLI

Sunday, December 8, 2019

PLENARY 4 : Chair and Session Rapporteur: Pr. SAIDI

09h00-09h30	Pr. D. CHARRON HLA & cancer à l'ère de la médecine de précision
09h30-10h00	Pr. T. MERGHOUB Develop means to overcome resistance to immune checkpoint blockade
10h00-10h30	Pr. A. BOUDJEMAA Pharmacogénétique et cancers : études algériennes
10h30-11h00	Coffee break and Poster session III Chair: Pr. S.DJOULAH <i>Biosciences I</i> Rapporteurs: Dr. MAHAMMI- Dr. CHOUBANE – Dr. KHELIL

PLENARY 5 : Chair and Session Rapporteur: Pr. A.AZIOUNE

11h00-11h30	Dr. HIHI Ecosystèmes de recherche translationnelle : un modèle pour accélérer la R&D du laboratoire à l'usage médical
11h30-12h00	Dr. A. BOUAMRANI Brainprint: du concept clinique à la création d'une start-up
12h00-12h30	Pr. N. SADEGH Application de la nanotechnologie à la biologie et la médecine : nouvelles perspectives

12h30-13h00	Pr. H BELHADJ TAHAR Conception et validations préclinique et clinique d'un nouvel agent anticancéreux issu de la nanotechnologie "Imdendrim"
13h00-14h30	Lunch break
14h30-16h30	4 oral communication workshops and a round table in parallel <ul style="list-style-type: none"> - Workshop 1: Oncogenomics, Pharmacogenomics, Cancer epigenetics and Nanotechnology in cancer treatment Rapporteur: Dr. N. Meroufel - Workshop 2: Novel approaches in cancer therapies I Rapporteur: Pr. N. Tabet Aoul - Workshop 3: Novel approaches in cancer therapies II Rapporteur: Dr. R. Abderrahmane - Workshop 4: Cancer diagnostic technologies, Immunotechnology and Cancer Immunotherapy Rapporteur: Dr. M. Abdi - Round table on the creation of a coordination of researchers in oncology of western Algeria
16h30-17h00	Coffee break and Poster session IV Chair: Pr. M. ARIBI Biosciences II Rapporteurs: Dr. MERZOUG – Dr. SADDIKIOUI – MAHMOUDI
17h00-17h30	Closing of the seminar

Plenary

Conferences

Pr. Zoubir AHMED FOUATIH

Apport du Réseau National des Registres du Cancer au Plan National Cancer 2015 - 2019

Pr. Ahmed Fouatih is a teacher - researcher in Social Medicine - Epidemiology - Faculty of Medicine - Oran University 1 - Ahmed Benbella. He is also the Head of Department of Epidemiology and Preventive Medicine at CHU of Oran and the director of the research laboratory: "Surveillance of Infections related to care in Oran".



Dr. Jacques ROBERT

Oncogénèse et progression des cancers

Dr. Robert is a specialist in oncology. His research is devoted to identifying tools for predicting the activity of anticancer drugs in all areas of pharmacology: pharmacokinetics, metabolism and resistance, cellular and molecular pharmacology, and pharmacogenetics.

He presently works at the university of Bordeaux (France) and belongs to the unit 1218 of the INSERM (French National Institute of Health and Research) and continues his activities in the field of pharmacogenomics of anticancer.



Dr. Abdelkader BOUSSAHBA

Actualités sur l'immunothérapie dans le cancer bronchique

Dr. Boussahba is the head of department of Oncology at the Hospital and University Center of Oran and the president of the "société d'oncologie médicale d'Oran S.O.M.O"



Pr. Faiza BEREKSI-REGUIG

Tumeurs neuroendocrines

Pr. Bereksi-Reguig is a specialist of oncology and head of the Medical Oncology service at the Hospital-University Center of Sidi Bel Abbés (Algeria). She participated in several researches on cancer (breast, colon, lung). She is Vice President of the Medical Oncology Society of Oran (SOMO).



Pr. Miloud MEDJAMIA

Rôle du pathologiste dans les testings moléculaires en cancérologie et expérience du service de Pathologie de l'hôpital militaire régional universitaire d'Oran

Pr. Medjamia is a doctor specialized in pathological anatomy. Presently he is the head of pathological anatomy department of the regional military hospital of Oran (Algeria). He is elected president of the Regional Pedagogic Committee of Specialty and draftsman of the National Pedagogical Committee of Specialty.



Pr. Idir BITAM

Apport des nouvelles technologies en Oncologie

Idir Bitam was trained by Philippe Parola and obtained his doctorate at the University of Aix-Marseille, he created JEAI MALBAVECT (2011-2014), a unique research team in entomology in Algeria. In 2014, this team was created as the main partner of the REMEDIER program (for REsearch for Mediterranean Infections Emerging or Reemerging) which was granted by A * MIDEX (No. ANR-11-IDEX-0001-02) funded by the investments for the future of the French State. In this context and alongside the creation of a doctoral program at the University of Sciences and Technology Houari Boumedién of Algiers, Idir Bitam was appointed visiting associate professor at the University of Aix-Marseille in 2015 and 2016.



Pr. Ammar AZIOUNE

Les biotechnologies et l'écosystème national

Pr. Azioune is the head of the research center in biotechnology of Constantine (CRBT). Formerly researcher at the Université Victor Segalen Bordeaux (France), LISE Laboratory University of Namur (Belgium) and Centre of Molecular and Macromolecular Studies in Łódź (Poland).



Pr. Abdallah BOUDJEMAA

Pharmacogénétique et cancers: études algériennes

Abdallah Boudjema currently works at the génétique moléculaire appliquée, Université des Sciences et de la Technologie d'Oran Mohamed Boudiaf. Abdallah does research in Biostatistics, Molecular Biology and Bioinformatics. Their current project is 'Immunogenetic study of ankylosing spondylitis'. also, I am interested in the pharmacogenetics of molecules used in autoimmune diseases and in cancer.



Dr. Sami DJOULAH

Bioengineering/IA et Oncologie, des métiers d'avenir pour les biologistes

Dr. Djoulah is an immunogenetician and creator of the company "Wiratech Europe" specialized in NGS (Next Generation Sequencing) and immunogenetic analysis for a precision medicine and a personalized diagnosis. He is currently Chairman at the France Genomics 2025 Project.



Pr. Dominique Charron

HLA & cancer à l'ère de la médecine de précision

Pr. Charron is a specialist in immunology. He is actually a professor Emeritus of medicine at the University of Paris Diderot (France) and professor advisory at the Shanghai JiaoTong University (China). He is a medical advisor at APHP General Directorate and co-founded the transplantation rejection laboratory of Excellence TRANSPLANTEX.



Pr. Taha MERGHOUB

Develop means to overcome resistance to immune checkpoint blockade

Pr. Merghoub is a specialist of human oncology and his research projects focus on investigating the means for developing immune-based therapies to treat cancer. He leads the Ludwig Collaborative Laboratory and the Swim Across America Laboratory at Memorial Sloan Kettering in New-York (USA).



Pr. Mourad ARIBI

Tumor antigen cell lysate-pulsed classically activated M1 macrophages for vaccination against cancer

Pr. Mourad Aribi is a professor of Immunology at the University of Tlemcen (Algeria). He is also the founder and director of the Laboratory of Applied Molecular Biology and Immunology. His current research focuses on the modulation of cell-mediated and inflammatory immune responses in autoimmune diseases, cancer diseases, and infectious diseases.



Dr. Abdelmadjid HHI

Ecosystèmes de recherche translationnelle : un modèle pour accélérer la R&D du laboratoire à l'usage médical

Dr. Hihi is a specialist in molecular genetics of nuclear hormone receptors. He conducted researches on genetic mechanisms of aging. He participated in creating companies such as: Chronogen inc. (Canada) and Génome Québec (Canada). He is currently Head of programs at CEA-LETI, Clinatec, Grenoble (France). Dr. Hihi is a lecturer at universities and management schools in Algeria, Japan and France.



Dr. Ali BOUAMRANI

Brainprint: du concept clinique à la création d'une start-up

Dr. Bouamrani is a researcher at the Office for Atomic Energy and Alternative Energies (CEA Grenoble_ France). He is the Co-founder of MEDIMPRINT (Grenoble_ France) a company that develops innovative medical devices allowing the analysis of previously inaccessible brain regions.



Pr. Nouredine SADEG

Application de la nanotechnologie à la biologie et la médecine : nouvelles perspectives

Pr. Sadeg is a specialist in Emergency Toxicology, Addiction Medicine and Clinical Pharmacology. He currently works at the pharmacologie toxicologie, as CEO of International Medical Institute of Toxicology and Pharmacology I-MITOX. He is also the president of the company NANO GUN TECHNOLOGY : NGT (France).



Pr. Hafid BELHADJ TAHAR

Conception et validations préclinique et clinique d'un nouvel agent anticancéreux issu de la nanotechnologie "Imdendrim"

Pr. Belhadj Tahar is the president of the French Association of Medical Research Advancement (AFPAMED) since 2007 and current president of COLCOM (laboratory of Nanotechnology for biological applications). He had graduated from Tlemcen University, School of Medicine in 1980. After obtaining degree of Doctors of Medicine in 1987, he has been specialized in the oncology and radiotherapy in Toulouse (France). He got the oncology specialization diploma in 1991 and PhD of radiochemistry in 1996 at Grenoble University, and engaged as researcher in radiochemistry and radiopharmaceutics field in national center of scientific research (CNRS of Toulouse).



Oral

Communications

Oncogenomics and

Pharmacogenomics

0001

Association of CHRNA5 rs16969968 Polymorphism and Predisposition to Lung Cancer in Algeria

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Abstract

Lung cancer remains the most common cancer in the World. As for Algeria, it is the first cause of mortality from cancer for men and the seventh for women. The genetic polymorphism rs16969968 in CHRNA5 was shown to be strongly associated with the risk of lung cancer. The aim of our study is to investigate how this polymorphism can modify the risk of non-small cell lung cancer (NSCLC) in the Eastern Algerian population. To date, no study has considered this association in the Algerian population. We have performed a case control study of 144 lung cancer patients and 211 healthy. Genotyping was done using TaqMan probes and the data were analyzed using multivariate logistic regression adjusted for covariates. The minor allele frequencies (MAFs) of CHRNA5 rs16969968 polymorphism in controls were A: 31%, which is

in disagreement with the result found for the Mozabite ethnic group (MAFs =18%). However, close to frequencies found in the European and Middle Eastern population, (MAFs=37%–43%). The rs16969968 polymorphism do not show any significant association with NSCLC risk, but stratified analysis showed that persons carrying the AA genotype are significantly associated with adenocarcinoma risk (pAdj=0.03, ORAdj = 2.55). Falvella *et al.* and reported that CHRNA5 mRNA levels are up-regulated 30-fold in ADK compared with normal lung tissue in individuals carrying AA genotype compared with those having GG genotype which accords with our results. Nevertheless, Jaworoska *et al.* showed that this locus is implicated in all histopathologic subtypes of LC. In our study, we found a significant association between the CHRNA5 rs16969968 polymorphism and the increase of lung adenocarcinoma risk. Additional studies on large population are needed to confirm our results.

Keywords: CHRNA5; Non-small cell lung cancer; Predisposition; rs16969968.

0002

The frequency of EGFR mutations in lung carcinoma in the west Algerian population

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Abstract

Mutation analysis of epidermal growth factor receptor (*EGFR*) gene in non-small-cell lung cancer (NSCLC) has become important for predicting response to treatment with tyrosine kinase inhibitors. however, their prevalence varies with ethnicity. Little is know concerning

their prevalence in Arab populations. The intention of this population study is to determine the frequency of EGFR mutation in NSCLC in a group of West Algerian patients. Tumor DNA was extracted from one hundred twenty FFPE tissue samples and analyzed for EGFR mutational status by real time PCR. A total of 15 EGFR mutations were found in this series of 120 patients (12,5%). The most frequent EGFR mutation was detected in exon 19 (80%) followed by exon 21 (13%) and exon 18 (7%), more frequently in men (67%) than in women. This preliminary epidemiological study is the first report on the prevalence of EGFR mutations in Algerian patients. It reveals a prevalence of 12,5%. The most frequent EGFR mutation was exon-19 deletion. Further studies, in larger numbers of patients are needed to confirm these findings

Keywords: Lung cancer; EGFR mutations; frequency; West Algerian population.

0003

Spectacular advances in genomics in favor of the implementation of Pharmacogenomics

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Abstract

Nowadays, cancer ranks the second place in the mortality podium with an estimated 9.6 million deaths in 2018 (WHO). Despite the innovative advances in the implementation of oncology treatments, there are significant cases of therapeutic failure. Several researches on the inefficiency of anti-cancer cures point to the genomic particularity of each patient that modulates the response to the drug as well as the access to anti-cancer treatments which is extremely expensive and makes the treatment inaccessible especially in low- and middle-income countries. With the spectacular advances

of molecular biology and genomics a new discipline has just been born, it is Pharmacogenomics. It aims to study the role of the genome in the response to drugs. It combines pharmacology and genomics by analyzing the impact of the patient's genetic heritage on its response to drugs thus allowing the correlation between gene expressions, SNPs, epigenetics...etc. with the pharmacokinetics (adsorption, distribution, metabolism and elimination of the drug) and the pharmacodynamics of the drug. This study focuses on the solutions and benefits of Pharmacogenomics in oncology and how to elucidate the genetic bases for interindividual differences and to use such genetic information to predict the safety, toxicity, and/or efficacy of drugs.

Keywords: Cancer; Drugs; Genomics; Pharmacogenomics.

0004

New cancer therapy strategy by targeting rescue molecules and dormancy

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Abstract

The mono-therapy approach is still a very common treatment modality for many different forms of cancer[1]. Combination therapy, a treatment modality that combines two or more therapeutic agents, is a cornerstone of cancer therapy. This approach potentially reduces drug resistance to sunitinib in thymic tumors [2], which are thymic epithelial tumors with poorly understood pathogenesis and no curative options beyond surgery[3]. The combination therapy using multitargeted kinase inhibitor Sunitinib and BCL2 inhibitor obatoclax or MIK665

inhibitor of MCL1 induce antiproliferative activity and apoptosis and block spheres forming in ex vivo primary Epithelial thymic tumor cells. Primary tumor Epithelial cells (pTECs) were isolated from fresh tumor tissues and treated using several drugs: Sunitinib as tyrosine kinase inhibitor (RTK), obatoclax as BCL2 inhibitor and MIK665 as MCL1 inhibitor in single or combined therapy. Cell proliferation and cell death were analyzed by MTT assay and FACS. pTECs were cultured in 3D spheres systems before and after any drug treatment. All the thymoma pTECs showed resistance to sunitinib, Obatolax and MIKK665 when used as single therapy. The cells showed either BCL2 or MCL1 overexpression in different groups of pTECs when treated with sunitinib as rescue mechanism induced after the first therapy. Synergy therapy combining sunitinib with Obatoclax or sunitinib with MIK665 in low dosis showed drug sensitivity and open new therapy strategy targeting the two rescue molecules BCL2 and MCL1 in thymic malignancies. pTECs showed

more thymic spheres formation after sunitinib treatment. Synergy therapy seems to be promising for thymic tumor therapy development due to targeting rescue mechanism developed during the phenomenon called therapy induced senescence, this could be a hint to the presence of distinct cell populations in the tumor, thymic cancer research has to face the major challenge of targeting the intra-tumoral as well as inter-tumoral heterogeneity. Thus, targeting molecular drivers operating in the different cell population including cancer stem cells, in combination with standard treatments, may improve cancer patients' outcomes, yielding long-lasting responses.

Keywords: Synergy therapy, therapy rescue molecules, RTK inhibitor and antiapoptotic inhibitor

Cancer Epigenetics and

Nanotechnology in cancer treatment

0005

Development of Transplantable Tumoral Graft in Immune-compromised Wistar Rats

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Abstract

Cancer modeling in laboratory-animals, particularly rats, has several limitations. These are related to the inbreeding nature of those animals, which does not adequately assess the contribution of host genetic heterogeneity during tumor growth. The present work aimed to develop a locally available animal model for cancer research. The investigation involves a series of transplantable cancerous cells, using subcutaneous Hep-2 cells inoculation (xenograft) and murine tumor cells derived from murine solid tumor (allograft) in cyclosporine immunodeficient female Wistar rats. Analytical follow-up focused on animal growth, tumor development, metastasis, survival, histopathology and immuno-histopathology of tumors. It has been successfully demonstrated that cyclosporine mediated immune-compromised female *wistar* rats support the growth of *human* epidermoid carcinoma cells (HEp2) resulting in tumor masses. Transplantation of these allografts has caused epithelial malignancies. Histopathological and immune-histochemical analysis of xenograft and allograft revealed a clear presence of malignant epithelial tumor. The present animal model has several advantages, timeliness of tumor appearance, easily and simply detectable by palpation due to its superficial location at the subcutaneous injection site.

Keywords: Animal model, immune-compromising agents, tumor induction, xenograft.

0006

Genetic and epigenetic profile of gastric carcinoma infected with *Helicobacter pylori* in an Algerian population

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Abstract

Gastric carcinoma is a biologically heterogeneous disease involving many genetic, epigenetic and environmental alterations. Pro-inflammatory cytokines SNPs appear to be factors in maintaining and promoting *Helicobacter pylori* (*H. pylori*) infection. This etiologic factor plays a role in the transcriptional inactivation of tumor suppressor genes by DNA hypermethylation. A case-control study was conducted to elucidate the effect of these polymorphisms and DNA hypermethylation on carcinogenesis of the gastric mucosa in association with HP infection in an Algerian population. The analysis was carried out on 79 HP-infected patients with chronic gastritis and gastric carcinoma, and 32 subjects were recruited as case-control. The bi-allelic SNPs of IL-1 β (-31 and -511), TNF- α (-308 and -1031) and the penta-allelic polymorphism of IL-1RN were genotyped. The identification of the hypermethylation of the promoter of the COX-2, CDKN2A^{p16}, APC, BRCA1, CDH1 and hMLH1 genes was carried out by Methylation-specific PCR (MSP) and the subtyping of *H. pylori* was carried out. The IL-1 β -31 * C and IL-1RN * 2 genotypes were associated with an increased risk of developing gastric carcinoma. However, IL-1 β -511 * T has been associated with an increased risk of developing chronic atrophic gastritis. Promoters of the hypermethylated COX-2 and hMLH1 genes were associated with the development of gastric carcinoma, infected with *H. pylori* vacA s1/m1, confirming the

involvement of this event in the inactivation of these genes, as observed by other authors. This study demonstrates that the presence of certain pro-inflammatory cytokine polymorphisms in the host and the hypermethylation of DNA in a mechanism of inactivation of tumor suppressor genes are crucial in gastric mucosal carcinogenesis which depends on the genotype of *H. pylori*. A better understanding of DNA hypermethylation will open up new diagnostic perspectives and highlight therapeutic targets in the treatment of gastric cancer in precision medical part in our population.

Keywords: DNA hypermethylation; Gastric Cancer; *Helicobacter pylori*; SNP.

0007

New biological dosimetry tool for detecting radio-induced aberrations

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Abstract

Biological dosimetry is a discipline that determines the dose of ionizing radiation received by an individual whether natural, accidental or occupational, from biological parameters. It is based on the analysis of radioinduced aberrations, mainly dicentric chromosomes, which are considered as true bioindicators of acute and recent irradiation, because they are very rare in the natural state. Our goal was to evaluate the efficacy and demonstrate the advantage of the FISH technique using probes allowing telomere and centromeric

labeling in the dosimetric study. In our study, we analyzed radionuclide chromosome preparations, obtained previously by irradiated samples at 2Gy, 5Gy and 8Gy doses of γ -gamma irradiation in the laboratory of the Department of Biology UAB, Spain. The metaphase plates were prepared according to two staining protocols. The first is based on a Giemsa uniform stain and the second is based on probes using the FISH technique. The staining of telomers and centromeres (tc) not only makes it easier to detect dicentrics and rings but also renders the scoring of radio-induced more reliable. The analysis focused on more than 2000 metaphases observed on slides prepared according to the staining protocols mentioned beforehand. A statistical analysis was undertaken taking into account the frequency, the Poisson's law, the standard error and Papworth's U calculation. Thus making it possible to confirm the homogeneity of the irradiations on our samples. We then used FISH tagging to explore the telomeres and centromeres and compared the two techniques by evaluating the benefits in dosimetric analysis. Our results show that the frequencies of dicentric chromosomes labeled in FISH are greater than those obtained in standard staining. This study allows long-term monitoring of populations exposed to radiation, which contributes to the definition of the risk associated with the use of chemical agents and ionizing radiation, particularly at low doses. In addition, the evaluation of a dose of irradiation by the FISH technique is faster and more reliable. Which would lead to the care of the irradiated persons in the case of an accident of irradiation in the shortest possible time such as the irradiations resulting from the radiotherapy which can be at the origin of the induction of certain cancers, as well at the patients than at the health personnel.

Keywords: Biodosimetry; ionizing radiation; FISH ; cancers.

0008

New design for synthesis of anti timor nano heterocyclic molecules called frog, fox and bat catalyzed by maghnite (Algerian MMT)

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Abstract

The use of phenolic compounds as natural antioxidants in food is in progress in relation to their role in prevention of some cancers and cardiovascular diseases. The aim of this work describes new and efficient strategy for synthesis of new anti timoral nano heterocyclic molecules called frog, fox and bat using Maghnite (Algerian MMT) as friendly catalyst. The Maghnite-Na + (MMT-Na +) used in this work came from a quarry located in Maghnia (North West of Algeria) and was supplied by the company "ENOF" (Algerian manufacture specialized in the production of non ferrous and useful substances). Our method of synthesis must include points of view on health and the environment that is why we used a catalytic support, heterogeneous and ecological it is the maghnite. chemical results have been summarized by above figures above and biological tests reported positive test such solubility and toxicity and good reaction with DNA support such as stopping cell divisions and rearrangement of DNA genes of a cancer cell .The structures of these compounds were confirmed by FT-IR and NMR spectroscopy. A synthesized materials having good physical chemical properties such as water solubility at room temperature and good biological properties such as the low degree of toxicity which is tested on a bacterium and a rat.

Keywords: Maghnite, heterocyclic, design, nanomaterials, orcenol, anti cancer.

0009

Metabolic Treatment against Cancer Methylglyoxal, a new target in the hepatocarcinoma treatment: An alternative approach for coumarin drug carriers

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Abstract

Methylglyoxal is a cytotoxic dicarbonyl compound, naturally present in cells and pathologically increased in oxidative stress. In fact, methylglyoxal is considered as one of the powerful precursors of the glycolytic pathway; it is formed by a non-enzymatic fragmentation of the triose phosphates and played a central role in the detoxification process. The abnormal accumulation of it leads to increased protein and DNA modification and contributes to cell and tissue dysfunction in ageing and disease. The aim of our study is to use the anticancer strategy of methylglyoxal on chemically induced hepatocarcinoma on Wistar rats to evaluate the inhibitory effect of OT-55 on the glyoxalase

system. According to the NIH, hepatocarcinoma is the most common primary malignant liver cancer and is the third cause of cancer mortality in the world, its multifactorial pathogenicity make it difficult to diagnosis. Liposomes were prepared by the dehydration-rehydration process and characterized, their content on OT-55 was quantified by HPLC in the same way as the MGO. Following carcinogenesis procedure, twenty females were treated with 200 μ l of liposomal suspension. After scarifying, tissues were removed fixed in formalin and frozen. The hepatic enzymes and glucose were quantified on kits. Histology was performed at IPA. For statistical analysis, one way-ANOVA test was used.

SEM and DLS evaluation confirms the presence of droplets sized between 75 and 134 nm. HPLC analysis confirmed that 50% of OT-55 was trapped in the lipid bilayer, as described by. Wistar rats treated with a classical carcinogen (DEN) showed the first microscopic signs of hepatocarcinoma. Pre-cancerous lesions on non-cirrhotic liver have developed. In OT-55 treated rats, the enzymatic activity of GLO1 was inhibited according to plasmatic methylquinoxaline concentration (2.55 vs 1.11 $\text{pmol} \cdot \mu\text{l}^{-1}$) compared to untreated group. In fact OT-55 reduce indirectly glucose consumption (5.26 vs 5.02 $\text{mmol} \cdot \text{l}^{-1}$), lactate deshydrogenase production (229.51 vs 234.29 UI/L) and impaired ATP supply necessary for cancer cells proliferation. On histological section, MGO generates apoptose

as depicted by pyknotic peripheral nucleus, a translucent cytoplasm and the appearance of a pseudoglandular formation. As expected, proteins show a non-statistical correlation between treated and untreated rats. However, we note a correspondence between these two parameters since albumin (594.96 vs 621.59 $\mu\text{mol} \cdot \text{l}^{-1}$) and protein (7.73 vs 8.06 $\text{g} \cdot \text{dl}^{-1}$) express in the same way. Preliminary results show simultaneously in the control and treated groups that OT-55 would probably act on protein synthesis in addition to blocking GLO1 confirmed *in vitro*. Same phenomenon was reported in both induced and induced-treated groups. We rightly believe that OT-55 has a dual role - to kill cancer cells and save healthy cells. Methylglyoxal has been reported to induce glycation and aggregation of serum proteins in the rat. We also demonstrated a decline of all liver enzymes in treated. Beyond its cytotoxic role, OT-55 can be also proposed as an angiogenic factor. In perspective, it would be interesting to list MGO as routine laboratory analysis and considered it as a biomarker.

Keywords: Coumarin-carriers; Hepatocarcinoma; Methylglyoxal; Wistar albino's rat

Novel approaches

In cancer therapies

0010

Herbal medicinal plants using by cancer patients at Oncology Department of CHU Blida, Algeria

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Abstract

In Algeria, herbal medicinal plants are using by a lot of patient because medicinal plants are very rich in source of bioactive pounds. Our study aims breast cancer patients using medicinal plants in hospital (CHU Blida) during chemotherapy for 7 years (2012/2018). In our study, we have done investigations on using medicinal plants by cancer patients at oncology department of CHU Blida, 1000 breast cancer patients was questioned, 85% of them report have used medicinal plants without informing them doctors. As a result we can say that this practice can be very dangerous in chemotherapy period because of interference between natural molecules and chemical one. The breast cancer patients can have a lot of problems like liver activity, digestive problems and can cause death of patients.

Keywords: medicinal plant; breast cancer; Chemotherapy.

0011

Study of antioxidant effect from Algerian medicinal plants

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Abstract

In this study involving the search of new natural therapeutic value of three plant species, namely *Inula viscosa*, *Artemesia campestris* and *Anabasis articulata*, selected on the basis of their widespread use in local traditional medicine have subject to phytochemical screening to highlight the different phytoconstituants present in these plants. The essence of the plant *I. viscosa* extracted by hydrodistillation using Clevenger apparatus is obtained in quantitative yield and comparable to previous work. The application of gas chromatography coupled with mass spectrometry (GC / MS) has allowed the identification of 21 compounds. Evaluation of antioxidant activity of aqueous extracts of three plants was addressed in two ways:

- The test of DPPH.
- Radical-Scavenging Activity

Our results demonstrate the antioxidant activity in vitro by inhibiting the oxidation power of DPPH. The IC₅₀, respectively, for plant *Inula viscosa*, *Artemesia campestris* are 2.24 mg / ml and 2.8 mg / ml. In light of these results we can highlight the protective power of new natural antioxidants of these plants against the onset and progression of certain diseases related to oxidative stress.

Keywords: phytochemical study, essential oil, GC / MS, flavonoids, antioxidant

0012

Cytotoxicity, Anticancer Dose-time manner and Apoptotic Activity in Human Breast Cancer Cells by Natural products Derived from Medicinal Herbs Extracts

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Abstract

Breast cancer is one of the most prevalent malignant diseases in women nowadays and its occurrence is rapidly increasing due to the stresses of modern life. Fortunately, biotechnology products derived from medicinal currently account for around half the profits generated by the “new” biotechnology industries. In order to increase the effectiveness of cancer treatment, the interest has been recently focused on those drugs that have been used in traditional medicine to manger breast cancer disease. Breast human adenocarcinoma cell line (MCF-7) were used to evaluate the cytotoxicity of Natural products derives from leaves extract of an endemic plant (NPs) using MTT assay in dose and dose-time manners (for 4 to 96 hours of exposure). Apoptosis was further confirmed and quantified by caspase-3/7 activation and by Annexin-V FITC binding of externalization of phosphatidylserine (PS) using the immunofluorescence staining. IP was used to detect the necrosis. The normal cell used to evaluate the cytotoxicity of NPs using Live/Dead ThermoFisher assay. Untreated and treated cells were evaluated for apoptosis by fluorescence microscopy. Zeiss (Zen) and Imaris© Software were used to treated images and counting labeled cells. All NPs decreased cell growth of MCF-7 cell line in a concentration-dependent manner. A less time exposure (just 4 hours) the NPs were capable to inhibit the MCF-7 proliferation with low concertation. The NPs exhibited a marker anti-proliferative effects on cancer cells in dose and time-dose manner, and

had little inhibition to normal keratinocyte (No cytotoxicity inhibitory activity on normal cells by live dead method has been reported with IC50, after 72 hrs); This concertation was used as induced apoptosis. In addition, the percentage of late apoptotic cells for irreversible pathway by caspase-3/7 is 40.5 %, 65 % and 78% after 24h, 48 and 72 h, respectively. While, the earlier apoptotic cells by Annexin V-FITC 57 %, 69% and 91% for NPs. For the necrotic cells were determined by IP, 23%, 29% and 37% of cells were IP+. Despite, the paclitaxel used as a positive standard. In a study carried out by Montero team were used the paclitaxel (Taxol), derived from *Taxus brevifolia* (from the family Taxaceae) and currently used in the treatment of breast cancer. In conclusion, our findings underscore that NPs suppressed, in a dose- and time-dependent manner, the proliferation and colony formation in the breast cancer cell line. The cell death was caused by induction of apoptosis through externalization of PS and caspase 3/7 activation which are cancer-specific targets for cancer therapy. Natural product from leaves extract could be expected to have a therapeutic effect and maybe will be used as a drug of cancer treatments. Further in vitro and in vivo experiments are warranted to resolve precise mechanisms responsible for its anticancer effects on gene expression.

Keywords: MCF-7 cells; Cytotoxicity; Apoptosis; Natural product.

0013**Real-time monitoring by electrical impedance spectroscopy of cell viability during treatment with Chromones and Coumarins derivatives**

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Abstract

Oncology treatments research aim at identify and develop new anti-cancer drugs with improved efficacy and no cross-resistance to complement the present chemotherapeutics, and chromones and coumarins derivatives have shown such activity. In this study, we test a novel series of synthetic chromone and coumarin derivatives 1-9 for cytotoxic activity against a panel of tumour cell lines.

The anti-proliferative effects of the chromones and coumarins compounds on several tumour cell lines (MCF-7, A549, HepG2, HTC-116, B16, CaCO2 and HEK-293t) was evaluated by electrical impedance spectroscopy was used to monitor cell viability in real time using the CellSine® instrument, as well as their involvement in apoptosis induction were evaluated by flow cytometry and Western blot analysis. Compound 8 significantly diminished cancer cell proliferation and viability in different cell lines. It induced apoptosis in a dose-dependent manner as shown by Western blot and flow cytometry. Indeed, compound 8 induced early and late apoptosis from 15,9 % in non-Compound 8 treated cells to 44 %, respectively between 02h and 48h at dose of 100 µM. These compounds showed a selectivity effect on the cancer cells line studied. CaCO2 and A549 cells were not affected by treatment. Compound 8, the most potent constituent, revealed a pro-

apoptotic mechanism of action in HCT-116 cells. The selectivity of action of these compounds against certain cancer cell lines are dimensions that we intend to explore in future.

Keywords: Coumarin; Chromone; Impedance; Cytotoxicity.

0014**Radioprotective effect of Rosemary crude extracts (*Rosmarinus officinalis* L.) against radiation induced DNA damage on Vero cells**

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Abstract

Radiotherapy is the most common modality for treating human cancers. However, the effective use of ionizing radiation is compromised by the side effects that result from radiation-induced damage to normal tissue. The use of radioprotective compounds, which can selectively protect normal tissues against radiation injury is of immense use because in addition to association with protecting the normal tissue, it will also permits use of higher doses of radiation to obtain better cancer control and possible cure. Our study aimed to investigate the in vitro radioprotective effect of freeze-dried aqueous of Rosemary extract (*Rosmarinus officinalis*) on DNA double-strand breaks (DSBs) induced by γ -rays in epithelial cells. The cells were treated with crude extract one hour before exposure to gamma rays, using a source of cobalt 60 at doses of 0, 2, 4 and 6 Gy. After 30 mn, 1h, 4h and 24h post exposure, γ -H2AX proteins were immunofluorescently labelled for evaluation by a fluorescence microscopy. The accumulation of phosphorylated γ -H2AX proteins at double-strand breaks (DSBs) appeared as nuclear foci. The cytotoxic effect of rosemary crude extract (RCE) was also studied and measured by MTT assay. It was observed that the treatment with

RCE (0,04-4 mg/ml) did not affect cell viability at 24, 48 and 72 hours after treatment. Important DNA breaks were observed in untreated cells, and the number of γ -H2AX foci per cell increased with increasing radiation dose. A pretreatment with the aqueous extract of RCE reduce the number of foci among irradiated cells. The results of our study suggest that the RCE could have a role as an effective radioprotector against irradiation damaging effects. However, further studies are needed to verify these results. In perspective, it is necessary to study the mechanism of action of phenolic compounds contained in the crude extract alone or in synergy on the protection of radiation-induced damage as well as the study of radiosensitive and anticancer effect of rosemary.

Keywords: Gamma radiation; γ -H2AX; Radioprotector; *Rosmarinus officinalis L.*

0015

The use of direct AMPK activators as a therapeutic treatment could induce the apoptosis of mature erythroblasts in the bone marrow

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Abstract

The 5'-adenosine monophosphate (AMP)-activated protein kinase (AMPK) is a heterotrimeric complex containing α , β , and γ subunits. It plays a key role as a master regulator of cellular energy homeostasis. In order to adapt required energy demands, AMPK regulates cellular events by stimulating ATP-generating cellular processes, while inhibiting ATP-consuming processes. Since AMPK inhibits cell growth and proliferation, and also promotes the regulation of Carbohydrate and lipid metabolism,

interest in the system as a drug target in the fields of cancers and metabolic diseases has been steadily increasing. In fact, a study carried out in our laboratory has demonstrated the interest of using the direct activator of AMPK, GSK 621, as a therapeutic treatment in order to induce the death of AML (acute myeloid leukemia) blasts. Thus, it was important to study the consequences of the use of this direct activator on human normal hematopoiesis and particularly on the process of red blood cell production (erythropoiesis). Cluster of differentiation (CD) 34+ cells were obtained from human donors. CD34+ cells were purified from the peripheral blood after cytopheresis by positive selection using an immunomagnetic procedure. After 7 days of culture, CD36+ cells corresponding to a highly purified population of human erythroid progenitors were obtained by selection on immunomagnetic beads. CD36+ cells were then cultured in the presence of 2 U/mL Epo, 100 ng/mL SCF, and 10 ng/mL IL-3 up to 12 days for erythroid differentiation. Our data show that, in erythroblasts, only $\alpha 1$, $\beta 1$ and $\gamma 1$ isoforms are expressed during erythroid differentiation. In addition, we showed that AMPK (Thr172) and its target ACC (Ser79) phosphorylation are elevated in immature (GPA^{low}) erythroblasts, and then decreased conjointly with the erythroid differentiation. AMPK activation in mature (GPA^{high}) erythroblasts through the use of direct activators (GSK621 and 991) induces a cell cycle arrest followed by the induction of autophagy and of caspase-dependent apoptosis, whereas no such effect is observed in similarly-treated immature erythroblasts. Our work suggests that AMPK activation during the final stages of erythropoiesis is deleterious. As the use of direct AMPK activators is being considered as therapeutic treatment in several pathologies including cancer, this observation is pivotal. Indeed, these activators could induce the apoptosis of mature erythroblasts in the bone marrow so it will be necessary to analyze hematologic parameters to prevent potential anemia.

Keywords: AMPK direct activator; metabolic diseases and cancer; primary human erythroblasts

0016

Anti-breast cancer activity, apoptosis induction, antioxidant potential and anti-inflammatory effects of *Bryonia dioica* growing in Algeria

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Abstract

Bryonia dioica Jacq. is a climbing perennial herb widely used as traditional anticancer treatment by local populations in Algeria. The main objectives of the present study were: a) investigate the anticancer activity of the plant against triple negative breast cancer, b) highlight whether the anticancer activity would be accompanied by apoptosis induction and/or cell cycle arrest, c) evaluate the antioxidant potential and estimate the anti-inflammatory activities of the plant. Anticancer activity of *B. dioica* aqueous extract against MDA-MB-232 cells was evaluated using the MTT assay. Apoptosis induction and cell cycle arrest were studied using flow cytometry. Total antioxidant capacity, DPPH scavenging ability and reducing power were investigated to determine the antioxidant potential of *B. dioica*. Moreover, human red blood cells membrane stabilizing assay and egg albumin membrane denaturation were used to estimate the anti-inflammatory activity. An important time-dependent cytotoxic effect *B. dioica* aqueous extract was found against the MDA-MB-231 cells. Moreover, this cytotoxic effect was accompanied by induction of apoptosis, and induction of cell cycle arrest at G2/M phase. In fact, cells in G2/M phase increased from 15% (untreated) to 59% (50µg/ml). Besides, our results demonstrated that the *B. dioica* aqueous extract possessed promising antioxidant potential. The extract exhibited a dose-dependent DPPH scavenging activity with an IC₅₀ of 6.18± 0.28 (mg/ml). Likewise, the extract was shown to exert a dose-dependent reducing power (IC₅₀ = 14.57± 0.77 mg/ml). Our findings revealed that *B. dioica* aqueous extract possessed an important anti-inflammatory activity. Indeed, the extract significantly inhibited the protein denaturation

and showed a strong membrane stabilizing ability with IC₅₀ of 0.5 and 0.26 ± 0.02 mg/ml, respectively. Findings of the present study revealed that *B. dioica* aqueous extract was able to inhibit growth of the MDA-MB-231 triple negative breast cancer cells. Furthermore, the extract induced apoptosis and cell cycle arrest at G2/M phase. Besides the cytotoxic and apoptogenic activities, the extract possessed promising antioxidant and anti-inflammatory activities. The latter seem to be mediated through inhibition of proteins denaturation and membranes stabilization. Overall, our findings suggest that *Bryonia dioica* could be considered as a promising source of anti-breast cancer bioactive molecules. Furthermore, these molecules could be used for their antioxidant and anti-inflammatory abilities. Ongoing studies are carried out to clarify the apoptosis-related molecular mechanisms and signaling pathways triggered by *B. dioica*.

Keywords: *B. dioica*; Breast cancer; Algeria; antioxidant; inflammation

0017

IMRT/VMAT as innovative technique in the treatment of cancer in radiation therapy

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Abstract

Radiotherapy (RT), also known as radiation therapy, is a treatment modality based on the use of high energy rays or radioactive substances, to damage tumoral cells and to halt their growth and division. Modern techniques are developed to get a better tumor irradiation and give fewer doses to healthy tissues (Organ at risk OAR). Over the years, many techniques were employed. The standard is the Three-Dimensional Conformal Radiation Therapy (3D-CRT). This technique failed to achieve maximum dose to tumor when it is surrounded by many OARs. With the advanced of technology, new sophisticated techniques see light such as IMRT (Intensity Modulated Radiation Therapy) and VMAT (Volumetric Modulated Radiation Therapy). Each technique shows advantage and

disadvantage that it is the aim of our study. 10 patients were planned with conventional 3D-CRT and VMAT techniques for different cancer type using Monaco V5.11 Treatment planning system (TPS) (Elekta AB (Stockholm, Sweden)). Objective was to choose the best PTV coverage plan with the least OAR dose. The 2 plans were compared for: PTV coverage, Homogeneity index, Conformity index and other Dose volume histogram (DVH) metrics related to each cancer type. Based on DVH metrics evaluation, VMAT planning method was found to result in better target volume coverage, improvement in dose conformity and homogeneity, high doses to organs at risk (OAR) were reduced when compared to the 3D-CRT technique for different cancer type. It is locally confirmed that VMAT has great benefit in terms of OAR sparing with a great PTV coverage, but requires complex patient preparation, planning and verification procedures.

Keywords: Radiotherapy; 3D-CRT; IMRT; VMAT.

0018

Silibinin suppresses hypoxia induced aerobic glycolysis in nasopharyngeal carcinoma

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Abstract

Tumor progression has been shown to be associated with enhanced aerobic glycolysis, promoted by HIF1 α dysregulation. In nasopharyngeal carcinoma, LDH has been associated with worse prognosis [4]. Here we investigated the effect of silibinin, a nontoxic flavonoid with anticancer properties [5] on glycolysis mediated in NPC. C666-1 cells were

cultured with silibinin (0-200 μ M). A proliferation assay was performed using Celigo imaging cytometer. Glycolysis was evaluated using Seahorse XF96 Extracellular Flux Analyzer. HIF1 α expression was performed by Flow cytometry. LDH activity and citrate levels were measured using LDH and citrate colorimetric assay kit, respectively. Lactate levels were evaluated using lactate plus Meter Test strips. Our results demonstrated that silibinin inhibited the growth of nasopharyngeal carcinoma C666-1 cells in a dose dependent manner and reduced their glycolytic activity. Treatment with Silibinin (100 μ M) promoted metabolic reprogramming in C666-1 cells. This translated in a reduction in LDH activity and lactate rate and elevation in citrate levels after treatment. Accordingly, expression of the transcription factor HIF1 α , a critical regulator of glycolysis, was down regulated after silibinin treatment. Altogether, we show that silibinin is an effective inhibitor of NPC glucose metabolism with simultaneous inhibitory effects on HIF1 α . These results provide new perspective for silibinin as a promising anticancer molecule for NPC.

Keywords: glucose metabolism; HIF1 α ; NPC; silibinin.

0019

Exosomes for drug delivery to lung cancer

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Abstract

Exosomes, biological extracellular vesicles (EVs) (typically 30-120 nm)¹, have recently begun to find use in targeted drug delivery in solid tumor research². First, because exosomes contain endogenous cellular components, certain EVs may be equipped to target particular cell types and tissues, enabling them to overcome

biological barriers. Secondly, owing to their endogenous origin, exosomes are less likely to be immunogenic or cytotoxic than other synthetic delivery systems. Finally, the lipid bilayer of exosomes may protect the drug from rapid blood clearance, and may reduce cytotoxicity associated with off-target drug effects³. In this study, we investigated the effectiveness of two different populations of EVs (microvesicle- and exosome-enriched) as carriers of Doxorubicin to lung cancer cells. EVs were isolated from lung cancer cell cultures using differential centrifugation and characterized by electron microscopy, nanoparticle tracking analysis, and Western blot. The uptake of microvesicles and exosomes by the A-549 was assessed by flow cytometry and confocal microscopy. The EVs were loaded with Doxorubicin and the effectiveness of EV-mediated drug delivery was assessed with viability assays. The distribution of EVs and EV-delivered Doxorubicin in cells was inspected by confocal microscopy. Our main finding was that the loading of Doxorubicin to lung cancer cell-derived EVs increased its cytotoxic effect. This capacity was independent of the EV population and the cell line tested. Although the EVs without the drug increased cancer cell viability, the net effect of enhanced cytotoxicity remained. Both EV populations delivered Doxorubicin to the recipient cells through endocytosis, leading to the release of the drug from within the cells. The removal of EV surface proteins did not affect exosomes, while the drug delivery mediated by microvesicles was partially inhibited. Cancer cell-derived EVs can be used as effective carriers of Doxorubicin to their parental cells, bringing the drug into the cells through an endocytic pathway and increasing its cytotoxicity. However, due to the increased cell viability, the use of cancer cell-derived EVs must be further investigated before any clinical applications can be designed.

Keywords: Drug delivery; Exosome; Lung cells; Microvesicles; Doxorubicin.

0020

DNA damage and mitochondria-mediated apoptosis of colorectal carcinoma cells induced by scorpion venom components

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Abstract

Cancer is one of the leading causes of death in the world and synthetic chemicals used in chemotherapy and radiotherapy chemicals have extremely high cytotoxicity and cause much collateral damage to normal tissues. Several studies have established that venom peptides from several scorpion species induced cytotoxic, antiproliferative and apoptogenic effects on tumor cells *in vivo* and *in vitro*. Therefore, the purpose of the present study was to investigate the antitumor mechanism of F3 fraction isolated from *Androctonus australis hector* venom on colorectal tumor cell line HCT116. The cell viability and cell proliferation were analyzed by MTT and clonogenic survival assays. DNA damage was assessed by comet assay and western blot analysis. Apoptosis was evaluated by Hoechst 33258 staining and protein expression of cleaved caspase 3 and PARP1 along with assessment of the TP53 dependent apoptosis target genes by RT-Q-PCR. Obtained results revealed that F3 fraction induced a significant decrease in cell growth of colorectal tumor cells associated with a DNA damage effect particularly double strands break due to phosphorylation of histone γ H2AX. The F3 fraction promotes cells apoptosis by up-regulated the expression of tumor suppressor gene TP53 associated with direct transcriptional activation of the pro-apoptotic PUMA, NOXA, BAX and BAD, and simultaneously down-regulated the level of the antiapoptotic BCL-2 gene expression. In addition, high amounts of cleaved caspase 3 and its substrate the poly (ADPribose) polymerase 1 (PARP-1) were detected, reflecting the DNA repair inhibition in favor of a caspase dependent apoptosis. Our investigations reveal the presence of antitumor peptides endowed with genotoxic

and apoptotic activities in F3 fraction. The identification of these venom-derived peptides in interface with a transcriptome-centric mechanistic study approach will be the broad utility to overcome the resistance of conventional chemotherapy.

Keywords: F3 fraction, H2AX, Apoptosis, TP53.

0021

Pathological and epidemiological features of ovarian carcinoma (serous / mucinous) in western Algeria

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Abstract

Ovarian cancer has become one of the most common gynecological cancers after breast cancer and the second leading cause of cancer death in women. This public health problem is becoming more and more important because of the increased life expectancy. Currently, one in ten women is at risk of developing ovarian cancer in her lifetime. The early diagnosis of all ovarian tumors and the sensitization of women towards its tumors is important because the profound situation of the ovary and the non-specific signs often explain a late diagnosis, on the other hand, to date, no favorable impact of the screening. Mortality due to ovarian cancer has been demonstrated. Our work was carried out at the level of the pathology department of the university hospital in Oran. The aim of our work was to conduct an epidemiological and pathological study to identify the most common risk factors in ovarian cancer patients over a period of one year. The results of our study showed that the occurrence of ovarian cancer increases proportionally with age. The highest frequency was observed for women aged 45 to 59 years. Which coincides with menopause. 80% of sick women are married, most of whom have had their first pregnancy at a late age (after 25 to 30 years) or are hypofertile. Epithelial tumors

(mucinous / serous) are the most common. Currently, there is no specific test to detect ovarian cancer at an early stage because of the deep and intrinsic location of the ovary. In view of this study, early detection should be considered in order to avoid late diagnosis of malignant or benign primary or secondary ovarian tumors to ensure adequate management.

Keywords: Ovarian cancer; screening; early diagnosis; sensitization.

0022

Nanoparticulate Drug Delivery System for Chemotherapy

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Abstract

The emergence of the chemoresistance of cancerous tumors and virus propels the medical research towards two ways: the development of new Active Pharmaceutical Ingredient and vectorization. This latter, exploiting only the physicochemical properties of the nanovectors, has the advantage of targeting the therapeutic sites and considerably reducing toxic effects. Thus, since the marketing in 1990 of Amphotericin B in liposomal form "Ambisome®", various nanocarriers have been developed both for therapeutic and imaging, as example: nanoliposomes, polymersomes, dendrimers, fullerenes, nanotubes , nanoshells, micelles, quantum dots, nanocapsules, nanospheres, nanovaccines, and nanocrystals ... In our work, we are interested in lipid nanoparticles, because of their biocompatibility, their biodegradability and their stability in biological medium. We will share our experience in encapsulation of Acylic Nucleoside Phosphonate for antiviral and anti tumoral treatments.

Keywords: SLN, HBV, HIV, Compritol, Adefovir

0023

Role of BRCA1 gene in hepatocellular carcinoma chemoresistance

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Abstract

Hepatocellular carcinoma (HCC) is one of the most lethal malignant tumors for which therapeutic options are limited. The failures of conventional and targeted therapies in the treatment of CHCs are due to the highly resistance of these tumors which is associated with DNA repair genes. Our attention has been focused on studying the potential role of BRCA1 in the chemoresistance of CHCs. Response of HCC cells to interstrand cross-links was investigated by cell viability assay following exposure to mitomycin C, cisplatin, and melphalan. BRCA1 protein was tested by Western blotting. Effects of BRCA1 ectopic expression were studied in HepG2 cells with BRCA1-expression plasmids. Effects of BRCA1 downregulation were studied in SNU449 cells with BRCA1-specific siRNAs. Response of transfected SNU449 cells to mitomycin C was analyzed by cell viability tests and cell cycle analysis using flow cytometry. Expression of Fanconi anemia and double-stranded DNA break repair genes was significantly upregulated in HCC tumors. This upregulation displayed a gradual amplification during tumor progression. BRCA1 and BRCA2 genes were among consistently upregulated genes. Epithelial-like HCC cells had low BRCA1 expression and low chemoresistance, whereas mesenchymal-like HCC cells had high BRCA1 expression and increased chemoresistance. Ectopic expression of BRCA1 increased the chemoresistance of epithelial-like HepG2 cells. Conversely, BRCA1 knockdown chemosensitized mesenchymal-like SNU449 cells. Chemosensitization of SNU449 cells was due to cell cycle arrest at 4N stage. Our study shows that enhanced expression of the BRCA pathway genes is an important mechanism involved in HCC chemoresistance. Moreover, we demonstrated that such chemoresistance can be overcome, at least partially, by downregulating just one BRCA pathway gene, such as BRCA1. We believe it is worthwhile to further explore the

inhibition of the FA/BRCA pathway to enhance the efficacy of chemotherapy in HCC.

Keywords: BRCA1, chemosensitization, hepatocellular cancer, interstrand cross-linker drugs.

0024

In vitro anticancer activity of *Ephedra vulgaris* against different human cancer cell lines

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Abstract

"*Ephedra vulgaris*" belongs to the Ephedraceae family. It is a species of *Ephedra* that grows mostly in the desert. *Ephedra* species have a long history in traditional Chinese medicine (approximately 5000 years), with uses in the treatment of allergies, nasal congestion, bronchial asthma, coughs, and flu. The aim of this study was to evaluate the cytotoxicity and apoptotic/antigenotoxic effects of *Ephedra* as well as its mechanism. Five different varieties of *Ephedra* were prepared in the traditional way and then freeze-dried. Phytochemical screening tested for the presence of secondary metabolites using standard procedures and antioxidant activities. The cytotoxic activity was evaluated on breast cancer (MCF-7), prostate cancer (PC-3), colon cancer (T-84), lung cancer (A-549), and human peripheral blood lymphocytes via a MTT assay. The pro-apoptotic effects were evaluated with Annexin V/Propidium Iodide and western blot of Bax, Bcl-2, TP53, and TP73. Induction and reduction of ROS were assessed by fluorimetry. Genotoxic and antigenotoxic effects were evaluated with a comet assay and micronuclei binucleated cells. Four of Five *Ephedras* had

cytotoxic effects against MCF-7 and A-549 while not affecting normal cells. These Ephedras induce cell death by apoptosis modulated by p53/p73. In CHO-K1 cells, the Ephedras decrease the damage induced by hydrogen peroxide and Mitomycin C measured in the comet and micronucleus assay respectively. The IC_{50} range of effective Ephedras in MCF-7 was 17 to 102 $\mu\text{g}\cdot\text{mL}^{-1}$. This effect may be related to its use in traditional medicine. On the other hand, immortalized Chinese hamster ovary cells (CHO-K1) and lymphocytes did not show a cytotoxic effect. The most potent Ephedra induced

apoptosis via a p53/p73-mediated mechanism. The Ephedras present antigenotoxic properties, which may be related to the antioxidant capacity. Future studies on Ephedra components are necessary to understand the interactions and beneficial properties.

Keywords: Ephedra; Cancer; Antigenotoxicity; Apoptosis.

Cancer diagnostic technologies,

**Immunotechnology and Cancer
Immunotherapy**

0025

The use of Comet Assay as a valuable tool for assessing DNA damage in Algerian children with lymphoma

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Abstract

Chemotherapeutic agents used to inhibit cell division and reduce tumor growth, increase reactive oxygen species levels, which contributes to their genotoxicity. The comet assay is expensive and rapid method to detect the damage at cellular levels and has been used in various cancer populations undergoing chemotherapy. The present study aim to determinate the association between chemotherapy and DNA damage in Algerian children with lymphoma. For our study, we selected thirty children with lymphoma treated in university hospital of Beni Messous (Algeria), and fifty unrelated subjects as controls, after obtaining the informed consent in accordance with the declaration of Helsinki (1964). Mononuclear leukocytes were isolated using ficoll histopaque 1.077 (Sigma) and DNA damage was analyzed by alkaline comet assay. The results were analyzed using Comet Assay IV program. (Perspective, England). DNA damage was significantly higher in lymphoma patients before and after therapy than in healthy controls (10.16 ± 2.83 vs 2.58 ± 0.43 ($P < 0.001$); 21.14 ± 7.64 vs 2.58 ± 0.43 ($P < 0.001$), respectively). This damage maybe related with excessive ROS generation and insufficient antioxidant capacity. Indeed, the chemotherapeutic agents generate a high level of ROS and can oxidize lipids, hydrolyze amide bonds of proteins and cleave RNA and DNA molecules. Our study is the first to apply the Comet Assay for assessment of genotoxicity in Algerian children undergoing

chemotherapy. We observed increased levels of DNA damage in patients with lymphoma, as compared with those in healthy controls. We suggest that the direct effect of chemotherapy, the alteration in redox balance may have an influence on oxidative / antioxidant status. However, further studies of the role of ROS in tumor biology may lead to new strategies for cancer therapy.

Keywords: Chemotherapy; Comet assay; DNA damage; lymphoma.

0026

Molecular interactions between anticancer drugs and their target cells and their risk against healthy cells, cases of leukaemia and colorectal cancer in patients in the departments of oncology and hematoclinic at the University Hospital Centre in Tlemcen, Algeria

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Abstract

Cancer chemotherapy is a therapeutic method using all chemicals, drugs, plant extracts (natural compounds) or chemically synthesized laboratory products, toxic for cancer cells, aimed at blocking cell proliferation in a phase of the cell cycle or to prevent it from progressing in the cycle (cytostatic) or killing the cell (cytotoxic). These substances are even assimilated to poisons of the cell cycle. This explains the name still used abusively antimetabolic. It represents the only theoretical way to control the spread of cancer as it is carried by the blood; it circulates throughout the body while surgery and radiotherapy is only for localized areas. In order to evaluate the real situation in terms of anticancer molecular interactions used in chemotherapy, we carried out a study at the level of oncology and

hematoclinic services at University Hospital Centre in Tlemcen. Our study was carried out at the level of the oncology and hematoclinic services of the University Hospital Center (CHU) Dr. Tidjani-Demerdji of Tlemcen. In this work, we followed a methodology based on the use of questionnaire and interview of the staff of the two services of oncology and hematoclinic (doctor pharmacist and nurse) and taking information on the patients starting from an interview and their medical records for 5 months, from November 2017 to March 2018. The results obtained from this study provide information on 10 patients, including 06 patients in the oncology department followed by cancer of the colon and rectum with a frequency of 50% for each and 04 patients in the hematoclinic service followed only by leukemia. However, mortality only affected one patient with rectal cancer. The action of anticancer agents against colorectal cancer target cells was studied for two anticancer drugs, cetuximab and bevacizumab. The first is in the inhibition of the EGF pathway by binding this molecule to the EGFR receptor, however, the second directs against vascular endothelial growth factor (VEGF). While, anticancer interactions against healthy cells represent poor interactions manifesting as toxic effects, secondary or undesirable for patients. The two types of cancer studied have different interactions, some of which are common, for example: abdominal bloating, decreased GB, GR and platelets. The cancer treatments theoretically act specifically on the mechanisms of oncogenesis and aim to eliminate target cells. They act either locally, that is to say only on the cancerous cells of an affected organ, or generally, that is to say on all the cancerous cells present in the body, but not are not without side effects. These anticancer drugs are taken in the long run, and the cumulative effects of adverse effects can be harmful to the quality of life of the patient. This phenomenon can result in a lack of patient adherence to its treatment. In addition, the mode of action of these anticancer drugs is not specific only against their target cells but they also react against healthy cells.

Keywords: Cancer of colon rectum, leukemia, Anticancer, Molecular interactions.

0027

The role of mammography, incidence and risk factors at patients with breast cancer

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Abstract

Breast cancer is a major public health problem in the world, is the most common cancer at women and describes it as rare at men .The objective of our work is to estimate the different incidence rates of breast cancer and also to know the risk factors and role of mammography for this disease at women and men. Our study is carried out on patients who have breast cancer after diagnosis by specialist doctors according to the medical records are treated at the level of Chorfa polyclinic oncology service in the Chlef region. We based on the period of January 1st, 2010 and up to December 31st, 2013 in our study and hospital public Establishment Bedje Sisters of Chlef in the same study region. We have used more than 150 breast cancer patients in the HPE Bedje Sisters of Chlef. The gross incidence rates of patients during 04 years from 2010 to 2013 of Chorfa Polyclinic are 19.88 woman patients per 100 000 inhabitants and 0.51 man patient per 100 000 inhabitants. The mammography plays a very important role in diagnosis and screening according to our study. This pathology is caused by several risk factors such as tobacco, alcohol, the pill, asbestos, radiation, electromagnetic fields ... etc. Finally, it is necessary to reduce the exposure to risk factors to fight against breast cancer by prevention, early diagnosis and positive treatment as recommendations.

Keywords: Diagnosis, Breast Cancer; Incidence; Risk Factors; Chlef region.

0028**Urinary tract infection in Algerian patients with bladder cancer: Histopathology and etiology**

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Abstract

The five most common infection-associated cancers in North Africa in order of incidence are bladder cancer, cervical cancer, liver cancer, stomach cancer, and nasopharyngeal carcinoma. The incidence of bladder tumours grows with age and is 2-3 times more frequent in men this frequency is due to various factors, mainly tobacco, and occupational exposure to toxins. Our prospective multiparametric study, covering the period from 2007 to 2018, involves 600 bladder cancer patients admitted to different urology services of Blida (39%) (Center Anti Cancer and CHU Frantz Fanon) and Algiers (61%) (CHU Ain Naadja and CHU Mustapha Pacha). In this study we first investigate the risk factors for bladder cancer (smoking and occupational exposures), its histological evolution (tumor grade), and its incidence in hospitalized patients. Then, we identified the prevalence of urinary tract infections (UTIs), offending germs and the evolution of their resistance to antibiotics. Our results show a clear male predominance whatever the year. However, the percentage of women has increased significantly in 2010 (12%) reaching a maximum of 21% in 2018. The percentage of smokers is much higher with a rate of 72%. However, Grade 2 (27%), G1 (20%) and G3 (10%) in smokers predominate compared to non-smokers patients G2 (15%), G1 (15%) and G3 (5%), respectively. In the age groups over 50 years, we observe an increase of UI occurrence from 3% in 2007 to 39% in 2018. The current findings agree with other published studies which demonstrated a dose-response relationship between tobacco and bladder cancer [5, 6]. In addition, we demonstrated that patients with grade 3

urothelial carcinoma were the most predisposed to urinary tract infections. The cytobacteriological examination shows that 3 germs dominate among the uropathogenic germs namely *Escherichia coli* (44%), *Klebsiella sp* (14%), followed by *Enterobacter sp* (10%). In conclusion, since multi-resistant bacteria are now a major health problem, periodic monitoring by prescription of ECBU remains essential in these patients.

Keywords: Bladder cancer; Histopathology; Urinary infection; Uropathogenic germs.

0029**Expression of human serum TCTP in prostate cancer is correlated with the aggressivity of cancer**

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Abstract

Prostate cancer (PCa) is a major healthcare problem. Clinical outcome at diagnosis is heterogeneous and not easy to predict; thus, predictive and diagnostic markers are needed. TCTP (Tumor Controlled Translationally Protein) also known as p23 is a growth-associated protein present in different types of tissues with preferential expression in mitotically active tissues. On the other side, tumor reversion and malignant transformation have been associated with TCTP. The Palma Rocchi team has shown an overexpression of TCTP in castration-resistant prostate cancers. In this work, we evaluated in subjects with PCa, the serum concentrations of the TCTP antigen and its association with tumor aggressiveness. ELISA was used to quantify serum TCTP concentrations in 58 PCa patients and 50 healthy individuals. Serum TCTP levels were significantly higher in patients with PCa (417.798 ± 381.88 ng/ml) than in control subjects (103.383 ± 58.57) ($P < 0.0001$). The results showed an over-expression of TCTP in

tumors and indicated that malignant tumors expressed higher TCTP concentrations than benign tumors. Thus, in the case of non-aggressive cancer (Gleason score < 7) a significant increase in secreted TCTP protein (257.549 ± 262.11 pg/ml) is recorded compared to that observed in the case of aggressive PCa (Gleason score ≥ 7) (538.824 ± 463.08 pg/ml) ($P < 0.0001$). Concentration values of TCTP were also correlated with the Gleason score. Elevated levels of TCTP antigen in human serum occur in PCa and are related to the prostate cancer malignancy level suggesting its use as a diagnostic biomarker.

Keywords: Prostate cancer, TCTP, Biomarker, aggressive cancer.

0030

Exploration of exon 2 of the KRAS gene in Non-Small Cell Lung cancer (NSCLC)

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Abstract

Non-Small Cell Lung cancer (NSCLC) accounts for nearly 85% of all Bronchial cancers. Among various genes involved in the appearance of this cancer, the proto-oncogene *KRAS* represents the gene most frequently mutated with a proportion of more than 25%. *KRAS* is followed by other oncogenes, such as *EGFR*, *NRAS*, *BRAF*, and *PIK3CA*. Some mutations can affect these genes and are associated with both the histological type and smoking history of NSCLC patients. The aim of our work was to first look for the mutational status of exon2 of the *KRAS* gene covering 35 patients with adenocarcinoma NSCLC by pyrosequencing. In order to predict the impact of the mutation found within the Ras sample, an In

Silico bioinformatics study was established. Then, using real-time PCR, we explored on new samples the G12D mutation that was previously found and associated with our patients. Thus, we determined in the first part of our work a single type of mutation at codon12 (G12D mutation) relating to the change of the amino acid Glycine to Aspartic Acid. Due to transition from guanine to adenine, (G>A) with a rate of 16%. This rate is up to date with recently reported figures, which in turn show that mutations in the *KRAS* gene are found in 15 to 30% of pulmonary adenocarcinomas. To add, we determined that these mutations are found only on Codon12, given that more than 82% of *KRAS* gene mutations are found at Codon12. With regard to the In Silico study, the latter predicted that the G12D mutation is rather tolerant; hence, this suggests that this substitution does not alter the function of Ras protein. This mutation sits at a region between the analyzed species that is not conserved. This indicates that the G12D mutation does not once again alter the protein structure found in the different species since it maintains its role in the signaling pathways. The second part of our work was performed on only 17 NSCLC patients where real-time PCR results revealed a single non-smoking male patient with G12D mutation. This work will allow selecting patients with mutational status to direct them to more targeted therapies

Key words: functional mutation G12D, *KRAS*, non-small cell, lung cancer.

0031

Epidemiological study and role of zinc and lead on Breast Cancer in El Oued (Algerian) Population

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Abstract

Cancer is a disease characterized by abnormal cell growth localized in a specific place or can invade other parts of the body. Cancers cells can form a tumor which invades the local tissue. Cancer has become the leading cause of death. Breast cancer is a major malignant tumor for

women with approximately 23% percent. Its frequency is very high for developed countries specifically. It is very difficult to determine the cause of breast cancer. Exposure to environmental pollution (such as pesticide and heavy metals) and lifestyle play an important role in the etiology of this disease. The aim of this study is to analyse the epidemiological and appreciate the distribution of breast cancer and to evaluate the effect of zinc and lead in women breast cancer in El Oued population. Our epidemiological study was carried out on 1505 cancer patients in the period (2007-2017) of the El Oued region. For mineral study, This work is carried out on 36 volunteers women, were divided into two groups; a group of 20 healthy control women and 16 women has breast cancer, on which we made the dosage of zinc in serum and hair, lead in serum and lead in the soil of different regions of El Oued.

In Results for 316 cases of breast cancer recorded, 28.95% patients were aged between 41-50 years. In the other hand, 1.9% of cancer patients are men versus 98.1% are women. In this study, 48% of the breast cancer patients had a tumor affecting the right breast whereas 52% of the people were affected in the left breast. In our study, compared to controls, serum Zn levels had significantly low ($p < 0.05$) in breast cancer patients which agreement with result of HONG et al., (2006) study [5], Zinc level in the serum of patients with cancer is lower than healthy individuals has been shown in other epidemiological study [6]. Our study also found that there was a lower hair zinc level ($p < 0.01$) in the breast cancer patients, which is in agreement with the hypothesis of the decrease of zinc level in hair of the patients has a cancer by an increased consumption compared to the healthy peoples [7]. Zinc is an essential element of life, which is of specific functional importance in various physiological systems [8]. Zinc also plays a role in cellular signaling such as the phosphorylation cascade of MAPK and Akt required for cell development under normal conditions or in pathological cases such as cancer [9]. In our study, lead levels had significantly high ($p < 0.001$) in serum of breast cancer patients compared to controls. There is not much evidence on the carcinogenic aspect of lead in humans. but lead can cause cancer by a genetic aspect through direct interaction with DNA by experience in a group of workers exposed to lead, this interaction appears to be due to an

increase in the release of reactive oxygen species, species that are very sensitive to cellular constituents including the proteins involved in DNA repair, which may contribute to the disappearance of cancerous cells. Hence epidemiological studies are needed to understand the variations and the occurrence of breast cancer. This study also reevaluated environmental contamination by lead is a very important risk factor for breast cancer expected in the region of El Oued. Moreover, The low Zinc level in breast cancer patients, indicates the importance of diet factors and zinc deficiency in breast cancer expected.

Keywords: Breast; Cancer; Epidemiology; Zinc; Lead; El Oued.

0032

Effect of glucose oxidase on the cytokine profile and cholesterol of monocytes in liver cancer

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Abstract

Cancer has an extremely important human and socio-economic impact. It is due to several cellular disturbances causing uncontrollable proliferation, which stimulate immune system elements including monocytes that can play a dual role either in the elimination or progression of cancer cells (Elliott et al., 2017), these disturbances affect a variety of functions such as glucose metabolism (Annibaldi and Widmann, 2010). This work hopes to investigate the effect of glucose oxidase at the level of the monocyte on the tumor growth thus determining its impact on the glycolysis activity and on the mitochondrial metabolism. The aim of this study is to show the role of GOD in the polarization of monocytes in contact with tumor cells. Monocytes isolated from the blood of the cancer patient were co-cultured with the tumor epithelial cells isolated from a biopsy of the liver cancer, in a culture medium supplemented or not with GOD. GOD

induced a decrease in the INF- γ and increase of IL-10 as well as in NO and Arginase in the presence of Glucose oxidase compared to those without GOD. In conclusion, our results showed an anti-inflammatory effect was reported in monocytes in contact with liver tumor epithelial cells.

Keywords: Liver cancer, monocyte, GOD, Cytokines.

0033

Association study of copy number variants in CCL3L1 gene with risk of ankylosing spondylitis in a West Algerian population

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Abstract

Numerous single nucleotide polymorphisms (SNPs) were explored in the Algerian population to evaluate associated ankylosing spondylitis (AS) genetic risk factors, but no study has identified the impact of copy number variations (CNVs). The aim of the study was to determine whether CNVs of CCL3L1 gene were also associated with the susceptibility of AS disease. The dataset of the current study is composed of 80 patients with AS and 100 healthy controls. All samples were genotyped by digital droplet PCR (ddPCR). Chi-square test and OR calculation were used to evaluate association between CNVs and AS and the risk associated with copy numbers (CN). An association between high CCL3L1 copy numbers and susceptibility to AS was found ($p = .02$, $OR = 3.17$ [1.47–6.82]). Our result shows that CNVs of CCL3L1 gene seem to play a role in the susceptibility to AS disease in the Algerian population. This is the first study that

investigated the CCL3L1 CNVs in relation to AS risk disease. It reveals that CCL3L1 CNVs may be involved in susceptibility to AS risk in the Algerian population. These results need to be confirmed in larger and other ethnic populations.

Keywords: Algerian population, ankylosing spondylitis, CCL3L1 gene, copy number variations.

0034

Laboratory testing requirements for diagnosis of multiple myeloma

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Abstract

Multiple myeloma is a neoplastic disorder characterized by proliferation of a single clone of plasma cells derived from B cells. This clone of plasma cells proliferates in the bone marrow and frequently invades the adjacent bone, [1]. Monoclonal immunoglobulins are markers of plasma cell proliferative diseases and have been described as the first (and perhaps best) serological tumor marker. Panels of tests have been recommended for sensitivity and efficiency [2]. The aim of this study is to discuss the use of various tests such as protein electrophoresis and immunofixation electrophoresis as well as immunoglobulin quantitation, free light chain quantitation, and heavy-light chain quantitation by immunonephelometry and to determine the clinical and laboratory features of patients with diagnosed MM. Records of all patients in whom multiple myeloma was initially diagnosed at department of hematology, from January 1, 2010, to December 31, 2016, were reviewed. The detection of M-proteins relies on the ability to differentiate between monoclonal and polyclonal immunoglobulins by agarose gel assays. In addition, IFE in agarose zone

electrophoresis was used to characterize the immunoglobulin heavy and/or light chain isotypes. Nephelometric methods can aid in the detection of M-proteins and can complement some of the weaknesses of electrophoretic techniques. Of the 172 study patients, 18% were younger than 50 years, and 25% were 70 years or older. The median age was 61 years. Of these 172 patients, 50% were men. Anemia was present in 34% of patients, bone pain was present at diagnosis in 75% of patients. Serum protein electrophoresis revealed a localized band in 82% of patients, immuno-fixation showed a majority of the myeloma proteins (50%) were of the IgG isotype followed by IgA (23%), whereas light-chain myeloma was present (18%), IgM (9%). A monoclonal light chain was found in the urine in 54%. The age and sex distributions of our patients were similar to those of patients with multiple myeloma seen in Tunisia and Morocco. Clinical history was taken in all our patients and the major presenting complaints were recorded. Bone pain was one of the chief complaints in 75% of our patients. In studies by Gupta and Kyle, 79% and 58% patients respectively had bone pains at diagnosis. Generalized weakness and fatigability were recorded in 34% of our patients and in 32% patients in a study of the Mayo clinic. Similarly, raised serum creatinine levels were found in 50% of the patients, for whom these results were available, compared with only 55% and 48% patients in two studies by Kyle and al. MM accounts for about 1% of all types of malignancy and slightly more than 10% of hematologic malignancies. The reported increased incidence during the past few decades is probably related more to the increased availability of medical facilities for elderly patients and to improved diagnostic techniques than to an actual increased incidence. A better understanding of the biology of myeloma means that quite soon we might be able to define and tailor-make at diagnosis which patients will most readily respond to which biological treatments.

Keywords: M-protein; immunofixation; multiple myeloma; protein electrophoresis.

Poster

Communications

Oncogenomics and

Pharmacogenomics

P035

Epidemiological and Histopathological Assessment of Central Nervous System Cancers in a Northern African Population: A Restrospective Study over Seven Years

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Abstract

Brain cancer, which is one of the most important central nervous system (CNS) cancers as its incidence is increasing in the world, has attracted much attention in recent decades because its survival is low mainly in the developing African countries. The aim of this survey to provide an accurate region-wide statistics of CNS tumors in a North African country (Western Algeria) by undertaking and epidemiological retrospective descriptive parameters such as: age, gender, symptoms, staging and histology. Our retrospective study was performed using a database of 191 patients with CNS cancer who had been diagnosed at the neurosurgery department of the University Hospital Center of Sidi bel Abbes, from 2010 to 2017. 191 patients (50.26 % females and 49.47 % males were diagnosed with brain cancer). We reported a slight female predominance with the male to female ratio of 0.989, the mean age was about 43,10 years, ranging from 12 to 80 years old. The most common medical histories recorded among our patients were: High blood pressure (13.6%), followed respectively by diabetes (10%). Concerning tumors' sites, the most noticeable ones were: supratentorial (71.2%), infratentorial (19.9%), medullary (7.3%) and cervical (1.6%). The most predominant histopathological types were: meningiomas (32.6%) and glioblastomas (21%), astrocytomas (9.4%). The most noted symptoms were: Intracranial pressure (62.8%), epileptic seizures (23.6%), sensitivo-motor deficiency (31.4%). North African analysis of

epidemiology and histopathology of CNS cancers in Western Algeria reported that the incidence of these malignancies is alarmingly increasing.

Keywords: Brain cancer; CNS; North Africa; Epidemiology.

P036

Polymorphism of the Cytidine Deaminase (CDA) Gene and Response to Nucleoside analogs-based Chemotherapy: The Value of a Phenotypic Test

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Abstract

Cytidine deaminase (CDA), a liver enzyme playing a crucial role in the metabolism of analogues, is widely prescribed in adult and pediatric oncology. The gene coding for CDA is characterized by its high genetic variability resulting in severe toxicities, or on the contrary a therapeutic escape. A stratified typing strategy of CDA status should reduce these risks and increase therapeutic efficiency. The present study aimed to validate analytically a visible spectrometric method allowing a rapid and low-cost establishment of the patient's "CDA" functional status, by measuring serum residual activity. In the present study we performed a simple phenotypic test, requiring 20 µl of serum and based on a visible spectrophotometric measurement. The test aims was carried out to establish at low cost and quickly the patients' CDA functional status, by measuring the serum residual activity. The analytical validation concerned the measurement domain study, the reproducibility and the

repeatability. A cross validation was carried out on serum specimens to evaluate the concordance level of the results between the laboratory of Biochemistry, CHU Annaba, Algeria and the laboratory of transfer in oncology of the North University Hospital, Marseille, France. Our results showed that the method was linear in the range of 0.25 to 8 U. Moreover, the statistical processing of the data obtained showed good fidelity; satisfactory repeatability, homogeneous reproducibility between all the variances (CV <5%) and an acceptable Cochran test. Our findings allowed us to validate this method of measuring the CDA serum residual activity at the Annaba CHU biochemistry laboratory. The phenotypic screening CDA and prior knowledge of the patient metaboliser status should contribute to adjust the dosage of nucleoside analogs, in order to improve the balance efficiency / toxicity.

Key words: Cystidine deaminase, gemcitabine, cytarabine, toxicity, efficacy.

P037

The genetic association between rs861539 and prostate cancer in Algerian population: cases-controls study

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Abstract

In Algeria, prostate cancer (CP) is a real public health problem. It combines the involvement of genetic and environmental factors. Many genes are associated with the risk of this pathology, some of which encode proteins involved in DNA repair mechanisms. Our study consists in

determining the influence of XRCC3 gene Thr241Met of the XRCC3 gene on the susceptibility to develop the CP. We have undertaken a case-control study of this polymorphism in a sample of the Algerian West population. This case-control study involved 10 subjects with CP and 20 unrelated normal subjects. The various genotypes of the polymorphism were investigated using polymerase chain reaction - restriction fragment length polymorphism (PCR-RFLP) technique. The comparison of allelic and genotypic frequencies between the two groups was established by calculating the odds ratio (OR) with a 95% confidence interval. Statistical analysis showed no statistical significant difference of distribution of allelic and genotypic frequencies (OR = 0.36 [0.12-1.1], P = 0.7) of this polymorphism explored between Cases and controls distribution. In conclusion, it would be very important to increase the number of cases studied and to explore other polymorphisms located on the XRCC3 gene and also located on other genes involved in DNA repair, for the most precise genetic characterization of prostate cancer in the population of western Algeria.

Keywords: Prostate cancer; XRCC3; Thr241Met; Algerian population.

P038

Study of genetic association between polymorphism Insertion / deletion of the angiotensin converting enzyme gene, the ACE gene and the ABO gene in breast cancer in the population of Tlemcen

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Abstract:

In Algeria, breast cancer represents a real public health problem, which combines the involvement of genetic and environmental factors. Several genes are associated with the risk of occurrence of this pathology, some of which code for proteins involved in different mechanisms of the human body. In this work, we carried out a case-

control study in order to search for and highlight possible associations between the ABO, ACE gene polymorphisms and the occurrence of breast cancer in the population of western Algeria. Specifically in the Tlemcen region, the study sample included 26 breast cancer patients and 39 unrelated normal subjects diagnosed and removed from the gynecology department at Tlemcen University Hospital. After statistical analyzes, our results have shown that the occurrence of breast cancer in our population is characterized by an early age of onset; the 35 to 60 age group is the most affected segment of the population disease. Hormonal status is a major risk factor for occurrence, statistical analyzes reveal that patients with a positive ER are four times more likely to develop breast cancer with one (OR = 4.58, P-value = 0.029). On the other hand, blood group A is a major risk factor. Our statistical results indicate that the risk of occurrence of breast cancer is multiplied by four times in women of the blood group A with one (OR = 4.71, P-value = 0.009). To our knowledge, this study represents the first approach of the kind on an Algerian population, the encouraging results obtained, suggest that it would be interesting to enlarge this study by increasing the sample size, so as to be able to determine the size of the sample. social and environmental factors on the one hand, and to explore other genetic polymorphisms located in other genes such as the BRCA1 and BRCA2 genes, on the other hand, in order to characterize in a more precise way the genetic determinism of breast cancer in our population, with the aim of proposing a breast cancer prevention strategy better adapted to our population.

Keywords: ABO gene, ACE gene, breast cancer, genetic study.

P039

Are there any other mutations of the RB1 gene in patients with retinoblastoma in Algeria?

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Abstract

Retinoblastoma (RB) is a malignant tumor of the retina of neuroepithelial origin. Its incidence is stable, described around 1 / 15,000 births in Algeria. The retinoblastoma gene, *RB1* gene is located on chromosome 13 at q14.2, has a major physiological function of controlling the cell cycle. It is a tumor suppressor gene. Inactivation of both alleles of the *RB1* gene during normal retinal development initiates the formation of a retinoblastoma tumor. RB1 screening remains difficult, most of the alterations being unique and randomly distributed throughout the entire coding sequence. In this report, we present the results of a constitutional and tumoral RB1 analysis in an Algerian population. The detection of RB1 gene deletion or mutation was performed by high performance liquid chromatography (HPLC) and sequence analyses in 21 patients. Germline abnormalities were found in 2/21 patients of sporadic unilateral retinoblastoma. The spectrum of germline and tumoral alterations included 3 nonsense mutations, 1 mutation affecting splice site, 1 deletion and 2 polymorphisms. These mutations have been reported in the Chinese population. In general, for the 21 patients with no family history of the disease we have identified mutations in germinal level in two of them showing that it is a transmissible form of retinoblastoma in these two cases known to be sporadic. A total of 2 mutations have not been previously reported.

These results can be confirmed by increasing the number of patients studied, and by conducting larger family studies.

Keywords: Retinoblastoma; Rb gene; HPLC; PCR sequencing.

P040

Synthesis and evaluation of 1H-benzo[d]imidazol-1-yl-3-(4-chlorophenoxy)propan-2-ol derivatives as cytotoxic agents

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Abstract

In the course of our research on the development of new anticancer agents we discovered that iminobenzimidazole 3a is cytotoxic in A375 melanoma cells. Considering that 3a had been described in a small number of patents and articles, none of them related to cancer, and since the anticancer potential of iminobenzimidazoles has been scarcely investigated, we explored the requirement of 3a for its cytotoxicity to determine whether it could provide the basis for the development of new anticancer agents. Cytotoxicity at 10⁻⁵ in KB cells after 72 h treatment of representative examples of 3a analogues expressed as % of cell death. The research and development of novel type of drugs is of great importance to improve the treatment of cancers. In this context, we describe herein the discovery and optimization of a first-in-class series of cytotoxic agents. The SAR studies demonstrated the requirement for a hydrophobic moiety. These results are highly encouraging, and SAR studies to examine structural variations of the iminobenzimidazole and 3-(4-

chlorophenoxy)-2-hydroxypropyl moieties are underway.

Keywords: minobenzimidazole; cytotoxicity; anticancer; synthesis

P041

Genetic polymorphisms implication of estrogen metabolising enzymes in breast cancer susceptibility: ongoing study on east Algerian women

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Abstract

Breast cancer is the most common fatal malignancy among women, in Algeria, it's about 11000 new cases identified per year. In breast cancer etiology, phase I and II detoxification of estrogen metabolites are described to play a role in carcinogenesis. Cytochrome P450 1A1 (CYP1A1), Cytochrome P450 1B1 (CYP1B1), catechol-O-methyltransferase (COMT) and glutathione S-transferase pi (GSTP1) enzymes, are implicated in xenobiotics metabolising system, therefore, their expressions are influenced by genetic factors such as genetic polymorphisms, and environmental factors such as exposure to polycyclic aromatic hydrocarbons (PAHs) and xenobiotics. Since these enzymes are involved in carcinogenic metabolism; there are a possible implication in breast cancer susceptibility. To study the relationship between CYP1A1, CYP1B1, COMT and GSTP1 polymorphisms and breast cancer risk, five polymorphisms CYP 1A1 * 2C (m2), CYP 1B1 A119S, CYP1B1 N453S, COMT V158M et GSTP

I105V are chosen to be assessed using PRC-RFLP approach. Pathological RFLP (restriction fragment length polymorphism) profiles were compared to healthy RFLP profiles. Preliminary results show that CYP1A1 M2 polymorphism is potentially associated with breast cancer susceptibility. Enlargement of sampling on east Algerian population are in progress and needed for a better understanding of the role of these polymorphisms in breast cancer occurrence.

Keywords: Breast cancer; estrogen metabolism; PCR-RFLP; polymorphism.

P042

Cancer pharmacogenomics strategies: investigations of organo-iridium anticancer complexes reveal novel mechanism of action

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Abstract

Intrinsic and acquired resistance to platinum drugs used in over 50% of cancer chemotherapies is a major clinical problem. Other precious metal complexes with distinct mechanisms of action might overcome this. Half-sandwich organometallic complexes containing arene or cyclopentadienyl ligands show promise. A potent antiproliferative activity for organo-iridium(III) complex discovered by phenotypic screening can provide valuable insight into their mechanism of action. This subject report the results of phenotypic screening and in-depth mechanism of action profiling of two organo-iridium (III) complexes [Ir phenylpyridine Cl] and [Ir N,N-dimethylphenylazopyridine Cl]PF₆ of 916 cancer cell lines with known gene sequences from 28 tissue types. Time-dependent up- and down-regulation of genes has been studied by RNA sequencing, together with the detection of

selected proteins and quantitative analysis of cell cycle, and apoptosis phenotypes. On average, complex 2 was 78× more potent than complex 1, 36× more active than cisplatin, and strongly active (nanomolar) in patient-derived ovarian cancer cell lines. RNA sequencing of A2780 ovarian cells revealed upregulation of antioxidant responses (NRF2, AP-1) consistent with observed induction of reactive oxygen species. Protein microarrays, high content imaging and cell cycle analysis showed S/G2 arrest, and late-stage DNA damage response without p53 requirement. The triple-negative breast cancer cell line OCUB-M was highly sensitive to the complex 2 as were cell lines with KIT mutations. Complex 2 exhibits a markedly different pattern of antiproliferative activity compared to the 253 drugs in the Sanger Cancer Genome database, but is most similar to osmium (II) arene complexes which share the same azopyridine ligand. Redox modulation and DNA damage can provide a multi-targeting strategy, allowing compounds such as complex 2 to overcome cellular resistance to platinum anticancer drugs, and also innovating molecules can be discovered by in silico screening for these new targets. On the same way, new Pharmacogenomic approaches can be created such as the integrative one used to systematically identify potentially cooperative genes and provide novel insights to combination therapies in cancer medicine.

Keywords: Pharmaco-genomic; Organo-iridium; Anticancer; Mechanism of action.

P043

Wormwood polyphenol extract mediated remediation of mitochondrial DNA (mtDNA) oxidation and neurotoxicity induced by mercury

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Abstract

Free radicals (ROS) are considered important factors in cancer. Attacks on DNA by ROS, including the hydroxyl radical (OH), superoxide anion (O₂⁻), singlet oxygen, the ferryl or perferryl ion, hydrogen peroxide, and peroxynitrate (OONO), frequently cause oxidative DNA damage. Recent studies have shown that DNA damage and altered intracellular redox status, such as imbalance of sulfhydryl and redox enzymes, occur after exposure to mercury. Occupational and environmental exposure to chemicals may increase the risk of unrepaired DNA lesions, which could become permanent mutations. Polyphenols are a very broad group of chemicals, widely distributed in plant foods, and endowed with antioxidant activity by virtue of their numerous phenol groups. They are widely studied as putative cancer-protective agents, potentially contributing to the cancer preventive properties of fruits and vegetables. In this study, we evaluated the relationship between mercury exposure and mitochondrial DNA (mtDNA) damage, and we evaluated the protective role of polyphenol extract isolated from *Artemisia absinthium* L plant in imparting protection against mercury mediated oxidative mitochondrial DNA damage of cortex, cerebellum, hippocampus and striatum. Intra-mitochondrial accumulation of 8-OHdG was measured as the indicator of mtDNA oxidative damage in Cortex, cerebellum, striatum and hippocampus. In the present study, we observed a significant increase in the 8-OHdG formation in

the mtDNA of cortex, cerebellum and hippocampus of the HgCl₂ exposed rat brain as compared to control. The concentrations of 8-OHdG were >2 folds in hippocampus and >1.5 folds in cortex when 5 mg / kg body weight per week for 10 weeks of HgCl₂ was administered. A significant decrease in the 8-OHdG formation in the mtDNA of cortex and cerebellum and no significant decrease in the mtDNA of hippocampus of the polyphenol extract+HgCl₂ exposed rat brain as compared to HgCl₂ exposed rat brain group. Earlier studies have suggested that mercury is genotoxic, whereas ROS generation is associated with the effect of specific oxidative DNA damage. One reason is the ability of mercury compounds to bind directly with tubulin sulfhydryl, which impairs spindle function and causes chromosome aberrations. Results reported in the recent literature, on the whole, lend support to the hypothesis that dietary polyphenols protect the body against the effects of reactive oxygen species on DNA integrity. In conclusion, the present stage of knowledge about the impact of heavy metals in biological systems indicates the enhanced formation of free radicals and ROS or RNS or their intermediates causing neurotoxicity and other ailments and that could be efficiently managed by using different preparations from a number of traditional medicinal plants. Although coadministration of antioxidants (natural, herbal, or synthetic) or with other chelating agents has shown to improve removal of toxic metals from the system as well as clinical recoveries in animal models, still the in-depth clinical studies with preexisting or newer chelating agents are required to be done to reap real benefit with the least side effects. In case of humans, it is also important to find out the suitable dose and duration of treatment to decide the optimal therapeutic index for any of the drugs to be given in isolation or in different combinations.

Keywords: 8-hydroxy 2-deoxyguanosine (8-OHdG); mtDNA oxidation; polyphenol extract; mercury.

Cancer Epigenetics and

Nanotechnology in cancer treatment

P044

Relationship between chemotherapy treatment on oxidative stress markers in Algerian colorectal cancer patients – A case control Study

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Abstract

Many chemotherapeutic agents' treatments depend on free radicals profile to kill cancer cells. In this research, we focus on the assessment of the oxidative stress in colorectal cancer (CRC) and then evaluate the effect of Xelox plus bevacizumab on the redox status. Forty one newly diagnosed CRC patients and fifty healthy subjects were included in this study. Blood samples were collected from control subjects and patients before and after treatment. To investigate the association between redox balance and CRC treatment, levels of ROS and antioxidants were analyzed by spectrophotometry. Our findings revealed an increase in MDA, O₂•⁻, CP, NO•, and ONOO⁻ before treatment and a decrease of SOD, CAT and GHS. After treatment, MDA, O₂•⁻ and CP levels decreased in CRC patients, the concentration of NO• and ONOO⁻ increased significantly in patients. The SOD, CAT activities and GHS levels were significantly higher after treatment at the opposite of plasma vitamin C concentration in CRC cases. Chemotherapeutic drugs control the evolution of tumor cells by interacting with ROS in an adaptive redox status, hence the importance of their regulation. Further studies are required to search for the most promising oxidative biomarkers to predict response to treatment.

Keywords: Colorectal cancer; Oxidative stress; Treatment response; Xelox-bevacizumab.

P045

Clinical Interests of the study of oxidative stress in gastric cancer-A case control-study-

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Abstract

Reactive oxygen species (ROS) are involved in the pathophysiology of gastric cancer (GC). ROS produced by the immune and epithelial cells, damage the host cells and can result in DNA damage. The species *Helicobacter pylori* has evolved to evoke this damaging response while blunting the host's efforts to kill the bacteria. This long-lasting state with inflammation and oxidative stress can result in gastric carcinogenesis. Few studies have specifically focused on the interaction of redox status with treatment. In this study, we aimed to evaluate the redox status in DC patients and investigate the association between ROS, antioxidants and chemotherapy. The study was conducted at the popular Hospital "EPH" of Maghnia where nine patients of GC and forty one healthy controls where recruited. Blood samples were collected from control subjects and patients before and after treatment. Levels of ROS and antioxidants were analyzed by spectrophotometry. The obtained results reveal a state of under nutrition observed based on BMI, an evident oxidative stress (OS) by the overexpression of ROS such as MDA, NO•, ONOO⁻ before treatment, with a drop in catalase activity with overexpression of SOD face of OS in cancer patients. The scheduled cure encompassed (a) Oxaliplatin + Xéloda + Epirubicin + Taxotère; (b) Cisplatin + Epirubicin + 5-FU; (c) Epirubicin + Oxaliplatin + 5-FU (d) Epirubicin + Xéloda + Cisplatin. The treatment used showed interesting interactions varying from a positive impact to a negative one on the individual redox equilibrium and depending on the composition of the drug regimen. Chemotherapy control the

evolution of GC including ROS synergy in an adaptive redox status, hence the clinical interests of their modulation to predict response to treatment.

Key words: Gastric cancer; Adaptive oxidative stress; Treatment response; chemotherapy.

P046

CD10 a prognostic and predictive potential marker of liver metastasis in colorectal cancer

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Abstract

Colorectal cancer is the third leading cause of cancer-related death in both men and woman in the world. It poses a major public health problem and there is renewed interest in understanding the basic principles of the molecular biology of colorectal cancer. In this context, recently assessment of membrane metallo-endopeptidase (MME/CD10) expression by immunohistochemistry in colorectal cancer and its relationship with cancer progression and prognosis were investigated. This work consists of studying the characteristics of epidemiological and clinical-pathological aspects of colorectal cancer during the period of time from January 2008 to December 2013. More than that, we aim to evaluate CD10 by immunohistochemical analysis on colorectal tumours and the relationship of its expression with regard to the clinic-pathological characteristics. A retrospective study was conducted on 364 patients in the northwest region of Algeria, diagnosed with colorectal cancer distributed between Sidi Bel Abbes university hospital, and Oran military regional university hospital. Furthermore, we performed an immunohistochemical study to evaluate CD10 expression level; that is expressed in colorectal tumors cells and liver metastasis. Overexpression of CD10 may be related to unfavorable prognosis of patients with colorectal carcinoma thus, may constitute a futur therapeutic target for

improving cares for patients. In our study, colorectal cancer affects people over 50 years as well as younger (16%). Colorectal cancer was more frequently found with an aggressive stage (42% of colorectal tumors with stage IV). 72% of patients develop liver metastasis. Finally, CD10 overexpression in colorectal tumors was associated with liver metastasis (21%) and the presence of lymph nodes (60%), suggesting a poor prognosis. Our results showed that CD10 is overexpressed in some colorectal carcinomas. Accurate CD10 assessment by immunohistochemical analysis in colorectal carcinomas is necessary and crucial. In the future, it will be necessary to evaluate the efficacy of administering a CD10 inhibitor for preventing liver metastases in colorectal cancer.

Key word: CD10; Colorectal cancer; Liver metastasis; Therapeutic Target.

P047

Colorectal Cancer and Oxidative Stress in the West of Algeria

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Globally, The CRC occupies the third place in both sexes combined; its incidence is 10% and 9.2% in men and women respectively. That incidence is due to several factors which are endogenous factors (age, inheritance and personal history) or exogenous one (smoking, alcohol, physical activity and diet). Our work is projected in this axis of research. We studied the oxidative stress of CRC patients in the West of Algeria. The current study was realised on 33 patients presenting a colorectal cancer recently diagnosed without metastasis (22men, 11women), aged 54±9 years and compared to 30 individuals volunteers (10 men, 20 women) as control aged 48±7 years. In this context, we try to evaluate the oxidative stress markers in a colorectal cancer

population living in the West of Algeria. Then, we measure the Malondialdehyde (MDA) plasma level by the thiobarbituric acid (TBA) reaction according to Quintanilha et al., 1982 and carbonyls plasma level according to the method of Levine and al, 1990. We also estimate the Catalase (CAT EC 1.11.1.6) activity according to Góth, 1991 and superoxide dismutase (SOD EC 1.15.1.1) activity as described by Marklund & al., 1974 as antioxidant enzymes and plasma level of thiols as non-enzymatic antioxidant by the method of Hu, 1994. All methods are colorimetric and the IBM SPSS statistics version 20.0 software was used for statistical analysis. Results are presented as mean \pm standard deviation. Independent sample *t*-test was used to compare the mean between groups. A value of $p < 0.05$, designed as (*) on graphs, was considered to be statistically significant. Our results showed an increase in plasma carbonyls and malondialdehyde levels in CRC patients compared to volunteers accompanied with a significant decrease in SOD activity and thiols levels in CRC patients compared to volunteers whereas a non-significant variation was noted between CAT activities of both populations. Our results reveal an excessive production of free radicals not compensated by the intrinsic antioxidant activity. This unbalance between pro-oxidant and antioxidant in our study population indicates the presence of an oxidative stress.

Key-words: Oxidative stress, colorectal cancer, free radicals, antioxidant

P048

Physicochemical Characterization of Magnetic Nanogels Based Natural Polymers

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Abstract:

The growing development of nanotechnologies has led to the emergence of innovative materials

that are revolutionizing the field of research, including the development of nanocomposites materials that combine the properties of polymeric matrices with those of inorganic nanoparticles, in particular magnetic ones. In the present work, the properties of magnetic nanogels based on natural/modified anionic biopolymer and magnetic nanoparticles were evaluated. The different magnetic nanogels prepared were mainly studied by Fourier Transform Infra-Red Spectroscopy (FTIR), Swelling Degree (SD) and Scanning Electron Microscopy (SEM). The characterization results of nanogels with and without crosslinking have shown the obtaining of different networks of hydrogels during the formation of nanoparticles in the different systems. SEM analysis showed a better morphology of the polymer crosslinking network. The incorporation of NPs into nanogels can not only significantly improve their efficiency but also their physico-chemical stability allowing their use in different fields. These results indicate that the magnetic biomaterials obtained have interesting characteristics that can be exploited as nanomaterials for pharmaceutical applications.

Keywords: Cross-linking; Hydrogels nanocomposites; Magnetic nanoparticles; SEM.

P049

Contribution at the research of the association between the MTHFR gene polymorphism 677C>T and bladder cancer occurrence in a sample of the population of Western Algeria

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Abstract

Urinary bladder cancer is the second most common genital urinary tumour that causes

more than 16,000 deaths per year. Tobacco consumption and exposure to carcinogens, most of which are aromatic amines, are considered to be the main environmental risk factors that have an impact on the genetic disorder. MTHFR is the metabolism gene that has been sufficiently studied by suggesting its involvement in the occurrence of the diseases. Several publications about the Ala677Val polymorphism of the MTHFR gene have elucidated its involvement in the occurrence of bladder cancer. The working goal was to find an association between the SNP c.677C>T of the MTHFR gene and the occurrence of bladder cancer in a sample from the western Algerian population. The genotyping of a sample of the population from western Algeria consisting of 20 cases and 23 controls was carried out by the classical PCR-RFLP technique, followed by statistical analyses. The results suggest that there is no significant difference between allelic and genotypic frequencies in cases and controls ($p>0.05$), this seems excluding the null hypothesis which concerns the presence of an association between the polymorphism c.677C>T of the MTHFR gene and the occurrence of bladder cancer in the population of Western Algeria. From these results described above, it can be concluded that there is no association between the c.677C>T polymorphism of the MTHFR gene and bladder cancer in the studied sample in the Western Algerian population.

Keywords: Bladder cancer; MTHFR; Polymorphism; C677>T; West of Algeria.

P050

Cancer nanomedicine challenges and opportunities: the nano-bio interactions of nanomedicines

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Abstract

The intrinsic limits of conventional cancer therapies prompted the development and application of various nanotechnologies for more effective and safer cancer treatment. However,

the function and ultimate efficiency of nanomedicines remain unsatisfactory for clinical application, mainly because of our insufficient understanding of nanomaterial/nanomedicine-biology (nano-bio) interactions. The nonequilibrated, complex, and heterogeneous nature of the biological milieu inevitably influences the dynamic bioidentity of nanoformulations at each site, that could have biocompatible or bioadverse outcomes. In this subject we will see the interaction of nanoparticles with proteins. The nanoparticle surface can modify the structure and therefore the function of the adsorbed protein thus affecting the overall bio-reactivity of the nanoparticle; several studies show these biological events: Titanium dioxide (TiO₂) nanoparticle was shown to cause conformational change and reduce polymerization of tubulin, which is an essential cytoskeletal protein. Gold nanoparticles were shown to influence conformational changes in the structure of bovine serum albumin (BSA) in a dose-dependent manner, whereas no major conformational change was recorded for BSA when adsorbed to carbon C60 fullerene nanoparticle. It can be assumed that interaction of the nanoparticle with cellular structures is indirect and occurs mostly via the nanoparticle-protein corona complex (NP-PC) and not the bare nanoparticle surface. The NP-PC can thus influence the uptake of the nanoparticle by the cell. The uptake might be either inhibited due to loss of protein structure of an adsorbed protein, or facilitated due to unfolding of the adsorbed protein to access receptors on the cell surface. Nanoparticle-induced protein conformational changes may affect the downstream protein-protein interactions, cellular signalling and also DNA transcription, which is particularly important for enzymes. Loss of enzyme activity can result due to the conformational changes in the active site, brought about by the nanoparticle surface. Likewise, such conformational changes can also increase the accessibility of the enzyme active site for its substrate. The nanoparticle surface may induce abnormal unfolding of the bound proteins to form novel conformational epitopes or may also induce unfolding of the native protein structure to expose hidden epitopes. Such occult epitopes may affect the functionality of the bound proteins for e.g. elicitation of an unwanted immune response. Nanoparticles can also induce

conformational changes in proteins that can lead to fibril formation, fibrillation of proteins is associated with diseases such as Parkinson's and Alzheimer's. The Perturbation of the native structure of the bound protein depends on the surface of the interacting nanoparticle and together these two factors direct the bio-reactivity of the nanoparticle. A comprehensive understanding of the underlying mechanisms of nano-bio interactions is paramount for the intelligent design of safe and effective nanomedicines.

Keywords: cancer therapy; nano-bio interactions; nanomedicine; nanoparticles.

P051

Anti timoral nano molecules called bats: New process for synthesis namely caesarean reaction under effect of maghnite (Algerian MMT)

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Abstract

Cancer is a disease caused by the transformation of cells that become abnormal and proliferate excessively. These disordered cells eventually form a mass called malignant tumor. Cancer cells tend to invade nearby tissues and become detached from the tumor. They then migrate through the blood vessels and lymphatics to form another tumor (metastasis). Although there are many different types of cancer, they all originate as a result of abnormal and uncontrolled cell development. Phenolic compounds can be considered as important parameters of organoleptic (color, taste, and aroma). The use of phenolic compounds as natural antioxidants in food is in progress in relation to their role in prevention of some cancers and cardiovascular diseases. We have identified a new class of molecules called 'bats' that act very specifically

on cancer cells, and whose efficacy is linked to a new mode of DNA inhibition, which plays a key role in the metabolism and cell survival. This molecule could stop the division of highly specific cancer cells. All the reagents in this work were of analytical grade and used as received without further purification. NaOH and H₂SO₄ (98%) were used as initiator from sigma Aldrich (French). The Maghnite-Na⁺ (MMT-Na⁺) used in this work came from a quarry located in Maghnia (North West of Algeria) and was supplied by the company "ENOF" (Algerian manufacture specialized in the production of non ferrous and useful substances). The chemical composition and structure of MMT-Na⁺ have been shown in (Table 1 and Figure 1). The cation exchange capacity (CEC) and clay surface were respectively 84 mEq (100 g⁻¹) dried clay and 786 m².g⁻¹, and its X-ray diffraction analysis (XRD) shows that the spacing between MMT-Na⁺ layers is 1.29 nm. The different molecules resulting from these organic syntheses and which summarize our research products have architecture or a structure like the frog or fox. All the chemical reactions have been catalyzed by a heterogeneous and ecological support called maghnite and which has a great catalytic activity especially for the vinyl and heterocyclic compounds and very remarks in several researches. Our method of synthesis must include points of view on health and the environment that is why we used a catalytic support, heterogeneous and ecological it is the maghnite. chemical results have been summarized by above figures above and biological tests reported positive test such solubility and toxicity and good reaction with DNA support such as stopping cell divisions and rearrangement of DNA genes of a cancer cell. We have identified a new class of molecules called 'bat' that act very specifically on cancer cells, and whose efficacy is linked to a new mode of DNA inhibition, which plays a key role in the metabolism and cell survival. This molecule could stop the division of highly specific cancer cells. The structures of these compounds were confirmed by SEM, FT-IR and NMR spectroscopy. A synthesized materials having good physical chemical properties such as water solubility at room temperature and good biological properties such as the low degree of toxicity which is tested on a bacterium and a rat. Results of our research are very interesting for stopping

cell divisions that is to say the rearrangement of DNA genes of a cancer cell.

Keywords: *Maghnite, heterocyclic, design, nanomolecules, orcenol, anti cancer, bat.*

P052

Toxicity of carbon nanotube used in cancer therapy

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Abstract

Cancer remains one of the greatest challenges faced across the world today. Nanomaterials have been shown promising for cancer therapy. Carbon nanotubes (CNTs) are suitable in this regards, such that, they possess a high photothermal cell destruction and optical absorbance efficiencies. When these CNTs were first introduced in complex biological systems, a new research direction evolved: nanotoxicology. The present study aims at reviewing the toxicity of CNTs. This is a descriptive study on the toxicity of (CNTs) used in cancer therapy. This study is based on the synthesis of a series of experimental studies that have been the subject of several publications. CNTs have attracted great interest in biomedical applications such as advanced imaging; tissue regeneration, drug or gene delivery, and cancer therapies. There is no consensus on CNTs toxicity to humans, however, a number of studies have shown significant toxicity in both cell cultures and in vivo animal model. One of many observed toxic responses is genotoxicity, For example, it has been shown that CNTs can penetrate and accumulate in mouse embryonic stem cells inducing a 2-fold increase in DNA damage through the generation of reactive oxygen species (ROS). In addition it has been demonstrated that CNTs have the potential to induce the release of the TNF- α pro-inflammatory mediator, which could result in the generation of ROS in monocytic cells in vitro.

This toxicity was related to the geometry and surface characteristics of the nanomaterials. Furthermore, ROS generation was found to play a key role in driving the induction of genotoxicity. Other research groups have examined the toxicity of single walled carbon nanotubes (SWCNTs) on human keratinocyte cells and signaling mechanism in keratinocytes upon exposure to SWCNTs. They have concluded that exposure to SWCNTs is associated with increased oxidative stress and inhibition of cells proliferation. The toxicity and efficacy of (CNTs) still need to be investigated further to pave a way for biomedical applications and a better understanding of their potential applications to humans.

Keywords: *nanoparticals; carbon nanotube; cancer; nanotoxicology.*

P053

The use of Gold nanoparticles for cancer radiotherapy

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Abstract

The Global Cancer Observatory (GCO) announced that in 2018 over 18 million of cancer case is diagnosed and over 9 million case of death. Radiotherapy is a key treatment and is currently used in 50% of cancer patients. The main goal of radiotherapy is to maximize the dose of radiation in the tumor and minimize it in surrounding normal tissues. An approach to optimize radiotherapy is to introduce nanoparticles with high Z element in tumor before irradiation. The aim of this work is to investigate the physical and biological aspect of the use of gold nanoparticles (GNPs) in radiotherapy with Low Energy X-rays. PENELOPE is a Monte Carlo (MC) simulation code has been developed to describe radiation interaction with biologically materials. The code is used for the simulation a phantom containing tumor and gold nanoparticles with different concentrations irradiate with different low energy X-rays at different depth of tumor. The dose profiles at normal tissue and tumor were

calculated to show the dose enhancement by nanoparticle. Results have shown that the dose enhancement increase linearly with GNPs concentration and it has highest values at photon energy between 50 keV and 60 keV. The secondary electron produced makes it possible to increase the radiolysis of water and the damage of biological macromolecules such as DNA. Gold nanoparticles has a high degree of biocompatibility, it can be used to optimize radiotherapy at low energy X-ray. It is proposed to be used in Stereotactic Synchrotron Radiotherapy (SSRT). In the future; GNPs will certainly play an important role in the treatment of tumors.

Keywords: Radiotherapy, Gold nanoparticles, Radiation dose enhancer, Monte Carlo Simulation

P054

SuperAntiferromagnetic Nanoparticles-based Hyperthermia for cancers Treatment

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Abstract

Magnetic hyperthermia is the process by which cycling magnetic nanoparticles in a Alternatif magnetic field leads to heat dissipation. It is an ingenious method for the treatment of cancer and reduction in size of non-malignant tumours. This Processus generates no side effects unlike more classical therapies such as chemotherapy. Understanding the mechanisms of the magnetic Hyperthermia is critical so as to produce particles with optimised properties for specific applications at nominal dose. All these mechanisms are highly particle size dependent. Several heating mechanisms are possible, associated with susceptibility loss, hysteresis loops and viscous heating. The Magnetic

susceptibility $\chi_1^1(\omega)$ and dynamic magnetic hysteresis (DMH) of single domain ferromagnetic nanoparticles induced by an external ac field of arbitrary strength and orientation are treated via Brown's model of coherent rotation of the magnetization we demonstrated that the DMH strongly depend on the DC magnetic field h_0 , and the antiferromagnetic parameter .

Keywords: Magnetic Hyperthermia, Specific Absorption Rate, Brown' Model, Fooker Planck equation

P055

5-Fluorouracil loaded- Magnetic nanoparticles for Targeted Cancer Therapy

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Abstract

Cancer remains one of the world's most devastating diseases, and the number of new cases increases each year. Conventional delivery of chemotherapeutic agents led to the fast development of cellular resistance causing toxic side effects (cytotoxicity, neurotoxicity, nephrotoxicity) on the entire body which limits the drug doses that can be administrated. Drug delivery systems can play a key role in the fight against cancers by delivering locally, to the tumor site, the anticancer drugs. Hybrid nanoparticle consisting of a polymeric matrix in which is dispersed a magnetic nanoparticles material (magnetite (Fe_3O_4), maghemite($\gamma\text{-Fe}_2\text{O}_3$), hematite ($\alpha\text{-Fe}_2\text{O}_3$), etc.), are lately studied for use as target delivery systems of antitumor drugs. Selection of the matrix-forming polymer is based on the need for it to be biocompatible, biodegradable, mucoadhesive, possessing reactive functional groups in order to achieve the cross-linking process under mild reaction conditions. The present work proposes a method for obtaining of magnetic nanoparticles based-chitosan, which fulfills the above-

mentioned conditions being one of the most used natural polymers for drug delivery. The magnetic nanoparticles have prepared by double crosslinking in reverse emulsion method, a slightly acidic solution of chitosan in which are dispersed magnetite nanoparticles are emulsified in an organic solvent (toluene), using sodium tripolyphosphate (ionic crosslinking) and glutaraldehyde (covalent crosslinking). The process has been optimized through the modification of certain reaction parameters (polymer ratio, stirring rate, crosslinker amount, etc.), in order to obtain nanoparticles with low dimensional polydispersity. The particles with optimal characteristics (in terms of morphology, water swelling degree) have been analyzed from the point of view of the capacity of inclusion/release of specific drugs (5-FU). This study highlights the way of obtaining micro/nanoparticles based on natural chitosan chemically grafted with synthetic poly(ethylene glycol) methacrylate or poly(ethylene glycol) methyl ether acrylate through Michael addition. This study highlights the way of obtaining magnetic nanoparticles based on natural chitosan with low molecular weight. Magnetic nanoparticles obtained present a spherical shape and a relative low dimensional polydispersity. Nanoparticles obtained showed a relative high swelling degree (300÷600 %) which explained the high drug loading efficiency. The *in vitro* release results are encouraging, showing that the amount of 5-FU released in 24 hours is closed to the maximum dose usually administered in patients with cancer. Double crosslinking in reverse emulsion is a method of obtaining hybrid nanoparticles with magnetic properties, capable of including, transporting and releasing antitumor drugs to the target, constituting themselves as a potential solution for cancer therapy.

Keywords: Cancer; Hybrid nanoparticle; Magnetic nanoparticles; 5-Fluorouracil.

P056

Nanotechnology in oncology: Therapeutic aspects, toxicological risks and perspectives

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Abstract

In the last decades, a lot of efforts have been provided and a large number of scientists have been involved in cancer research. Therefore, several drugs have emerged for different cancers treatments, notably for breast cancer. Nevertheless, even if the efficacy of these drugs is undeniable, their lack of safety represents a major drawback. It is in this perspective that a new generation is born : nanomedicines. This work aims to evaluate and quantify the global effect of those promising drugs, in terms of safety and efficacy, in the field of breast cancer treatment. A good search strategy of two major electronic databases has been conducted before performing a meta-analysis, including strictly randomized controlled clinical trials comparing nanomedicines with conventional treatments for different populations. The primary outcomes are the most recurring adverse effects, survival being a secondary outcome. Results were expressed in odds ratios and standardized mean differences respectively. 34 studies were included in this meta-analysis, 3 of which were unpublished. Given the statistical heterogeneity of the results, a subgroup analysis was performed. We found that nanomedicines are significantly less cardiotoxic than conventional treatments (OR 0.30, 95% CI, 0.18-0.51), and they significantly decrease the rate of neutropenia in adjuvant therapy (OR 0.35, 95% CI, 0.24-0.52). On the other hand, they seem to accentuate some adverse effects: Hand-foot syndrome, Stomatitis / mucositis. No big differences were found for leukopenia and alopecia, neither for nausea /

vomiting, fatigue and neuropathy of grade 3 and above. Efficacy results seem to be in favor of nanomedicines. According to our results, nanomedicines demonstrated favorable toxicity profiles with less cardiotoxicity and myelosuppression in addition to an efficacy equal to or better than conventional treatments which make them the drugs of choice for breast cancer treatment especially for elderly and cardiac populations. Other more interesting perspectives

concern inorganic nanomaterials which call into question the relationship of mankind to technologies and thus, many ethical and moral interrogations remain stirred up.

Keywords: Breast cancer; Meta-analysis; Nanomedicine; Nanotechnology.

Novel approaches

In cancer therapies

P056

Chemopreventive effect of luteolin on 1, 2-dimethylhydrazine induced experimental colon carcinogenesis

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Abstract

Colorectal cancer (CRC) is the third mostcommonly diagnosed cancer in males and the second in females. Globally there were 1.2 million cases of CRC yearly resulting in about 608,700 deaths from CRC accounting for 8% of all cancer deaths. Colorectal cancer (CRC) is a leading cause for cancer-related death and its prevention is of great importance throughout the world. Chemoprevention offers a novel approach to control the incidence of colon cancer. The present study was performed to evaluate the efficacy of luteolin supplementation on colonic aberrant crypt foci (ACF), lipid peroxidation, and antioxidant defense system in 1,2-dimethylhydrazine (DMH)-induced colon carcinogenesis in male Wistar rats. Twenty male Wistar rats were randomly divided into 4 groups (5 rats/group). The control group was fed a basal diet. DMH-treated group (DMH) was fed a basal diet and received 1, 2-dimethylhydrazine (DMH) intraperitoneal injections of DMH for two weeks at a dose of 30 mg/kg. The luteolin treatment group (Lu) received oral supplementation of luteolin (30mg/kg) for 1 month, and the fourth combined group received DMH and luteolin (DMH +Lu). The colon tissues were examined microscopically for pathological changes and aberrant crypt foci (ACF) development, oxidant status, enzyme antioxidants system (GSH, GST). Our results showed that DMH induced ACF development and oxidative stress (glutathione depletion) in rat colonic cells. The concomitant treatment of DMH with luteolin, significantly ameliorated the cytotoxic effects of DMH. The results of this study provide in vivo evidence that luteolin reduced the DMH-induced colon cancer in rats, through their potent anti-oxidant activities.

Keywords: 1,2-dimethylhydrazine(DMH), colon cancer, chemoprevention, oxidative stress.

P057

Phytochemical screening and evaluation of the antioxidant activity of the methanolic extract of *Rubia Tinctorum*

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Oxidative stress is recognized as a key player in the development and complications of many chronic diseases. For the sake of prevention, it is therefore necessary to have powerful tools for correctly assessing the oxidative stress status, in order to make the necessary corrections to optimize the antioxidant defenses and to reduce the oxidative damage induced by the activated oxygen species (EOA) at the level of DNA, proteins and lipids. In this perspective, we have considered to characterize the phytoconstituants of this plant and to determine the biological activity (antioxidant). In order to study the anti-radical activity of the various extracts of the leaves of *Rubia Tinctorum*, we used the method based on the DPPH. The reduction of the free radical DPPH by an antioxidant can be followed by UV-Visible spectrometry, by measuring the decrease of the absorbance at 517 nm caused by the antioxidants. The results suggest that the methanolic extract has good antioxidant activity with (IC₅₀ = 0.538 mg / mL). The results of the phytochemical screening are positive for the majority of phytoconstituants (alkaloid, phenol, flavonoid, and terpene). The results of this study revealed that this plant has antioxidant agents and this can either suggest the use of this plant in the pharmaceutical industry as well as in the food industry.

Keywords: antioxidant activity, DPPH, *Rubia tinctorum*

P058

Protective effect of extracts of propolis on liver injury induced by cisplatin used in cancer therapy in mice

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Abstract

Cisplatin (CP) is one of the most effective anticancer drugs in the treatment of solid tumors. However, hepatotoxicity is the major adverse effect representing a dose-limiting factor in cisplatin therapy. Therefore, the objective of this study was to investigate the effects of extracts of propolis against cisplatin-induced liver injury in mice. The mice were intragastrically administered with different extract of propolis (250 mg/kg/day) for 3 days, and the liver injury model was established by single intraperitoneal injection of CP (10 mg/kg). Liver samples were taken for determination of histopathological changes. The oral administration of the extracts reduced histological changes (inflammation) induced by the injection of cisplatin in the liver. This effect may be due to the antioxidant activity of the phenolic compounds present in the extracts associated with less increase in hepatic iNOS protein content. The present study showed that apicultural products contain components that can be used in the food and pharmaceutical industry and are effective hepatoprotective agents, with potential to ameliorate cisplatin-induced hepatotoxicity.

Keywords: Cisplatin; Hepatotoxicity; Propolis; Phenolic compounds.

P059

Effects of polyphenols on lymphocyte proliferation and telomere length

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Abstract

Despite the production of free radicals in the body is inevitable, they become toxic responsible for significant cell damage and are implicated in the etiology of several human diseases. Considerable research has been aimed at reducing the effects of oxidative stress by use of free radical scavengers derived from nutritional sources, such as vitamins and polyphenols. In addition, increasing oxidative stress affects telomeres which are specialized DNA-protein structures found at the ends of chromosomes and are markers of genomic integrity and age-related metabolic dysfunction. Antioxidant supplementation could improve age-related abnormalities by protecting telomere length. Polyphenols have been shown to protect against oxidative stress and reduce risks of metabolic disorders. However, their effects on telomere length remain poorly understood. The aim of this study was to determine in vitro effects of two polyphenols (chlorogenic acid, curcumin) on cell proliferation and cell ATP levels in lymphocytes exposed to oxidative stress. Telomere length was also determined.

Peripheral blood lymphocytes were isolated using a density gradient of Histopaque. They were in vitro cultured and stimulated by Con A in the presence or absence of free radical generator (H₂O₂/FeSO₄) and of polyphenols (final concentration 10 μM), for 48 hours in a CO₂ incubator. Cell proliferation was determined by MTT assay. Cell ATP content was assayed by appropriate ELISA kit. DNA was extracted from lymphocytes and Telomere length was quantified using quantitative PCR.

The present study demonstrated that proliferation rate of T-lymphocytes was decreased with free radical generator resulting from intracellular oxidative stress and ATP depletion. Indeed, telomere length was reduced under oxidative stress. Free radicals reduced

lymphocyte proliferation by causing cell membrane, nucleic acid and protein damages that can lead to energy depletion and cell apoptosis and death. Chlorogenic acid and curcumin improved significantly lymphocyte proliferation and increased ATP levels. This improvement was accompanied by an increase in telomere length. These beneficial effects were more pronounced with curcumin. Previous results suggested that polyphenols may play important roles in the protection against oxidative- induced cell injury by reversing the decrease in cell proliferation and ATP levels induced by free radical generators. In conclusion, we proved the in vitro positive effects of polyphenols on lymphocyte function; these polyphenols might contribute to immune improvement during oxidative stress. They protect telomeres and could be promising agents for the prevention of age-related immune alterations.

Keywords: ATP; Chlorogenic acid; Curcumin; Lymphocytes; Telomeres.

P060

Acute toxicity of the methanolic extract of a medicinal plant from western Algeria: *Zizyphus lotus* in wistar rats

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Abstract

Scientists interested by the traditional medicine used a various genus of medicinal plants to isolate and identified a numerous bioactive compounds (polyphenols) for the treatment of human diseases, such as cancer pathology. A various recently studies of the antitumor activity of plant extracts were published and its used must be after studying their toxicity to the organism. The main objective of this study was to evaluate the toxicity of the methanolic extract

(Met.E) of *Zizyphus lotus* known for its anticancer effects, harvested from western Algeria, El-Mamounia region, Mascara. The Met.E was extracted by cold maceration in methanol 80% and with agitation 24h. The toxicological study was performed in Wistar rats by oral administration of a non-lethal dose: 5000mg/kg body weight (b.w). The detection of any toxicity was carried out by determining the behavior and clinical signs, weight evolution of the treated rats and by the determination of the presence of mortality. Thus, biochemical parameters have been investigated for the detection of any discrete toxicity. Methanolic extract of *Z. lotus* prepared during this study presented a highest yield (14, 02%) than obtained by. Administration of Met.E by gastric gavage showed no evidence of toxicity in wistar rats, no change in behavior was observed, a normal weight evolution, no mortality was recorded and the biochemical parameters were consistent with the control group. The dose of Met.E used during this study showed no secondary effect on wistar rats. This result indicate that the genus *Zizyphus* can be exploited in the medical field for treatment of cancer pathologies with no risk to human health.

Keywords: Acute toxicity; Methanolic extract; *Zizyphus lotus*; Western Algeria.

P061

Medicinal plants from Algeria: A complementary and alternative therapy for cancer

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Abstract

Cancer is a major public health problem worldwide and it is a complex disease involving

many biological factors, processes and systems, which may severely limit the actual efficacy of anticancer approaches. Even though numerous anticancer drugs are available now, yet their effectiveness and usefulness are highly debatable particularly because of their adverse effects. As herbal cures are usually linked with a good safety profiles therefore, they have the possible potential to deliver effective substitutions to presently available synthetic anticancer agents. The present study aims to describe the plants used in Algeria to treat cancer, as reported in the literature. The ethnopharmacological data were found through a research conducted on several works on the medicinal plants of Algeria. The used scientific nomenclature is according to The Plant List. In the current study, we have presented the plants used (159 species) for the therapy of different kinds of cancer. Additionally, we have provided a list of medicinal plants showing local or vernacular name, the origin, part used, method of preparation and administration, other ingredients used as a mixture, therapy type and kind of cancer treated. The most plant genera used in traditional medicine for the treatment of cancer are *Aristolochia* L. (Aristolochiaceae), *Artemisia* L. (Asteraceae) and *Urtica* L. (Urticaceae). Breast cancer is the most commonly treated cancer by herbs. The plants used are the most common and most easily found in Algeria. The reported plants with anticancer properties, seem to be interesting and to which modern pharmacology can appeal. Additional studies are necessary to completely identify the phytochemicals responsible for the reported anticancer effect, and further research are needed therefore to determine the exact mechanisms involved in this disease.

Keywords: Cancer; Ethnopharmacology; Medicinal plants; Phytotherapy.

P062

In vitro Cytotoxicity and Ex ovo Anti-Angiogenic Activity of Lemongrass (*Cymbopogon citratus*) Essential Oil against Breast Carcinoma Cell Line

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Abstract

The search for new drugs that display activity against several types of cancer has become one of the most interesting subjects in the field of natural products research. The aims of this study were to investigate the in vitro irritation index and antiproliferative activity and ex ovo anti-angiogenic effects of *Cymbopogon citratus* essential oil (CCEO) and its major compound (citral). CCEO was isolated using a steam distillation method and tested for cytotoxicity activity and anti-angiogenic activity using a breast carcinoma cell line (MDA-MB 231). Cytotoxicity activity was determined by using the MTT assay and the anti-angiogenic activity was determined by using a chorioallantoic membrane of fertilized hen's egg (HET-CAM assay) and compared to a standard angiogenic substance. The chemical composition of CCEO was determined with gas chromatography and revealed that citral was the major compound (60.3%), followed by menthyl acetate (9.5%) and menthone (5.5%). The irritation potential test in the Red Blood Cell (RBC) system cellular model allowed the quantification of adverse effects of CCEO on the plasma membrane of RBC and the consequent release of hemoglobin (hemolysis), which enables the determination of the irritation degree. CCEO manifested high hemolytic activity (H50 = 0.4614%) and a great attention will take with greatest concentrations. The *ex ovo* test using the HET-CAM assay was used for the determination of the anti-angiogenic effect of CCEO and revealed that oil-treated CAMs

branched into more multi-stage capillaries and more abundant neo-vasculatures. Our results in the HET-CAM assay suggested a moderate anti-angiogenic effect (angiogenesis index branch points = 60 ± 10) of the CCEO at the tested concentrations ($2 \mu\text{L}/\text{pellet}$) in comparison with basic Fibroblast Growth Factor (140 ± 9) at the dose of $1 \mu\text{g}/\text{mL}$. Breast cancer cells were treated with CCEO concentrations ranging from 4 to 0.03% for 24 and 48h. CCEO has a potential cytotoxic effect on MDA-MB 231 with IC_{50} value of 0.063%. Data obtained in these experiments suggest that further investigations are warranted using CCEO on various cancer cell lines due to its anti-angiogenic effects observed in this work.

Keywords: Angiogenesis; Anticancer effect; Breast Cancer; *Cymbopogon citratus* Essential Oil.

P063

Oxidative Stress in Patients with Non-Hodgkin Lymphoma

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Abstract

Non-Hodgkin's lymphoma is a heterogeneous group of lymphatic system cancers that have different biological characteristics based on a combination of morphological, immunophenotypic, genetic and clinical criteria. We know that chemotherapy is associated with an increase in the formation of reactive oxygen species and the depletion of plasma and these antioxidants. There are a limited number of studies that examine oxidative stress in patients undergoing chemotherapy. In this work, we try to evaluate the diet in patients with NHL undergoing first-line chemotherapy (CHOP) in a retrospective study and the demonstration of metabolic disturbances of lipids and lipoproteins, oxidative stress and the level of serum proteins. Thirty new patients with NHL (16 men, 14 women, age: 54.30 ± 3.04) and thirty controls (15 men, 15 women, age: 49.30 ± 2.12) were

recruited to the Hematology Department of the Tlemcen University Hospital Center. All patients underwent first-line chemotherapy (CHOP: cyclophosphamide, adriamycin, oncovin, prednisone), with a number of courses ranging from 1 to 8. Dietary assessment revealed a daily diet reduced in calories, protein, carbohydrates, fiber, saturated and polyunsaturated fatty acids and vitamins E and C and observed at a low level of plasma ORAC. The study of demographic characteristics of practice has revealed the presence of risk factors, namely smoking. The analysis of the biological assessment has objectified a disturbance of lipid and protein profiles, including increased serum triglycerides, LDL-TG, the VLDLc and decreased levels of HDLc and α -LP and a significant increase of albumin and alpha-1 globulin in line with high CRP found in our assays. However the rate of gamma globulin was significantly lower in patients. Daily food intake can be reduced to cause lowering of plasma levels of ORAC and observed the altered metabolism of lipids and proteins observed may be related to the poor prognosis of patients and often poses the problem therapeutic care during chemotherapy.

Keywords: Non-Hodgkins Lymphoma; serum protein; oxidative stress; inflammation.

P064

The oyster mushroom, an edible mushroom rich in antioxidants, to prevent cancer

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Abstract

Oyster mushroom is specie of edible fungi of the genus Pleurotus and a form of the family of Pleurotaceae. This species has been the subject of an industrial culture for years and all over the world. In Algeria, these specie grow from autumn to winter in the north of the country and from East to West. Several studies have shown that high consumption has an antitumor effect on some cancer cells and prostate, however they

have a very interesting nutritional value. In some countries, these foods are a substitute for meat or fish. In our study, we are interested in the antioxidant activity of oyster mushrooms. The culture of the mycelium of the oyster mushroom strain is made under a specific physicochemical condition in our laboratory. An fruiting bodies (sporophores) is obtained at the cellars of the CFPA center of Messerghine (Oran). The obtained fungi are subjected to an antioxidant activity test made with the DPPH method. In order to test the ability of our fungi to directly trap the free radicals. The activity is evaluated using a UV-visible spectrophotometer which follows the reduction of this radical that is accompanied by its passage from the violet color to the yellow color; the reading was repeated six times. The results are expressed as percent inhibition of the DPPH radical. Trapping the free radical DPPH: The antioxidant activity of our mushroom on the DPPH radical was evaluated using a spectrophotometer (at $\lambda = 517\text{nm}$) [5]. The results are very interesting because they show a significant antioxidant activity ($\text{EC}_{50} = 6.83 \text{ mg / ml}$) higher than the ascorbic acid ($\text{EC}_{50} = 6.19 \text{ mg / ml}$). The EC_{50} values determined in mg/ml expressing the effective concentration of the antioxidant extract necessary for the entrapment and a reduction of 50% moles of dissolved DPPH in methanol. The consumption of oyster mushroom can contribute to increase the intake of antioxidant compounds. In order to prevent cancer, it is therefore recommended to have a diet rich in antioxidants. Further research is needed to identify, isolate and purify these constituents.

Keywords: Antioxidant activity; Oyster mushroom; DPPH radical; cancer prevention.

P065

In Vitro Antioxidant, Anti-inflammatory and Cytotoxic Potential of Thyme (*Thymus vulgaris*) Essential Oil and its Related Terpenes on Tumor Cell Lines (Breast cancer and Melanoma)

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Abstract

In recent years, essential oils have been reported to possess interesting anti-tumor, anti-mutagenic and anti-carcinogenic activities against various cancer cells. Therefore, we investigated the *in vitro* anti-inflammatory, antioxidant and cytotoxic potential of *Thymus vulgaris* essential oil (TVEO) and some related terpenes (Thymol, Carvacrol and Linalool) on cancer cell lines. The cytotoxicity assay was done with MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] to investigate changes in mitochondrial/non-mitochondrial dehydrogenase activity and to determine the potential anti-proliferative property of the TVEO and related terpenes against two human cancer cell lines: Human Breast Adenocarcinoma (MDA-MB 231) and Melanoma M3. Anti-inflammatory activity was assessed with *in vitro* (Human Red Blood Cell Membrane Stabilisation) and *in vivo* (xylene induced-ear edema) tests. The chemical composition of TVEO was determined with Gas Chromatography and revealed the presence of six compounds. Carvacrol was found to be the major component (77.4%). Linalool and Carvacrol were detected in minor quantities (0.88% and 0.52%, respectively). Antioxidant activity was evaluated with a 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging assay and

metal chelating ions test. The percentage inhibitions were concentration dependent with IC50 value of TVEO of 1.4 µg/mL scavenging activity in DPPH free radical, while those of BHA and ascorbic acid were 0.44 µg/mL and 2.12 µg/mL, respectively. Topical anti-inflammatory potential of TVEO was also explored *in vivo* and exhibited a potent anti-inflammatory effect at all doses (100, 10 and 2 mg/kg), which were statistically similar to the positive control (Diclofenac Sodium). This activity was also confirmed at the cellular level with a histopathology analysis. The MTT assay showed that the TVEO exhibited significant dose-dependent growth inhibition in the 50–200 mM dilution range. Carvacrol and Thymol showed better results compared to Linalool, particularly for breast cancer cells. Higher concentration of Carvacrol and/or synergistic effect of the overall composition were probably responsible for the efficacy of TVEO against the tested cancer cells. TVEO may be a potential source of natural anti-cancer compounds and play an important role in human health.

Keywords: Anticancer Activity; Breast Cancer; Melanoma; Thyme Essential Oil; Antioxidants.

P066

Study and development of anticancer molecules by means of simulation and molecular modeling

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Abstract

The human genome encodes 19 aldehyde dehydrogenase (ALDH) enzymes that metabolize reactive aldehydes to their corresponding carboxylic acid derivatives. Although the

majority of the research community has considered ALDH1A1 as a marker of cancer stem cells and a predictor of the prognosis, this enzyme also plays an important role in the biology of tumors and cancer stem cells. The objective of our studies is to identify an inhibitory molecule of the enzyme ALDH1A1, and thus serve as an anticancer treatment. This study was carried out by means of simulation and molecular modeling, of which different software was used. We quote among gaussian 09, chemsketch, marvensketch. Firstly, we have highlighted the structure of a series of molecules; these molecules identified as potent inhibitors of the enzyme ALDH1A1. Secondly, we identify the descriptors of these molecules on the atomic, energetic and physicochemical levels. Finally, we have established an equation that will serve as a model of molecule that may be the best inhibitor of the enzyme ALDH1A1. From this series of molecules and by means of simulation and molecular modeling, we come to highlight the equation that groups together the descriptors and the characteristics of a molecule, which can have a better inhibitory effect on ALDH1A1 and thus will serve as treatment of Cancer. Prospects expected to study other molecules that can be used as anticancer treatment.

Keywords: ALDH1A1; gaussian09; simulation and molecular modeling; treatment of Cancer.

P067

Laser Biophotonics for Cancer Diagnosis and Therapy (An Overview)

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Abstract

Over the past two decades, laser technology has made great progress and explosive developments in the medical field as diagnostic, therapeutic, and surgical tools whereas in cancer biology the

laser technology provides new tools for both academic and applied research in addition open new eras and opportunities for future developments. Biophotonics, general term for all techniques that deal with the interaction between biological items and photons, this refers to emission, detection, absorption, reflection, modification, and reradiation from biomolecules, cells, tissues, organisms and biomaterials, such interactions form the basis of laser diagnostics in biology and medicine. Cancer biology as very fast growing discipline, with the rapid automation and the ultra fast laser spectroscopic techniques became multidisciplinary fields which combine the mathematical, statistical, physical, chemical, biophysical, biochemical immunological, serological, oncological, and molecular methods for cancer prediction, and therapy, even in single cells or in population communities and their metabolites evaluation for both clinical purposes or biotechnological applications. This review list all most different laser spectroscopic approaches, and powerful techniques, such as Laser-Induced Breakdown Spectroscopy (LIBS), Laser Flow Cytometry (LFC), Confocal Scanning Laser Microscopy (CSLM), Laser Tweezers Raman Spectroscopy (LTRS) and Whole-Cell Mass Spectrometry (WC-MS). Furthermore we review the photochemical principles and components with special focusing on of Photodynamic therapy (PDT) and their utilities as powerful tool in cancer diagnosis and therapy.

Keywords: laser; techniques; PDT; cancer; diagnosis; therapy.

P068

Traditional medicinal plants used by breast cancer patients: results from a retrospective study in Northern West Algeria

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Abstract

Recent studies proved that medicinal plants have many virtues against cancer exploring the

usefulness of medicinal plants in cancer occurrence to postpone cancer development or to delete side effects of chemotherapy. Other study suggests that may found treatment of cancer in traditional medicine. Several natural products have an anti cancer effects. This study was carried out to investigate and explore whether medicinal plants can be used as a treatment for breast cancer patients to improve a better quality of life. A survey of medicinal plants for the treatment of breast cancer was carried out in North West Algeria (Sidi Bel-Abbès). Information on the plants names, parts used and methods of preparation was collected through a questionnaire among breast cancer patients. Our results found that 52% of breast cancer patients used medicinal plants, among them 4% of population used commercial preparation and 61% of them used cooking preparation and natural product such as curcuma, some patients found that some medicinal plants have a good effect on cancer and chemotherapy treatment. Different species belonging to various botanical families were identified. Taken together, our findings suggest that medicinal plants are widely used by breast cancer patients to avoid the side effects of chemotherapy treatment and improve a better quality of life to survive.

Keywords: Breast cancer; North West Algeria; Medicinal plants.

P069

Anti-tumoral and anti-proliferative activities of bacteriocins from lactic acid bacteria

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Abstract

Human cancer is a major cause of mortality worldwide. The heavy treatments used for the cancer therapy, the radiotherapy and the

chemotherapy, cause a serious health problem. That is why, the research of novel anticancer agents and modes of therapy are the subject of the several recent studies. A large number of natural antimicrobial peptides (AMPs) have been reported to display anticancer properties. The use of the bacteriocins as AMP from lactic acid bacteria to treat cancer has attracted several researchers, because of their safety for human consumption recognized by WHO (World Health Organization). The present study aims to describe the ability of bacteriocins to treat cancer, as reported in the literature. The data were found through a research conducted on several works on the application of bacteriocins in the therapy of cancer. The therapy of cancer by these molecules were based on four mechanisms: direct killing, anti-inflammatory, wound healing activities and immune modulation. In the recent study, several researchers show the selective cytotoxicity effects of some bacteriocins on cancer cells. Already, some bacteriocins secreted from Enterobacteriaceae, such as the colicin and microcin E492, are known for their anti-cancer activities against a variety of human tumor cell lines *in vitro*, with no effect on normal cells. The colorectal cancer, head and neck squamous cell carcinoma, are the kinds of cancers which could be treated using the bacteriocin therapy, like colicin and the bacteriocin produced by *Pediococcus acidilactici* K2a2-3. The nisin which is the first bacteriocin used as bio preservative, has shown to effectively reduce and prevent tumorigenic properties *in vitro* and *in vivo*. The field of using bacteriocins in cancer therapy is still new; further studies are imperative to examine their clinical significance. The findings presented suggest that this promising cancer therapy needs to be optimized and developed further.

Keywords: anti-cancer activity; bacteriocin; lactic acid bacteria; therapy.

P070

In vitro antioxidant and antiproliferative properties of aqueous extract of *Pistacia Atlantica*

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Abstract

The medicinal plants may serve as potential sources for the development of new drugs and more effective anticancer agents for future therapy. *Pistacia atlantica* Desf (Anacardiaceae) is an important plant used in traditional medicine practice in Algeria, and North Africa countries. The present study has the objective to estimate the *in vitro* antioxidant (CUPRAC, ABTS, DPPH) and antiproliferative (on the RD and Hep2 human tumor cell lines using the 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium (MTT) assay) properties of the aqueous extracts of *Pistacia atlantica* leaves, offering a phytochemical characterization of its aqueous extracts, by spectrophotometry methods. Total phenolic contents (TPC) and flavonoid contents (TFC) of aqueous extract of *P. atlantica* indicated were demonstrated the highest levels. The results of the studied extract were highlighted a higher antioxidant capacity. The MTT assay revealed that the tested extract had a good activity against Hep2 and RD cell lines with median inhibitory concentration (IC₅₀) of 324.9198 µg/mL and 434.912 µg/mL. The MTT assay revealed that the leaf aqueous extract of *P. atlantica* had the highest antiproliferative activity against Hep2 cells. The results showed a great bioactive potential for this species with a significant contribution of phenolic compounds, specially the flavonoids which makes it an interesting matrix in the development of novel

pharmaceutical formulations. Planned future studies will involve the identification of different extract other than aqueous extract, determination of the mechanisms of action and the bioactive molecule of plant extracts.

Keywords: Pistacia atlantica; aqueous extract; antioxidant, antiproliferative; phenolic compounds; MTT.

P071

Optimization in modeling of molecules for inhibition of α -synuclein aggregation during multisystemic atrophy (MSA)

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Abstract

Multiple System Atrophy (MSA) is a rare, progressive, life-threatening neurodegenerative disorder beginning in adulthood, of uncertain etiology, which clinically presents a variable combination of autonomic, parkinsonian, cerebellar, and pyramidal features. A-synuclein is primarily involved in the neuropathology of a group of neurodegenerative diseases called "synucleopathies" which are: Parkinson's disease, lewy-body dementia and multi-systemic atrophy. There is growing interest in molecules capable of reducing α -synuclein production, promoting accumulated synuclein clearance, and increasing the stability of the native form to avoid misfolding. Among the main categories of aggregation inhibitors that include proteins / peptides and nanoparticles, the most interesting option is to discover or design new inhibitors of small molecules. Our approach is to optimize and model a better molecule that can inhibit aggregation of α -synuclein with molecular docking methods. The Enzyme / ligand complexes have been realized with the MOE software. The scores (energies) are obtained in Kcal / mol. The interactions with the active site are visualized with MOE. Calculation of the

scores of the α -synuclein / ligand complex. For each ligand allowed us to highlight the most favorable mode of interaction. The results obtained show that for the majority of the ligands the interactions are of the hydrogen or ionic type is the values of the calculated scores reproduce a descending order of the inhibitory power of the six compounds VX-765> KYP2047> PAROXETINE> ANLE138b> NORTRIPTYLIN > SERTRALINE> NOCODAZOLE. Therefore, the high affinity of α -synuclein for the VX-765 and KYP2047 ligands is justified by the fact that they correspond to it lower scores compared with that of nocodazole that is to say the least energetic and the easiest enzyme / substrate complex. In addition, the VX-765 and KYP2047 show results comparable to the reference ligand which justifies their commercialization. The results obtained are particularly interesting in the search for new drugs against multisystem atrophy. However, from the molecule to the drug, the steps are numerous, tests of affinity, selectivity and toxicity, are required in this particular case or it will be necessary to abolish a function to restore another.

Keywords: VX-765 ; KYP2047; α -synuclein ; PAROXETINE; ANLE138b.

P072

Application of virtual screening in the selection of new inhibitors of the Bcr-Abl fusion protein, anticancer (drug candidates)

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Abstract

Chronic myeloid leukemia is a cancer of white blood cells. It is a form of leukemia characterized by increased and unregulated growth of myeloid cells in the bone marrow and by the accumulation of these cells in the blood. CML was the first cancer to be associated with an obvious genetic abnormality, the chromosomal

translocation known as the Philadelphia chromosome. This is the result of a reciprocal translocation between chromosomes 9 and 22 resulting in the fusion of the BCR and ABL1 genes, which forms the BCR-ABL fusion gene. In our work, we focused on the treatment of CML based on inhibition of the Bcr-Abl fusion protein; we chose axitinib which is the most potent and selective third generation of the Bcr-Abl fusion protein that binds to the active conformation of Bcr-Abl as conformation of DFG-in with residues Lys271, Met318 and Tyr253 by hydrogen bonds. Using molecular modeling methods, especially docking by Autodock 4.2.6, Autodock Vina and Molegro Virtual Docker, we evaluated the inhibitory activity for axitinib complex - Bcr-Abl fusion protein "PDB: 4TWP" and similar axitinib downloaded from the PUBCHEM database. After molecular docking with the MVD, we drew the first 20 poses that represent the best interactions with Lys271, Tyr253 and Met318. We quote: 91207885, 134149925 and 69371801. As for Autodock 4.2.6, we chose among the first 20 poses those which represent good binding energies; 22978316, 25181570 and 58890158. Similarly with Autodock Vina: 134142313, 134134141 and 134137011. To reduce the number of molecules to be tested experimentally, we have filtered according to Lipinski's rule of 5 and according to the obligatory presence of the three amino acids in the interactions. Four molecules 69371801, 69399014, 20781394, 90733463 selected by MVD were obtained, one of which, 69399014, also ranked in the first 20 poses by Autodock4.2.6. To conclude, we believe that the MVD program is more suitable for virtual screening with our protein than Autodock 4.2.6 and Autodock Vina, it better represents the key interactions governed by hydrogen bonds.

Keywords: Molegro Virtual Docker; Autodock 4.2.6; Autodock Vina ; Docking; Bcr-Abl; Axitinib

P073

Anticancer Drug Design: Development of Tyrosine Kinase Inhibitors

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Abstract

One of the limitations of conventional chemotherapy is its lack of selectivity, altering both tumor cells and healthy cells, resulting in many adverse effects, sometimes limiting for further treatment. One of the proven drugs against Chronic Myeloid Leukemia (CML), by inhibiting the protein activated by the Bcr-Abl gene, is Imatinib, known commercially as GLIVEC® from in silico molecular modeling. Our main objective is to identify new anticancer drug candidates, using the new technologies of structure-based drug design (SBDD) and Quantitative Structure-Activity Relationship (QSAR). We used software of structure-based drug design (SBDD) and Quantitative Structure-Activity Relationship (QSAR) that is based on molecular modeling techniques and in silico virtual screening. As a therapeutic target, we chose tyrosine kinase, which has been proven to be a therapeutic target for the development of targeted therapy and to overcome the problem of selectivity lack of chemotherapy drugs. Four molecules that were chosen which IC₅₀ are different; at each stage we chose the best in terms of interaction, binding modes, energy scores and predicted biological activity. The four molecules were compared to choose one. the molecule whose IC₅₀ = 4 nmole, it proved the most refined, that means, that it presents the best interactions, the best energy score testifying the stability of the complex.

Keywords: Drug Design; Tyrosine Kinase; Molecular Modeling; Cancer.

P074**In Silico Studies of AXL Kinase Inhibitors****Derouicha Matmour**^{1,2,4*}, Yahia Dellaoui⁴, Yassine Mérad², Fatima Zohra Hadjadj³, Houari Toumi⁴¹Therapeutic Chemistry Laboratory, Department of Pharmacy, University of Sidi Bel-Abbes, 22000, Algeria.²Central Laboratory, University Hospital Center of Sidi Bel-Abbes, 22000, Algeria.³Therapeutic Chemistry Laboratory, Department of Pharmacy, University of Algiers, 16000, Algeria.⁴Research in Pharmaceutical Development Laboratory, Pharmacovigilance Department, University Hospital Center 1st November, University of Oran, 31000, Algeria.drmatmour24@hotmail.fr**Abstract**

The tyrosine kinase of the AXL receptor and its major ligand GAS6 (growth arrest specific gene 6) have been shown to be overexpressed and activated in many human cancers (such as lung, breast and pancreatic cancer) and their activation has been demonstrated in many aspects of oncogenesis, invasion, metastasis and resistance to targeted therapies. The objective of this work is to search for new drug candidates for lung, breast and pancreatic cancer treatment using the molecular docking approach. We used software of molecular docking, we chose AXL as a relevant therapeutic target and prediction software. Our practice is to study new AXL inhibitory ligands with better affinity and selectivity for this target. The virtual screening of 50 molecules belonging to the Can SAR Data Base library brings out compounds of interest. The study of Molecular Docking of these molecules allows to classify them according to their energy score and to predict their interactions with active site residues while determining the pharmacophore. The compound under the code 56231879 presents a lower energy score is the best. As prospects, it would be very interesting to conduct structure_activity relationship studies to predict the biological activity of this drug candidate.

Keywords: Molecular Docking, AXL Inhibitors, Cancer.

P075**Does Argan Oil affect Nitroso Compounds Formation?****Fatima Zohra Chenni**^{1*}, Gunter G C Kuhnle^{2*}¹ Department of Biology, Biotoxicology Laboratory, SNV Faculty of Djilali Liabes of Sidi Bel Abbes University, BP 89, 22000, Algeria² Department of Food & Nutritional Sciences, University of Reading, Reading RG6 6AP, United Kingdom
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Recent epidemiologic, experimental, and mechanistic evidence suggest that dietary heme iron has a central role in the promotion of colorectal cancer by promoting the formation of N-nitroso compounds. However, diet rich in fruits and vegetables may reduce the risk of colorectal cancer. Argan oil is among many natural products with several health benefits and wide range compounds that are very beneficial. This oil takes origin from argan tree, endemic to Morocco and Algeria.

The aim of this study is to assess the effect of argan oil extracts on the modulation of the in vitro formation of ATNC (Apparent Total Nitroso Compounds), potent agents in the etiology of colorectal cancer. In vitro incubations in simulated gastric juice were conducted to assess the effect of polyphenols from argan oil on ATNC formation. Different concentrations of argan oil extracts were incubated with bovine serum albumin, HCL 1M and 1.56 μ M of NaNO₂ at 37°C. Samples were collected and analyzed by chemical denitrosation with chemiluminescence detection for different types of nitroso compounds 975. The preliminary results of this study show that argan oil has no relevant protective effect on the in vitro modulation of ATNC compounds formation, nitrosothiol and nitrosyl haem products. Although this findings suggest no evidence of argan oil effect, this remains beneficial oil for human health and the great source of healthy dietary fat.

Keywords: Nitroso Compounds, ATNC; Argan Oil; Simulated Gastric Juice; Cancer Colorectal.

P076

Traditional medicine and cancer in Oran: what about interactions?

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Abstract

The last decade has seen an increase in the use of traditional medicine especially in cancer patients with utilization rates of up to 88%. The interest in this topic and the number of publications continues to grow; however the majority of studies are Anglo-Saxon, there are few studies in Algeria regarding the use of medicinal plants in cancer patients. It there for seemed useful and important to draw up an inventory of the practice of traditional medicine in cancer patients in the city of Oran. Our objectives are: to list the medicinal plants used against cancer, describe the characteristics of this use, the profile of the users and estimate the drug –plant risk of interaction. This is a cross-sectional descriptive study carried out from 26 November 2015 to 10 January 2016, within the EHUO oncology services as well as the EHS Emir AEK Oran. The survey was conducted using a questionnaire for 384 patients. Data and statistical analysis were done on SPSS and Excel softwares. The analysis of the survey data identified 46 vegetal drugs used for traditional cancer treatment, which many have interactions with anticancer drugs. Our results show that 43% of the population studied are women with breast cancer, among the 384 cancer patients, 47.4% use at least one medicinal plant. The use of medicinal plants differs significantly with the sex with a $P \leq 0.003$ with a female predominance or a frequency of 75%. We also found that 39.4% of patients use medicinal plants in combination with their treatment and that 26.4% of patients can experience interactions following this association. In conclusion, it is imperative that

medicinal plants benefit, as well as drugs, of a system of vigilance and awareness which prevents the risks of toxicity, interaction or inefficacy.

Keywords: Cancer; Medicinal plant; Interaction; Oran.

P077

Antioxidant and antiproliferative potential of *Syringa vulgaris* L. flowers ethanolic extract

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Abstract

Syringa vulgaris L., (common lilac) belongs to the *Oleaceae* family and is regarded as one of the most popular ornamental plant, but also as an interesting choice in terms of antioxidant, anti-inflammatory, anti-nociceptive and antipyretic properties. Similarly, phytochemical studies on *Syringa* species have pointed out the presence of bioactive secondary metabolites with antioxidant and anti-inflammatory activities. Our study was designed to assess the antioxidant and antiproliferative property of an ethanolic extract obtained from *Syringa vulgaris* L. flowers. The protective effect of the ethanolic extract against free radicals and *in vitro* SOD like activity was evaluated. The cytotoxicity and antiproliferative potential of ethanolic extract were investigated on human keratinocyte (HaCaT) and murine melanoma (B16F10) cell lines using CCK8 and MTT assays. Our results indicated the *Syringa vulgaris* ethanolic extract ability to efficiently protect against superoxide anions, therefore it

can be considered as a promising effective agent against toxicity of superoxide anion. CCK8 and MTT tests indicated the antiproliferative potential of *Syringa vulgaris* extract was expressed in a dose dependent manner, without negative effect on normal cell line. *Syringa vulgaris* extract displayed cytotoxicity potential and increased SOD-like activity and based on these results it may be considered as a potential therapeutic agent for the prevention and treatment of radicals mediated diseases free by. Both authors contributed equally to this work. This work was additionally supported by the Domus Hungarica Scientiarum and Artium research fellowships.

Keywords: *Syringa vulgaris*, ethanolic extract, antioxidant, antiproliferative.

Antioxidant activities of hydrolysates were evaluated by 2,2-diphenyl-1-picrylhydrazyl (DPPH) and Nitric oxide (NO) free radicals scavenging methods. Whey proteins hydrolysed by the strains LBM2 and LBBS2 showed the highest antioxidant activity with both the methods used compared to samples obtained by the strain (CHTD27). Our findings suggest that whey proteins hydrolysed by strains of *Lactobacillus* could potentially be used for producing novel functional foods. However, the development of antioxidant activity was strain-specific characteristic. The strains *Lactobacillus plantarum* LBM2 and LBBS2 could be used as new potential adjunct bacteria. Moreover, whey could be used for the production of molecules with a promising interest as antioxidants.

Keywords: antioxidant activity, hydrolysates, *Lactobacillus*, whey proteins.

P078

Antioxidant activity of whey protein hydrolysates obtained by strains of *Lactobacillus*

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Abstract

Reactive oxygen species (ROS) and free radicals play an important role in many degenerative diseases like cancer, atherosclerosis and diabetes. These radicals are very unstable and react rapidly with other groups or substances in body, leading to cell or tissue injury. Foods containing antioxidative materials may be useful for the prevention of these diseases. Antioxidant activity is one of the multiple health-promoting attributes assigned to bovine whey products. Hence, the aim of this study was to investigate antioxidant activity of whey proteins hydrolysed by strains of *Lactobacillus*. Whey protein hydrolysates were prepared using two strains of *Lactobacillus plantarum* (LBM2 and LBBS2) isolated from raw ewe's milk and one strain of *Lactobacillus brevis* (CHTD27) from camel milk.

P079

Theoretical contribution of bastadins: molecules of therapeutic interest

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Abstract

The natural environment has always been a very important source of molecules with anti-angiogenic activity, natural products have inspired many developments in organic chemistry, particularly leading to advances in the methodologies of synthesis and the ability to make analogs with properties pharmaceutical or pharmacological improved, many natural products and synthetic analogues have been successfully developed for the treatment of cancer, in this work we focus on the theoretical

study of bastadins (bis-diaryl), this family of naturally occurring molecules is produced by marine sponges and has anti-angiogenic properties. The objective of this work is to model the bastadin 6 molecule and some of its natural and synthetic analogs and establish a correlation between energy properties and anti-angiogenic properties of these products. The calculations were made using the modeling and molecular simulation software: Gaussian 09 based on the DFT method "density functional theory". The results show that:

- The bastadin 6 molecule is the most stable molecule by contributing to its natural and synthetic analogues.
- The natural product is the best therapeutic product
- The anticancer activity of these molecules increases with the stability and HOMO-LUMO energy difference.
- The biological activity of bastadins depends on two oxime functions locating in the right part of the molecule.
- The presence of bromine give to the molecule a good rigidity

In this work, we have shown that the modeling of natural anti-angiogenic molecules to describe biological systems to remove information difficult to obtain experimentally and synthesize chemicals with improved pharmaceutical properties. Computer science as a research tool is growing and the research topic presented here shows only a tiny part of the current development of computer science.

Keywords: anti-angiogenic; bastadin; cancer; energy.

P080

Emotional freedom techniques for cancer

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Abstract

Cancer patients, such as those diagnosed with malignant mesothelioma, may use EFT as an alternative or complementary therapy to deal

with stress, pain and anxiety. Emotional Freedom Techniques include a variety of practices that generally involve tapping acupuncture points while repeating statements that focus on a specific issue, on such as anxiety or addiction, technique which helps to experience emotional harmony and is based on tapping acupuncture points heal. Our study was quasi experimental to evaluate the effectiveness of Emotional Freedom Techniques on anxiety by cancer. Investigator found that the Emotional freedom technique is effective in decreasing the level of anxiety.

Keywords: Cancer, Emotional freedom techniques, Anxiety, Decreasing.

P081

Propolis extract reduces prostate cancer cells proliferation in Wistar rat

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Abstract

Prostate cancer is a very heterogeneous disease, in terms of its pathology and its clinical presentation. Localized prostate cancer can be effectively treated by surgery or radiotherapy. In advanced stages, androgen deprivation is the best therapy. Unfortunately, after a short time, androgen-independent cancer, very aggressive and resistant to conventional hormonal therapies, develops. It is therefore essential to develop new molecules, of natural origin, more active, to reduce costs and allow greater accessibility for a larger number. The aim of this work is therefore, to study the anti-proliferative effect of the ethanolic extract of propolis on chemical-induced prostate cancer in *Wistar* rats. Benzo (a) pyrene [B (a)P], a chemical molecule belonging to the PAH (Polycyclic Aromatic

Hydrocarbons) family was administered intraperitoneally to *Wistar* rats and then, after 28 weeks of treatment, the rats were treated with an ethanolic extract of propolis (20 mg / kg) administered by gavage for 21 days. We studied the histological modifications by H/E staining. The Ki67 proliferation marker was studied by immunohistochemistry and the expression of the AhR receptor by RT-qPCR and western blot. Intraperitoneal injection of B (a)P induces prostate cancer in *Wistar* rats. B(a)P, in itself, is a procarcinogen. However, it acts as a carcinogen in animals when activated after its metabolism and causes gene mutations by binding to DNA. This is called initiation of carcinogenesis caused by B (a)P and the phase characterized by the growth of irreversibly transformed cells is called tumor promotion. Oral administration of propolis to *Wistar* rats resulted in a decrease in cell proliferation and a 49% reduction in Ki67 expression. Already studied on mice with melanoma B16F1 tumors, this propolis increases mouse survival by 30% and reduction of the mitotic index (-75%) and Ki-67 (-50%). Many studies have already studied the effect of propolis on the development of prostate cancer. These studies showed that propolis acts on the proliferation of prostate cancer cells of different lines generally studied by the MTT test, but the molecular mechanisms involved are very poorly described. Our propolis extract reduces the expression of the AhR nuclear receptor at the transcriptional and protein levels. It has been shown that the consumption of food rich in AhR ligands leads to the triggering of the AhR activation cascade. The signal transduction of natural AhR ligands differs from that of toxic molecules such as dioxin. Park et al. have shown that the ethanolic extract of Brazilian propolis containing high flavonoid concentrations suppresses the transformation of AhR induced by its toxic ligand TCDD, a toxic synthetic agonist of AhR. Our propolis extract has a very strong anti-proliferative effect against B(a)P induced prostate cancer. A complementary study of the mechanisms involved seems to be essential.

Keywords: Prostate cancer; Benzo(a)pyrene; Propolis; *Wistar* rat.

P082

Evaluation of protective effects of *Opuntia ficus-indica* cladodes on colorectal cancer

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Abstract

Obesity has been referred to as the epidemic of the 21st century. Recent epidemiological studies on patients with obesity or type 2 diabetes have revealed higher risks for several kinds of cancer, including breast, colorectal, pancreatic, and liver. In addition, oxidative stress may be a linking factor between obesity and cancer. Recently, functional foods are the subject of numerous studies because in addition to their high nutritional value, they offer an additional health benefit. The cactus and cladodes of *Opuntia ficus-indica* are widely consumed in the Mexican diet. It has a low glycemic index and is considered a functional food due to its high content of dietary fiber and polyphenols concentration. Phenolics are an important class of secondary plant metabolites possessing an impressive array of pharmacological activity. Moreover, several reports suggest that the polyphenolic compounds from fruits and vegetables could suppress cancer through their antioxidant, antiproliferative and proapoptotic properties. In this study, we investigated the protective effect of dietary cactus *Opuntia ficus-indica* cladodes (OFIC) on the oxidative stress and the incidence of colorectal cancer, induced by N-Methyl-Nitrosurea (NMU) in diet-induced obesity. Phenolic compounds were extracted, and total polyphenols, flavonoids and tannins were assayed. Antioxidant parameters were evaluated by colorimetric methods. *Wistar* rats were fed for 4 weeks with a control or a high-fat diet, enriched or not with OFIC (50%), then colorectal cancer was induced by intraperitoneal (i.p) injection of NMU (50 mg/kg body weight). The oxidative stress was monitored in plasma by measuring the MDA level, the carbonyls protein generation, CAT, SOD, GSH-Px and GSSG-Red activities and evaluation of antioxidant status by ORAC. BALB/c mice were subcutaneously

implanted with CT26 colon carcinoma cells, and then were i.p injected with (OFIC) polyphenols (50 mg/kg/d) during 7days. Our results clearly showed that obesity and NMU induced significant alterations in oxidative stress markers. Conversely, the cactus cladodes diet improved the oxidative stress and reduced the number of colon polyps induced by NMU/obesity. Furthermore i.p. administration of OFIC polyphenols reduced CT26 tumor growth. Dietary *Opuntia ficus-indica* cladodes (OFIC), by their content of polyphenols, may improve oxidant stress and decrease the risk of colorectal cancer, associated with obesity.

Key words: colorectal cancer, CT-26, *Opuntia ficus-indica*, cladodes, phenolic compounds.

P083

Pharmacoeconomics and nanotherapy in cancer treatment

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Abstract:

Despite recent progression in detection and therapy, cancer is remaining a major health care problem. The number of patients suffering from it has been estimated by the Algerian registries of cancer at nearly 45,000 cases since 2015. In countries where resources are limited, the cost of cancer treatment is an issue with significant economic repercussions. Treatment success is mainly limited due to difficulties in diagnosis besides the cancer presentation is often late. Chemotherapy and radiotherapy are conventional treatment of cancer. The problem with this therapy is the lack of specificity to target cancer cells. To answer this problem, multi-target strategies have been developed instead to identify effective diagnosis and treatment such as nanotherapy using nanotechnology. In this therapy, nanoparticles (NPs) are used for drug delivery, for in vitro diagnosis and in vivo imaging wich permet to target cancer cells, to increase effeciency and decrease side effect and toxicity. However, their

cost of production remains really expensive because of research and manufacturing process. In USA, a research report from the Business Communications Company (BCC) showed that the global nanomedicine sector, was worth \$100 billion in 2014, where anticancer products valued about \$33 billion. To overcome this problem, the pharmacoeconomics has been used as a tool to help health care decision-makers to determine effectiveness cost of the therapy. The aim of this work is to show the benefit of pharmacoeconomics by choosing nanotherapy as an economic treatment for cancer compared to conventional treatment cancer in limited ressources coutries. The work is a literature review formed on scientific articles and many wibesites and research motors where used as: Pub med, Springer, science direct. According to many research published, biotechnology using nanoparticule fight cancer in a better way than classical chemical drugs. Biotechnology target cancer cells far more precisely and with less overall damage than in conventional therapy. For example, Doxil (PEGylated liposomal formulation of doxorubicin) using in metastatic breast cancer. In this study, 22,509 women suffert of cancer are treated with doxil or doxorubicin. These therapy caused cardiotoxicity as effect side. Comparing the risk of cardiotoxicity with doxorubicin was significantly higher than Doxil. These new treatments remain hard to master and their coast seem extremely high in beguining but at long term represent an interesting economy by decreasing hospitalization cost and complication. For exemple, comparing gemcitabine and PEGylated liposomal doxorubicin for ovarian cancer. Cost with gemcitabine treatment was significantly higher than nanotherapy with 5,547.30 dollars resulting for one patient in a difference of 3,350.28 dollars for nanotherapy. ,Pharmacoeconomics is increasly used in developed countries as tool in choosing cancer treatment and improving quality of therapy to decrease toxicity and side effects and finally to minimazing cost. However, this science of economy is still limited in poor contries where ressources is limited.

Keywords: nanoparticle, cancer, therapy, pharmacoeconomics.

P084

Polyphenols from *Pennisetum glaucum* grains induce caspase-mediated apoptosis in human osteosarcoma cells

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Abstract

Osteosarcoma is the most common bone tumor with a high prevalence among children and adolescents. Polyphenols are widely investigated for their chemopreventive and chemotherapeutic properties. In the present study, we investigated the pro-apoptotic effects of pearl millet, *Pennisetum glaucum*, phenolic compounds (PGPC) on osteosarcoma U-2OS cells. Pearl millet phenolic extracts were obtained according to the method of Liyana-Pathirana and Shahidi with slight modifications. Apoptosis determined by APC-Annexin V and 7-amino-actinomycin D (7-AAD). P-p53, p53, caspase-8, caspase-9 and cleaved PARP activation was assessed by western blot. Bcl-2, XBP1, BAX/BAK, and CHOP mRNA expression was assessed by RT-qPCR. Our findings demonstrate that PGPC induced cell death mainly via apoptosis as shown by a significant decrease in cell death when cells were co-treated with z-VAD-fmk, a pan-caspase inhibitor. The extrinsic, or death-receptor pathway, and intrinsic, or mitochondrial pathway are the most described pathways of the apoptosis machinery. In most human cancers, the p53 – tumor suppressor– protein or pathway is mutated or inactivated. We and others have shown that p53 can mediate caspase-dependent apoptosis, and many stimuli, including polyphenols, trigger apoptosis through the activation of initiator caspases (caspase-8 and caspase-9). In this study, western blot showed that PGPC treatment induced p53

phosphorylation, caspase-8 and caspase-9, which is an essential downstream component of p53, activation. Indeed, PGPC triggered pro-caspase-8 and pro-caspase-9 cleavage into their active fragments. Furthermore, PGPC induced PARP cleavage, a downstream substrate of both caspase-8 and caspase-9. In response to ER stress, inositol-requiring enzyme 1 (IRE1) mediates a pathway known as unfolded protein response (UPR) in which gene expression is altered. However, severe ER stress can lead to programmed cell death. Moreover, alteration in calcium homeostasis, splicing of X box-bindingprotein 1 (XBP1) mRNA, and increased CHOP expression are usually described in ER stress-mediated apoptosis. Thus, p38 MAPK, upstream component of p53, has been reported to downregulate Bcl-2 survival protein via CHOP, a highly stress-inducible gene, activation. PGPC treatment increased transcription of XBP1, BAX/BAK, and CHOP mRNA expression, and decreased Bcl-2 mRNA expression in U-2OS cancer cells. We deduce that PGPC induce caspase-dependant apoptosis through p53 activation. Overall, this study encourages the exploration of pearl millet polyphenols as a promising candidate for osteosarcoma prevention and treatment. Nonetheless, anti-tumor effects in animal models remain to be investigated.

Keywords: Apoptosis; pearl millet; polyphenols; U-2OS.

P085

Chimeric Antigen Receptor T-cell (CAR -T) Therapy for Hematologic and Solid Malignancies: Risk and benefits- A Systematic Review with Meta-Analysis

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Abstract

Chimeric antigen receptors T cells (CAR -T) had been used for treating various tumor patients in

clinic, and owned an incredible efficacy in part of malignancies. However, CAR -T therapy remains controversial due to doubts about its efficacy and safety in the clinical treatment of various malignancies. Our objective was to summarize the efficacy and safety of CAR-T cell therapy. Interventional studies investigating CAR-T cell therapy in patients with malignancies were included. Our primary outcome of interest was complete response (defined as the absence of detectable cancer). A total of 42 hematological malignancy studies and 18 solid tumor studies were included (913 participants). Of 486 evaluable hematologic patients, 54.4% [95% CI, 42.5%-65.9%] experienced complete response in 27 CD19 CAR-T cell therapy studies. Of 65 evaluable hematologic patients, 24.4% [95% CI, 9.4%-50.3%] experienced complete response in seven non-CD19 CAR-T cell therapy studies. Cytokine release syndrome was experienced by 55.3% [95% CI, 40.3%-69.4%] of patients and neurotoxicity 37.2% [95% CI, 28.6%-46.8%] of patients with hematologic malignancies. Of 86 evaluable solid tumor patients, 4.1% [95% CI, 1.6%-10.6%] experienced complete response in eight CAR-T cell therapy studies. CAR T cells with higher doses and longer persistence in vivo can lead to better response rates however these promising results have been tempered by safety considerations, including cytokine release syndrome, neurotoxicity, and other rare and uncommon adverse events. These results will help to inform patients, physicians of the benefits and risks associated with CAR-T cell therapy.

Keywords: CART; cytokine release syndrome; efficiency; neurotoxicity.

P086

LRRK2 Protein Inhibitors During Parkinson's Pathology

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Abstract

Parkinson's disease (PD) is the second most common neurodegenerative disorder in the world. At the cellular level, it is characterized by a progressive loss of dopaminergic neurons (DA) in the Black substance pars compacta as well as cytoplasmic protein aggregates (Lewy body) in surviving neuronal cells. The exact etiology is not yet completely clear. Mutations in the leucine-rich repeat kinase 2 gene (*Lrrk2*) have been shown to be the most common cause of both hereditary and idiopathic cases. The G2019S mutation within this gene increases the kinase activity of the LRRK2 protein, contributing to the pathogenesis of Parkinson's disease. The actual function of the LRRK2 protein is not yet clear, although it has been implicated in several pathways, including synaptic vesicle regulation, endocytosis and membrane trafficking, as it can also interact with other proteins involved in parkinson's disease such as alpha synuclein. We propose in this work: to inhibit the kinase domain of *lrrk2* protein via a series of inhibitors and to predict the interactions between *lrrk2* and alpha synuclein. In our study we used MST3 as a powerful model that shares a 73% homology with the kinase domain of LRRK2. The results show that the ligand (4) of the family (Quinolines) represents the best inhibitor, we can also conclude that the family of Quinolines is best placed to inhibit LRRK2. It has been verified that LRRK2 has a significant ability to phosphorylate alpha synuclein (Asyn) at serine 129. The Docking results show that there may be 3 MST3 interactions (Met13, Pro11, Gly9) with Alpha synuclein (Thr92, Lys96, Asp98) respectively.

Keywords: Parkinson 1; a-syn, LRRK2 2; Black substance pars compacta dopaminergic.

P087

Synthesis and characterization of hydrogel films based on polysaccharide and their applications in the treatment of skin cancer

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Abstract

Turmeric (*Curcuma longa*), a spice commonly used throughout the world, has anti-inflammatory, antimicrobial, antioxidant and anti-neoplastic properties and has been successfully used to treat rashes and skin infections. The main disadvantage is its water insolubility and low bioavailability. Inclusion complexes with β -cyclodextrin to increase its water solubility have been obtained, these being subsequently immobilized in co-reticulated hydrogel films based on polysaccharides (chitosan, oxidized carboxymethyl cellulose) and proteins (α -lactalbumin) in order to treat especially dermatological diseases. The chitosan used was of medium molecular weight, with a degree of deacetylation of 75%. Crosslinking to obtain hydrogels was performed with partially oxidized carboxymethyl cellulose (CMC-Ox) with NaIO₄, to form aldehyde groups by cleaving the C2-C3 bond. The oxidation degree was between 25-45% being influenced by the amount of oxidant used. α -Lactalbumin (milk-derived protein) was used on the one hand for the solubilization of the curcumin / β -cyclodextrin complex in the aqueous synthesis medium of the hydrogels, but also to participate to the formation of hydrogels. The films were obtained by crosslinking as a result of the reaction of the chitosan and α -lactalbumin amine groups with the aldehyde groups in CMC-Ox, working at different molar ratios -NH₂ / -CH = O (1: 0.25, 1: 0.375, 1 : 0.5, 1: 0.75, 1: 1). The inclusion complex (150 mg) solubilized in lactalbumin solution (1%, 5 ml) was included in the chitosan-CMC-Ox films from the preparation stage. The films obtained were characterized by the determination of the swelling degree, by

electronic scanning microscopy, FTIR, TGA and rheological tests. The stability of curcumin from films at light and different pH values was evaluated. The oxidation degree of CMC-Ox varies between 25-45% and is influenced by the sodium periodate amount used. The amount of amino groups that did not participate at cross-linking (determined by the ninhydrin test) decreases as the CMC-Ox amount increases as a result of numerous amino groups from chitosan / lactalbumin. The duration of the crosslinking process (up to 3 hours) determines the increase of the crosslinking degree (in accordance with the decrease of free amino groups), respectively the decrease of the swelling degree values in different mediums. The maximum crosslinking degree is reached at 30°C. It has been found that the polymeric matrix has a protective character for curcumin, both in light and in solutions with different pH values. The curcumin release kinetics from films was studied in two mediums of different pH (5.5 and 7.4) and it was found higher release efficiency at pH 7.4, the maximum efficiency being 70% after 48 hours; the results are consistent with the swelling degree. The results obtained led to the following conclusions: (i) CMC-Ox could constitute an appropriate cross-linking agent for chitosan or for its mixture with α -lactalbumin, also having the advantage to avoid the use of another covalent cross-linker, usually toxic; (ii) curcumin allows to obtain complexes with β -cyclodextrin, thus improving its water solubility; (iii) curcumin complexes can be immobilized successfully in films with hydrogel character based on chitosan and α -lactalbumin, leading to systems with increased bioavailability; (iiii) the polymeric matrix of the films has a protective role for curcumin against degradation at light or in mediums of different pH.

Keywords: Skin cancer; Hydrogel film; polysaccharide; Treatment

Cancer diagnostic technologies,

**Immunotechnology and Cancer
Immunotherapy**

P088**Association between clinicopathological characteristics and KRAS mutation in colorectal cancer**

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Abstract

Colorectal cancer is a major public health problem. It is the most common cancer in Algeria. Among the most common prognostic factors for CRC is mutation status analysis, which is one of the most common genetic alterations in this pathology. Previous studies have shown that KRAS mutations are a predictor of the response to EGFR-targeted therapies in patients with metastatic colorectal cancer.

The aim of our work is to compare the mutational status of the KRAS gene, and to know if the mutations correlate with the anatomico-clinical behavior and prognosis of CCR patients in BATNA-Algeria. Our retrospective study which consisted of 91 cases, 46.2% of patients are found affected by the KRAS mutation, and 58.3% are wild-type KRAS. The KRAS mutations were detected by RT-PCR and confirmed by sequencing where they found that codons 12 and 13 of exon 1 and exon 2 of the gene were the most affected. Mutations p. G12D (c.35G> A) and p.G13D (c.38G>A) were the most frequently detected mutations. KRAS mutations were independently variable age, sex, tumor size, type of metastasis, appearance histological, tumor localization, neoplastic emboli and stage PTNM.

Keywords: CCR, mutated KRAS, wild-type KRAS, mutations, Batna, Algeria.

P089**Detection of papillomavirus (HPV) infections at the cervix in women at risk (HIV-positive) by a method of molecular biology: classic PCR**

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Abstract

HIV-related immunosuppression for a variety of reasons is a significant risk for persistent infections with human papillomavirus (HPV), which increases the risk of having complications and cancers compared to the general population. The goal of our work is to detect the presence of HPV DNA from cervical samples using the classical PCR technique and the Amplicor® kit. A total of 32 samples is the subject of HPV DNA detection. HPV / HIV-1 coinfection was found in 24 (75%) patients, of whom 17 (70.8%) had intraepithelial lesions and 7 had inflammations, the remaining 8 HIV-positive women being HPV-negative. According to this study, we acknowledge that the frequency of HPV infection was significantly high in HIV-1 positive patients which is in accordance with the literature, Seen that several researchers have noted a high prevalence of cervical abnormalities in women infected with HIV-1, with rates of 40%. HIV infection is associated with gynecological risks (cancer of the cervix, vulva ...), which is why it is recommended to systematically offer HIV-infected women screening for HPV-induced lesions through the implementation of HIV infection. a cervical smear at the time of the discovery of the seropositivity as well as the possibility of genotyping the HPV, which is a technological progress whose interest in the diagnostic or even therapeutic steps, deserves to be discussed.

Keywords: HPV, HIV, cervical sampling, PCR, cancer.

P090

Comparison between Modified Papanicolaou Stain and Hematoxylin–Eosin Stain for the Demonstration of Keratin in Oral Tissue Sections

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Abstract

Oral squamous cells carcinoma is one of worldwide spreading tumours. Those types of tumours characterized by the formation of keratin. This study aimed to compare between hematoxylin and eosin (H&E) stain, and modified Papanicolaou (PAP) stain with respect to the staining specificity and intensity of keratin present in different cases of oral squamous cell carcinoma (SCC). Analytical cross-sectional study conducted at the University of Medical Sciences and Technology (UMST) and University of Khartoum (U of K) on (n= 221) different cases of oral squamous cell carcinoma. Duplicated section were taken from each block, one stained by H&E and the other by modified PAP stain. Stained sections were then evaluated based on the specificity and intensity of staining keratin using modified scoring criteria of poor, satisfactory, good and excellent. Statistical analysis for data were analysed using S.P.S.S (Statistical Package for the Social Science) software, version 21 using McNemar-Bowker Test and Wilcoxon Signed Ranks Test. *P-value* < 0.05 were considered statistically significant. The staining specificity of modified PAP stain were statically significant with *P value* = 0.0000001, and staining intensity with *P value* = 0.00002 than H&E stain. Modified PAP stain gives a better staining specificity and intensity and easier diagnosis of keratinization in cases of oral SCC than H&E stain, because it provides better contrast to the background, allowing easy identification of keratin and more accurate diagnosis of the cancer. This results were consistent with those of Ramulu *et al.* (2013), but contrary to those of Rao *et al.* because phloxine-B was used in the current

study to enhance the staining technique. This modified method will help the pathologist to exhibited easier diagnosis of keratinization in samples of oral squamous cell carcinoma, since it gives different colour contrast to the background and the keratin. Hence, allowing easy identification of keratin and more accurate diagnosis. Also such a technique can be adapted for precise diagnosis of other tissues that form keratin in the presence of cancer, which can in turn help determine the appropriate treatment. Moreover, such technique can be used to teach student and medical laboratory technologist how to enhance the staining technique in terms of specificity and intensity when staining oral tissue section suspected to have keratinization.

Keywords: Haematoxylin and Eosin; Keratin; Modified Papanicolaou; Oral squamous cells carcinoma.

P091

Instance selection algorithms for a Cost sensitive medical diagnosis

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Abstract

Classification is an important process in medical diagnosis. An early detection reduces significantly the mortality risk. For that reason, in medicine misclassifying an abnormal sample as a normal sample is highly expensive. However, a great majority of traditional classification algorithms tend to minimize the classification error without considering the misclassification cost. On the other hand, medical datasets are highly imbalanced since there are many more normal samples than abnormal ones. Therefore, the abnormal cases are generally misclassified. In this paper, the authors compare the effectiveness of using a resample process with instance selection algorithms to reduce the misclassification cost. We tested these algorithms

on several medical datasets from UCI machine learning repository with different imbalanced ratio. The results show that evolutionary algorithms outperform the traditional instance selection approaches.

Keywords: Cost sensitive learning, instance selection algorithms, medical diagnosis.

P092

Interest of beta catenin in the diagnosis and targeted therapy of hepatocellular cancer

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Abstract

Hepatocellular carcinoma (HCC), the most common malignancy of the liver, is the sixth most common cancer in the world, and the third leading cause of neoplasia. Occurring in nearly 80% of cirrhotic liver cases or in the context of chronic liver diseases including viral hepatitis B and C. Hepatocarcinogenesis remains at present a poorly known process. This work aims to study the involvement of the β -catenin adhesion molecule, in the development of this pathology as well as the possibility of its use as tools for early diagnosis, follow-up and as a therapeutic target. The work is based on the search for the localization and the expression level of β -catenin by immunohistochemistry, from paraffin blocks of 40 pathological cases divided between hepatocellular carcinoma, metastases, cirrhosis and viral hepatitis, also a Retrospective study is carried out on 300 cases collected over five years (2017-2013) including 70 cases of hepatocellular carcinoma and 230 metastases. The retrospective study shows a male predominance for hepatocellular carcinoma with maximal frequency in the elderly (over 70 years), as well as a predominance for metastases of mammary origin (32%). The distribution according to the state of cell differentiation shows that well-

differentiated hepatocarcinoma is the most common (78%). The results of the immunostaining carried out on the 40 pathological cases show a correlation between the expression of β -catenin in the different cellular compartments and the degree of differentiation as well as the severity of the cases of cirrhosis and viral hepatitis. Male predominance of hepatocellular carcinoma in various national and international studies [5 and 6], consumption of alcoholic tobacco, and high rate of liver disease in men were found to explain this result. Immunohistochemistry results suggest activation of the WNT / β -catenin pathway in cases where immunolabeling is cytoplasmically and nuclear positive, correlating with various studies. These results allow us to suggest the direct involvement of β -catenin in hepatocarcinogenesis, which favors the use of this molecule in the diagnosis, monitoring and development of therapy.

Keywords: Hepatocellular carcinoma; B-catenin; Cirrhosis; Hepatitis B.

P093

Incidence and diagnosis of thyroid cancer in eastern Algeria: a retrospective study of 339 cases over 24 cities

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Abstract

The incidence of thyroid carcinoma TC has alarmingly increased over the last couple of decades, globally as well as in Algeria. We undertook an epidemiological study consisting in the census of patients suffering from this type of pathology as a means to report new disclosures regarding its risk factors, causes, diagnosis and evolution. The study was carried out using data from the records of the nuclear medicine department of Benadis Constantine University Hospital; it covers 339 cases with TC. It refer to the period between 2011- 2013, patients reside in 24 different cities over the eastern region of Algeria (north and south). The diagnosis was based on anatomopathological and para-clinical

reports (ultrasonography, blood test, radiography, scintigraphy, scanner and MRI). The population represents a remarkable female dominance with a percentage of 87.90% and a sex ratio of 0.13, this is almost related to sex hormones and menopause. According to the statistics the most affected age group is [40-50 [and the average age is 43.5 years old, Our results indicates that Setif is the most affected city with a frequency of 50 cases; it is mainly due to the cold climate that increases the risk factor of TC. Regarding risk factors; 67% of cases have no medical history, although 33% have different medical histories namely: 35.22 % high blood pressure, 26.13 % diabetes, 11.36 % liver troubles, 9.09 % genital involvement, 6.81 % renal impairment, 4.54 % Asthma, 4.54 % heart disease, 1.13 % psychiatric disorders and 1.13 % rheumatism. TC development in 126 patients is associated with another thyroid pathology type, 46 cases suffered from goiter, 27 had several nodules, 27 had Hashimoto's thyroiditis, 18 had hyperplasia, 1 case with Parathyroid Fat Involution and 7 cases with Adenoma. Patients were diagnosed of papillary type as the most common class of TC: 291 cases, 40 cases follicular, 7 cases poorly differentiated, 1 case medullar and no case has been taped for anaplastic cancer. We noticed four subclasses of papillary CT with unequal proportions: classic papillary cancer 55.63% > papillary-vesicular 25.93% > papillary micro-carcinoma 17.06% > papillary-trabecular 1.36%. In eastern Algeria (North and South) TC is more frequent in women than in men. The development of TC is moderately associated with some benign thyroid diseases. Risk factors vary depending on the presence of medical history and eventual environmental triggers. Setif as a city shows the highest incidence of TC. The most abundant class of the TC is papillary carcinoma in its classical form and vesicular variant.

Keywords: diagnosis; incidence; risk factors, thyroid cancer.

P094

Monte Carlo simulation in mammographic imaging and evaluation of the dose distribution

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Abstract

The high efficiency of medical images is an important factor in mammography because they allow a reliable diagnosis to detect lumps, whether clinical abnormalities or screening for cancerous lesions such as breast cancer for women. Currently, only mammography shows capabilities to detect small lesions and with an early diagnosis can reduce the mortality rate of this disease. This is defined as a radiographic examination that uses X-rays to detect breast tissue damage. Due to the advantages presented by this imaging modality, we will be interested in this thesis work on Monte Carlo simulation. Monte Carlo codes designate a family of algorithmic methods to compute an approximate numerical value using stochastic processes, we will rely for it on the Monte Carlo GATE (GEANT4 code Applied for Tomographic Emission), for the simulation of mammography dedicated device. It will involve the simulation of a complete mammography setup, with a conventional X-ray source and the several accessories used to shape the X-ray spectrum (anode, filters, detectors,) to reproduce a realistic mammography examination. We will then proceed to calculate a number of parameters such as the dose distribution, the average glandular dose that can be validated by a comparative clinical study.

Keywords: mammography, GATE Monte Carlo simulation, breast cancer.

P095**Descriptive and Immunohistochemical Study of Lung Cancer****Imene Bendoukha**^{1*}, Fatima Zohra El kebir², Amal Mesli².*Antifungal Antibiotics Laboratory: Physicochemistry, Synthesis and Biological Activity. ABUBEKR BELKAID University of Tlemcen.**Faculty of Sciences of Nature and Life, AHMED BEN BELLA University of Oran.**imenebendoukha31@gmail.com***Abstract**

Despite significant progress in detection or treatment, the prognosis for bronchial cancer remains bleak. Less than 15% of diagnosed patients survive their illness due to a late diagnosis of the disease, which is already well advanced. Bronchial cancer evolves in a silent way and the symptomatology of call is often commonplace with a late effect. These last years, the biological evidence for carcinogenesis has evolved with the discovery of new biomarkers. These are the witnesses of the cancerous disease and have an interest in the improvement of the diagnosis. Thus, the use of immunohistochemical staining techniques makes it possible to improve the diagnosis establishment while specifying the histological type. The latter can be supplemented by molecular biology techniques that seem to be of greater benefit in the clinical diagnosis. The realization of the immunohistochemical staining technique using monoclonal antibodies by adopting the EnVision + kit method, allowed us to carry out the labeling of EGFR and CK5 / 6 on the histological type pulmonary adenocarcinoma. This allowed us to make a final and differential diagnosis with respect to the other histological types in addition to the histological techniques of Hematoxylin-Eosin staining. The results obtained by carrying out the immunohistochemical technique using anti-EGFR and anti-CK5 / 6 monoclonal antibodies (EnVision + method, Dako), allow selective and additional diagnosis of the different histological types of bronchopulmonary cancers. Immunohistochemical analysis has significantly improved the clinical diagnosis and management of the patient in selecting the type of treatment. A strong implication of the EGF receptor has been reported in the NSCLC (small cell lung

carcinoma) and this by its expression on the tumor tissues but also by the presence of mutations which in the absence of tobacco consumption, induce in a strange way the phenomena of the carcinogenesis. Several studies of the mutational status of EGFR and its involvement have resulted in the development of targeted therapies based on tyrosine kinase inhibitors, used for patients whose chemotherapy is ineffective.

Keywords: Epidermal Growth Factor Receptor; Lung Cancer; Monoclonal Antibodies; Small Cell Lung Carcinoma.

P096**Vibrational Spectroscopy – A diagnostic tool in oncology****Alaa Mohamed Foued DERDOUR**^{1*}, Hichem NAAS², Abdelaziz GHARBI³.*Resident Pharmacist in Analytical Chemistry, Department of Pharmacy, Saad Dahleb University, Blida.**Resident Pharmacist in Analytical Chemistry, Department of Pharmacy, Saad Dahleb University, Blida.**Industrial Pharmacist, Professor of Analytical Chemistry, Department of Pharmacy, Saad Dahleb University, Blida. foued.med@gmail.com***Abstract**

Spectroscopy is the study of the interaction of different types of electromagnetic radiation with matter. Indeed, molecules, or atoms, can absorb or emit electromagnetic radiation at distinct frequencies. The set of all these radiations constitutes a spectrum characteristic of the molecule, or the atom, in question. When a molecule is exposed to certain electromagnetic radiations, such as Infrared radiation (IR), it changes its vibrational state. The study of the resulting spectrum is vibrational spectroscopy. This branch of spectroscopy includes the Infrared spectroscopy: which studies the absorption spectra in the Infrared domain (0.78-1000 μm); and Raman spectroscopy: based on the Raman effect, or the inelastic scattering of radiation by the molecules. Both techniques provide information about the identity and the structure of molecules through the study of changes in their vibrational state. Thereby, these techniques have great potential as medical diagnostic tools, particularly

in oncology. In fact, vibrational spectroscopy allows the detection of molecular changes that occur in cells, tissues, and biofluids, which can be at the origin of the pathology, or one of its effects.

Keywords: Cancer, Diagnosis, Oncology, Vibrational Spectroscopy.

P097

Value of Anatomopathological Examination in Prostate Cancer

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Abstract

Prostate cancer (PCa) is the most common cancer in men over 50 years and the 5th leading cause of cancer deaths in men, with about 1.1 million new cases diagnosed and 307000 deaths in 2012. There are two tests for PCa: a rectal exam and a Prostate Specific Antigen (PSA) test. These are the best ways to detect PCa as early as possible, but currently they do not confirm the diagnosis. To determine whether a patient is suffering from PCa, a biopsy is performed for anatomopathological investigation. So, PCa histology, especially Gleason score, plays a critical role in predicting patient outcomes. This work aims to contribute to the study of the value of PCa anatomopathological test in a population of Eastern Algeria. This retrospective study included 264 patients over a period of three years from January 2015 to December 2018. The study was based on the informations collected on the register patient's. The age, the PSA and the histological grade features were taken in consideration for all patients. The highest number of patients was observed in the age group 70-79 years. The average rate of total PSA was 28.51 ng/ml (ranged between 4-92 ng /ml). 53% of patients had a PSA > 20 ng/ ml. Histology confirmed that all patients accounted for prostatic adenocarcinoma with prognostic Gleason score that ranged between 6 and 8. The proportion of PCa with Gleason 6 and 7 was the most frequent in the studied population with a

total number of 82 patients. The proportion of PCa with a Gleason 7 score appears significantly higher than that of a 6 score. Anatomopathology plays a vital role in the diagnosis of CaP. Only the examination of biopsies affirms with certainty the diagnosis of CaP from the analysis of histological sections. The results of this study show that the diagnosis is often made too late in advanced stage with a high PSA levels and biopsy showing high levels of Gleason. Early detection of cancer through early diagnosis and population screening must be a priority to reduce the high incidence of late stage cancer cases, thus increasing survival rates, which remain very low, compared to Western countries

Key words: Prostate cancer; PSA; Biopsies; Gleason score; Histology.

P098

Contribution of BRCA1 and BRCA2 Germline Mutations to Early Algerian Breast Cancer using High Resolution Melting Analysis (HRM)

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Abstract

Several studies have shown that factors implicated in breast carcinogenesis might have a different impact on the risk of developing breast cancer in Algerian women. Tumours occurring at an early age have a poor prognosis. The genetic mutations are the cause of occurrence of cancer at an early age even in the absence of a familial context. Germline mutations in the BRCA1 and BRCA2 genes in patients with early-onset breast cancer have not been clearly identified within the west Algerian population. Our aim is to analyze BRCA1 and BRCA2 genes mutations among 50 consenting young women from western Algeria diagnosed or treated with primary invasive breast cancer at the age of 40 or less who were referred through the Military Teaching Hospital of Oran. Two deleterious mutations have been identified (C.2125- 2126 inSA) located on the exon 11b of BRCA1, and (c.250c>T) located on the exon 3 of BRCA2 gene. Moreover five variants of uncertain clinical significance and favor

polymorphisms were identified. Four rare variants of an unknown biological significance (UVs) have been identified on BRCA1 gene (rs498650, rs1799949, rs16940, rs16942) and on the BRCA2 gene (rs2889772). Our data suggest that BRCA1/2 mutations are responsible for a significant proportion of breast cancer in Algerian young women.

Keywords: Breast cancer, BRCA1, BRCA2, Western Algeria

P099

The Electrical Bioimpedance Technique in Cancer Diagnosis

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Abstract

Electrical bioimpedance technique has been widely used in human physiology to estimate hydration levels, water weights during pregnancy, fat levels, cardiac output and cancer diagnosis.

Several methods are used to measure electrical bioimpedance: bioelectrical impedance analysis (BIA), electrical impedance spectroscopy (EIS), impedance plethysmography (IPG), impedance cardiography (ICG) and electrical impedance tomography (EIT). The studies showed that there are significant differences in bioimpedance between normal tissues and cancerous tissue. In this work, we designed an electronic circuit prototype to measure and analyze the electrical bioimpedance for normal and cancerous tissue. Bioimpedance spectroscopy (BIS) of tissues has been used for identifying cancers by investigating their resistance and reactance in RF and correlating these to malignancies of a variety of tissues. Our bioimpedance device is accomplished in three sections comprising of current injection stage, voltage detection and resistance and reactance evaluation interface. A Howland voltage controlled current source based on TL082 operational amplifier integrated circuit was used to inject a current for measuring bioimpedance. An AD620 instrumentation amplifier was used for the voltage measurement. The bioimpedance measurements were realized

in tetrapolar configuration based on four electrodes. The interface based on LABVIEW was used for evaluation of resistance and reactance of bioimpedance. This device has been characterized with RC networks and validated by testing its current output over a range of frequencies between 1 kHz and 1 MHz and comparing measured values of impedance across a test circuit to expected values. The measured value of impedance in a test circuit followed the impedances of RC networks according to the Fricke, Cole and Debye models. Bioimpedance is a well-established technique in detecting breast cancer, cervical cancer, and prostate cancer. In this work bioimpedance spectroscopy is performed by two electronic stages and an interface based on LABVIEW. The performance of our device is tested by RC networks used as virtual tissues. With this medical device, a lab or research group can begin introductory study to confirm significant differences in bioimpedance between normal tissues and cancerous tissue.

Keywords: Bioimpedance; Cancer; Diagnosis; spectroscopy.

P100

Investigation of colorectal cancer via an anatomopathological approach

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Abstract

Colorectal cancer usually occurs after 50 years (95% of new cases, 46% after 74 years). The majority of colorectal cancers arise from benign lesions such as polyps that develop on the mucosa and can develop into cancer. Our work is based on an anatomopathological study of colorectal cancers to determine the most common histological varieties. This study was conducted at a hospital-university level, and included eight cases of colorectal cancer including 3 women and 5 men. The tissue samples are obtained either by biopsy or by resection of an operative part or organ. Then

they were fixed in formalin and then treated according to a well-defined protocol to be cut and stained with hemalun-eosin. The reading of the slides is done with a computer-linked optical microscope which allows a better exploration of the tumor and a recording of the images with their data. The results obtained revealed a male predominance of 62,5% with a sex ratio of 1,66. The average age is 55 and dominance has been noted in the 50-60 age group, which is 37% of our population. Histological analyzes reveal that 75% of colorectal cancers are adenocarcinoma lieberkühniens, and 25% undetermined. The distribution according to the degree of differentiation of adenocarcinomas indicates that 62,5% are well differentiated, 12,5% moderately differentiated and 25% little or no differentiated. The choice of treatment depends on the stage and location of the cancer. It is never decided by a single professional but is the result of a multidisciplinary consultation meeting. Major advances in understanding tumor biology, biomarker development, and targeted therapy have improved the treatment options for colorectal cancer.

Keywords: Colorectal cancer; Lieberkühniens adenocarcinoma; Polyps; Risk factors.

P102

Epidemiological and histopathological aspects of colorectal tumors in a West Algerian population

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Abstract

Colorectal cancer (CRC) is one of the most common causes of cancer morbidity both in men and in women. In more than 80% of cases, this cancer comes from benign tumors like polyp. There is growing evidence that polyps represent a precursor lesion of CRC. Our purpose is to explore benign and malignant colorectal tumors by studying epidemiological and histological profiles in West Algerian population. Our study

concerns 25 cases collected between January and April 2018 in various health sectors. We included all patients with primary benign or malignant tumors of colon, of rectum or the both. Samples are fixed at 10% formalin; paraffin embedded and stained with haematin-eosin. CRC frequency is higher among males (60.7%), than females (39.3%). The male/female sex ratio was 1.54. The mean age was 55.2 ± 16.3 years. Colorectal cancers predominate with 16 cases against 9 benign tumors. Malignant tumors were more common in the age group 50-59 years with (31.25%) and benign tumors are very present among individuals in the age group 40-49 years (33.33%). Whatever the nature of the tumor, the male sex was predominant with a sex ratio of 2 (6 cases against 3) for benign tumors, and 1.28 (9 cases against 7) for malignant tumors. Our study shows that colorectal cancer is very often diagnosed at a late stage. Otherwise we recommend regular molecular screening tests to help prevent colorectal cancer by identifying and monitoring benign tumors before they turn into cancer.

Keywords: Colorectal cancer; Histopathology; Diagnostic; Polyps.

P103

Epidemiological and diagnostic aspects of 350 colorectal cancers cases in Sidi Bel Abbes (Algeria)

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Abstract

Colorectal cancer is a worldwide health problem. In Algeria, this type of cancer is widely frequent and remains a major public health problem. In fact, colorectal cancer is the second leading cause of death among cancers that affect both women and man. The aim of this study is to highlight the epidemiological and diagnostic aspects of colorectal cancer in the cancer center of Sidi Bel Abbes (West of Algeria). We conducted a retrospective study of 350 adults who were

diagnosed with colorectal cancer between January 2010 and December 2017. The results of this study show that the mean age at diagnosis was 57 years and the sex ratio was 1.22 with a predominance of males. Common histological type was adenocarcinoma (74%). Most common site of involvement is colon (72%), which is followed by rectum (22%). Mean body index was > 25 in 31 % of colorectal cancer patients. At diagnosis, 50 % of patients were in stage III. The serum levels of CA 19-9 and carcinoembryonic antigen (CEA) were determined in 60% of patients and 53% of the CA19-9 level was increased in only 5 % of patients. The CEA level was elevated in 18% of patients. Colon cancer is more frequent than rectum in Sidi Bel Abbes. Colorectal cancer patients are diagnosed at later stage. Carcinoembryonic antigen and (CEA) and carbohydrate antigen 19.9 have yet to be used as prognostic factor, but not for all patients, for colorectal cancer.

Keywords: Colorectal Cancer; Retrospective Study; CEA; CA 16.9. Adenocarcinoma; Sidi Bel Abbes

P104

Primary Plasma Cell Leukemia: Immunochemical and Immunophenotypic Features

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Abstract

Plasma cell leukemia (PCL) is a rare and aggressive variant of myeloma characterized by the presence of circulating plasma cells. PCL can either originate *de novo* (primary PCL) or as a secondary leukemic transformation of multiple myeloma (secondary PCL). The prognosis of PCL is poor with a median survival of 7 to 11 months. The International Myeloma Working Group (IMWG) recommends that the evaluation of response in primary PCL should combine acute leukemia and multiple myeloma requirements.

On the occasion of this observation, we emphasize the importance of the immunochemical and the immunophenotypic analysis in the diagnosis and the monitoring of PCL.

Serum protein electrophoresis, immunofixation and free light chains (FLC) assays were performed for the patient A.B: 50-years old male diagnosed with PCL based on the % ($\geq 20\%$) and absolute number ($\geq 2 \times 10^9 / L$) of plasma cells in the peripheral blood. The immunophenotyping has been performed by 8 colors flow cytometer. The serum proteins electrophoresis reveals the presence of a monoclonal paraprotein evaluated at 41 g/L migrating in the gamma region. Immunofixation confirms that this is a monoclonal IgG Lambda intact immunoglobulin. FLC ratio was abnormal ($0.02 < 0.26$). These results confirm the secretory characteristics of this PCL. These secretory plasma cells are CD38+ CD138- CD27- and CD19-. The mechanism of extramedullary spread of malignant plasma cell is explained in the literature by the lack of CD56 (NCAM) which does not agree with our case where the CD56 was positive. The immunophenotypic results confirmed the diagnosis and can be used for the evaluation of minimal residual disease however the follow-up of the level of the monoclonal immunoglobulin and the FLC should be used as response criteria.

Keywords: Plasma Cell Leukemia; Immunophenotype; Serum Protein Electrophoresis; Immunofixation; Free Light Chains.

P105**Distribution study of G216T polymorphism of the EGFR gene and evaluation of its therapeutic prognosis in Non-Small Cell Lung Carcinoma.**

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Abstract

Despite numerous therapeutic advances, lung carcinomas prove to be indestructible because of their aggressiveness and poor prognosis, thus causing the most cancer deaths in the world. Patients who present themselves often at an advanced stage have their chances of survival minimized and especially shortened. This study was performed on 20 patients with non-small cell NSCLC and small cell lung carcinoma SCLC to establish a differential diagnosis. The search for possible genetic polymorphisms located in the region of the promoter and part of exon 1 of the EGFR gene was performed by sequencing this gene region using a ABI 3100 capillary electrophoresis. Sequencing of the promoter region and part of exon 1 of the EGFR gene revealed the presence of a G216T polymorphism in the Sp1 transcription factor binding site in 64.70% of NSCLC patients, accompanied by a clear predominance in squamous carcinoma. This variation induces the change of a guanine to thymine (-216G /T) and thus makes it possible to increase its transcriptional activity by 30%. Another nucleotid variation C191A was also found in the promoter region inducing the change from cytosine to adenine. It is located upstream of many transcription initiator sites that can exert a regulatory role on the EGFR promoter. The distribution analysis of the four haplotypes (G-C, G-A, T-C and T-A) and the diplotype (G-C / T-C) of the G216T and C191A polymorphisms was performed to analyze possible functional correlations. It is important

to note that overexpression of EGFR, induced by hyperactivation of its promoter region, has been described in several cancerous pathologies and is often associated with poor prognosis, as reported in this recent study on the Algerian population.

Keywords: NSCLC; SCLC; EGFR; Squamous carcinoma; Sp1; G216T; C191A.

P106**Oral intake of aqueous extract of Graviola (Annonaceas Muricata) dried leaves suppresses the 7,12-DMBA/Croton oil induced two-step skin carcinogenesis in Swiss albino mice**

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Abstract

The phytochemical complexity of plant extracts may have chemotherapeutic and chemopreventive effects. The purpose of this study was to assess the potential of extracts from the tropical tree *Annona muricata* (Graviola) as a therapeutic and preventive agent of cancer. Its composition is rich in Annonaceae acetogenins which are strong nicotinamide adenine dinucleotide oxidase inhibitors of the cancer cell's mitochondrial membrane. We divided 20 mice from the Swiss Albinos strain into four groups: 1/witnesses, 2/carcinogenicity using DMBA as the initiating agent and Croton oil as the promoter, 3/ receiving treatment with Graviola leaf extract alone, 4/ receiving GLE in parallel with carcinogenesis. The tests on animals lasted 19 weeks, and were followed by an anatomopathology that tends to evaluate the development of pre-cancerous lesions as well as inflammatory skin conditions. Subsequently, we measured the enzyme activity of SOD, CAT and GPx allowing the study of oxidative stress parameters. The results revealed the development of precancerous hyperplasia affecting the epidermoid (spinous) cells in the second group. In contrast, no hyperplasia was

observed in the mice of the other three groups by submitting that the GLE in the mice of group 4 interfered with the development of the DMBA-induced tumour. Carcinogenesis causes disruption in the enzyme activity of antioxidant enzymes: SOD, CAT and GPx. The cancer pathway appears to decrease the activity of SOD while the healing pathway increases it. Regarding the immune system we found no significant effect of the extract on the activation of the immune system and the level of immune cells remains almost unchanged and this result is opposed to certain studies, especially that done on Desacetylularicin, which shows an activation of the Innate immunity. The aqueous extract of the leaves of *Graviola* improves the antioxidant activity of the organism on the other hand it would not boost the immune system, soon, we plan to study the effect of the plant on the third and fourth stage of skin cancer, namely, carcinoma and melanoma.

Keywords: Graviola; acetogenins; Dimethylbenzoantracen (DMBA); Oxidative stress; Papiloma

P107

Tumor PD-L1 expression and Nivolumab efficacy in the treatment of cancer: a meta-analysis of phase III randomized clinical trials

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Abstract

Nivolumab is a fully-humanized IgG4 monoclonal antibody that binds to the PD-1 receptor expressed by activated T-cells blocking thus the immune checkpoint and activating an immune response to tumor cells. We conducted a meta-analysis with the aim of investigating the effect of tumor PD-L1 expression on the efficacy of Nivolumab in the treatment of different types of cancer. The meta-analysis was performed in

conformity with the Preferred Reporting Items for Systematic Reviews Meta-Analyses (PRISMA) statement. Phase III randomized clinical trials were identified through a systematic literature search over PubMed, Cochrane, and the clinicaltrials.gov databases up until August 15th, 2019. The included studies provided hazard ratios (HRs) for overall survival (OS), progression-free survival (PFS), and odds ratios for objective response rates (ORR). The generic inverse variance method was used for the pooled analysis. The statistical analyses were carried out using the R statistical program (version 3.6). Thirteen phase III randomized controlled trials were included involving 7 371 cancer patients. The trials examined the efficacy of Nivolumab in patients with melanoma, non-small cell lung cancer (NSCLC), renal cell carcinoma (RCC), Squamous Cell Carcinoma of the Head and Neck (SCCHN), and gastric cancer (GC) [16] with PD-L1 tumor expression levels < 1%, ≥ 1%, < 5%, ≥ 5%, < 10%, and ≥ 10%. The HRs for overall survival, among patients with PD-L1 < 1%, were (0.71; 95% CI 0.58; 0.87) for melanoma, (0.77; 95% CI 0.61; 0.97) for NSCLC, (0.89; 95% CI 0.54; 1.45) for SCCHN, (0.98; 95% CI 0.56; 1.72) for RCC, and (0.76; 95% CI 0.49; 1.18) for GC. Among patients with PD-L1 ≥ 10%, the pooled HRs were (0.65; 95% CI 0.46; 0.92) for melanoma, (0.43; 95% CI 0.31; 0.60) for NSCLC, and (0.56; 95% CI 0.31; 1.01) for SCCHN. Similar pattern was observed for PFS. The summary of HRs for the PD-L1 <1% subgroup were (0.54; 95% CI 0.40; 0.73) for melanoma, (0.75; 95% CI 0.44; 1.29) for NSCLC, (0.39; 95% CI 0.09; 1.67) for SCCHN, and (1.00; 95% CI 0.80; 1.26) for RCC. Among patients with PD-L1 ≥ 10%, the pooled HRs were (0.43; 95% CI 0.28; 0.65) for melanoma, (0.54; 95% CI 0.40; 0.73) for NSCLC. According to our findings, patients with higher tumor PD-L1 levels have benefited the most from treatment with Nivolumab, where the overall survival and progression-free survival were longer for this subgroup compared with patients with lower PD-L1 levels. We, therefore, suggest that tumor PD-L1 expression may be taken into consideration when assigning Nivolumab for the treatment of the investigated cancers in our study.

Keywords: Neoplasms; Nivolumab; PD-L1; meta-analysis.

P108

Study of the possibility of using carcinoembryonic antigen 5 in the diagnosis of liver metastases and for hepatocellular cancer

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Abstract

It was found that several liver metastatic cancers overexpressed the embryonic carcino antigen 5 (CEACAM5) which has been described for the first time as an oncofetal gastrointestinal antigen. This molecule is found to be overexpressed in the majority of carcinomas including those of the gastrointestinal tract, respiratory and genitourinary systems and breast cancer. While other studies show the influences of CEACAM5 in general liver metastatic process by either protecting circulating cancer cells from anoikis-induced cell death and by binding to heterogeneous nuclear RNA M4 which is a receptor for Kupffer. But there were no conclusive studies showing its localisation in the liver itself in metastatic cases. The purpose of this study is to find the marking carcinoembryonic antigen 5 in liver tissue with cirrhosis, hepatitis, hepatocellular cancer and secondary metastatic foci of various origins. 230 patients of different ages were the subject of a prospective study based on the immunohistochemistry technique performed on histological sections using primary and secondary antibodies. Analysis of results showed a marked carcinoembryonic antigen only in the metastatic cells 32% of the cases were breast metastases origin. These results are similar to those found by Lee et al. While they are in contradiction with several works that describe the prevalence of colorectal metastases. These results confirm the involvement of the CEACAM5

in the metastatic process and its different roles in cell adhesion. The results are in favor with the use of the molecule in the differential diagnosis, followed and therapeutic development of cancers. It would be interesting to deepen this research by the techniques of molecular biology.

Key words: Carcino-embryonic antigen 5; Liver; Immunohistochemistry; Metastases.

P109

Occurrence of oral and oropharyngeal squamous cell carcinoma among patients in Basrah city

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Abstract

Oral cancer consider as the sixth common malignant disease (its incidence is about third in developing countries and eighth in developed countries). Squamous cell carcinoma (OSCC) account 95% of all oral malignant lesions. A few studies have been written in Iraq regarding the incidence of oral cancer. The aim of this study was to identify differences in oral and oropharyngeal squamous cell carcinoma patients according to age groups, gender, and location of the tumor in Basrah city. This study included 21 patients with oral and oropharyngeal squamous cell carcinoma were clinically diagnosed and then confirmed by histopathological examination. Age, gender, as well as clinical signs and the site of lesions, were recorded. There were 21 new cases of oral and oropharyngeal squamous cell carcinoma in Basrah from September 2015 to December 2016, 13 in men and 8 in women. Cancer at all oral sites affected men more than women. The Tongue is the most frequent site.

Keywords: SCC, oral, Oropharyngeal squamous cell carcinoma

P111

Immunohistochemical markers of mammary tumors in female dogs from Northeastern Algeria

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Abstract

Research in the field of canine tumors has evolved and become more relevant in recent years; not only because the frequency of canine tumors is constantly increasing in veterinary medicine, but also because the mammary tumors of the canine species is a good model for breast cancer in women. Mammary gland tumors are the most common tumors in the female dog. The present study was undertaken to investigate the importance of immunohistochemical markers (cytokeratins AE1/AE2, CK20, CK5, 6, RE, vimentin and P63) in tumor type diagnosis in the case of canine mammary tumors. Thirteen (13) tumors tissue specimens were obtained from 42 female dogs in different ages and breeds. They had been classified according to WHO method after histopathological examination. The tumors were diagnosed as Squamous cell carcinoma (3 cases), Spindle cell carcinomas (2 cases), Sarcomas (3 cases), Carcinoma simple cribriform (2 cases) and the epithelial component is malignant, and the myoepithelium is benign (3 cases). Cytokeratins AE1/AE2 were seen in all cases except in the spindle cell carcinoma. Vimentin can be used as a myoepithelial and mesenchymal cell marker in all cases except in the malin myoepithelioma, P63 is a sensitive and specific myoepithelial marker in canine mammary tumors. Whereas CK 5, 6 and RE were specifically detected in simple cribriform Carcinoma, cytokeratins CK20 were expressed in all cases except in the Squamous cell carcinoma. These results emphasize the interest of immunohistochemical markers to identify the humoral cell origin in canine mammary tumors, allowed distinguishing between canine mammary tumors of myoepithelial and lumino-epithelial cells lineage in female dogs.

Keywords: Immunohistochemical ; Immunohistochemical markers; Northeastern Algeria ; mammary tumors.

P112

Interleukin-17A and NOS2 signaling independently link NF-κB activity to epithelial to mesenchymal transition in invasive laryngeal squamous cell carcinoma

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Abstract

Laryngeal squamous cell carcinoma (LSSC) is an inflammatory tumor of the head and neck characterized with aggressive invasive behaviour and metastasis. Here, we aimed to address the possible contribution of nitric oxide synthase type 2 (NOS2) and IL-17A, two controversial contributors of Epithelial to mesenchymal transition (EMT), to LSSC invasive features, together with NF-κB. To this aim, expression of NOS2, IL-17A and EMT markers (E-cadherin, β-catenin, vimentin and MMP-9) were assessed by immuno-histochemistry in tumor biopsies obtained from 20 patients with invasive LSSC and compared to NF-κB nuclear status. Spearman analysis of IHC scores showed that NOS2 upregulation strongly associated with loss of E-cadherin and gain of vimentin. We found presence of a significant link associating acquisition of nuclear NF-κB labeling to loss of E-cadherin expression. We observed that as IL-17A labelling was enhanced in the tumor and the stromal areas of LSSC, a significant association linked stromal IL17-A signal to nuclear NF-κB staining, and E-cadherin loss. Multiple correspondence analysis (MCA), showed that, acquisition of a mesenchymal profile was linked to enhanced NOS2 and IL17-A stainings and nuclear NF-κB signal. To our surprise, no

significant correlations were found between either tumor or stromal IL17-A stainings and NOS2 labelling. Altogether, our results suggest that in invasive laryngeal squamous cell carcinoma, IL17-A and NOS2 would independently mobilize NF- κ B nuclear activity to support epithelial to mesenchymal transition to mediate tumor cell metastasis.

Keywords: IL-17; NF- κ B; NOS2; TEM.

P113

Formulation of biomedicines for the treatment of metastatic colorectal cancers: what is the role of the galenic pharmacist?

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Abstract

Colorectal cancer (CRC) is one of the most common cancers in Algeria with 6500 cases detected each year. More and more effective treatments to get rid of this disease are now available. Indeed, thanks to medical research and galenic development, monoclonal antibodies (MAbs) anti-EGFR, which have the ability to identify and block specific mechanisms of cancer cells, could be manufactured and put into dosage forms such as parenteral preparations. The aim of this work is to define the place of galenic pharmacy in the development of biomedicines. The goal is to describe the main manufacturing steps and controls of MAb-based drugs for the treatment of metastatic RCCs. This is a review of the scientific literature that has been developed after consulting databases and search engines, especially « Pubmed, Google Scholar, et MedlinePlus ». Monoclonal antibodies (MAb) have profoundly modified therapeutics, especially metastatic CRC. The first MAbs were murine, but they soon proved to be ineffective and highly immunogenic. Biotechnology has made possible to obtain antibodies that are more human, that is to say chimeric, humanized and then completely human. Unlike chemical synthetic drugs, MAbs are very complex molecules, so their manufacturing process uses

genetic engineering and cell culture: all begins with the creation of transgenic mice, into which human genetic sequences, coupled with lymphoid myelomas, have been inserted; «the hybridoma » obtained can be reproduced infinitely in a suitable sterile liquid culture medium; a nutrient medium is then added which will make it possible to obtain IgG1 anti-EGFR, which will subsequently be extracted from the culture medium by centrifugation, purification and concentration, then put into a galenic form, and finally packaged in appropriate vials. MAbs are innovative drugs that bring hope for effective cancer treatment; indeed, the observations made in the thousands of patients with metastatic CRC already treated, clearly demonstrate their clinical interest. In the coming years, further progress will be needed to select relevant mAb targets, reduce their immunogenicity, and reduce their cost.

Key words: Anti-EGFR monoclonal antibodies - Galenic development- Metastatic colorectal cancer.

P114

Thymoquinone enhances IFN- γ -associated antitumor cytokine production

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Abstract

Interferon gamma (IFN- γ) is mainly produced by cytotoxic T-cells and T helper type 1 (Th1) cells, and remains as the most important cytokine with antitumor properties, which act as proapoptotic molecule. It has been used in clinical management of different type of cancers, including adult T-cell leukemia. In our study, we set out to evaluate the potential adjuvant effects

of thymoquinone on the production of IFN- γ content in the co-culture system of classically activated macrophages (M ϕ), pulsed or not with necrotic tumor cell lysates (NecrJCLs) with autologous CD4⁺ T-cells. Assay was carried out in co-culture system in the presence or absence of TQ at the dose of 5 μ M. IFN- γ was measured in co-culture system after 24 h by a quantitative sandwich enzyme-linked immunosorbent assay, using human ELISA kit of Sigma Aldrich Co., St. Louis, USA. Absorbance measurements were made at 450 nm with a microplate reader (Biochrom Anthos 2020, Cambridge, UK). TQ treatment of NecrJCL-pulsed M ϕ co-cultures resulted in a significant upregulation in the production levels of IFN- γ compared with untreated M ϕ s co-culture. Furthermore, our results corroborate a well-documented study showing that TQ treatment in ovalbumin-sensitized mice to air way inflammation resulted in shifting the immune response from humoral toward cellular immunity as evidenced by an increase in the production of Th1-associated cytokine IFN- γ . Thymoquinone would have a powerful therapeutic effect on NecrJCL-pulsed M ϕ given its capacity to enhance the IFN- γ production. Upregulation of IFN- γ -associated antitumor cytokine production open up new possibilities in clinical settings for the treatment of cancer using NecrJCL-pulsed M ϕ s combined with TQ as immunotherapeutic adjuvant in T-ALLs.

Keywords: Thymoquinone, Classically activated macrophage, Necrotic tumor cell lysate-pulsed macrophage, IFN- γ .

P115

Role of Immuno-Oncology in Treating Cancer

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Abstract

For decades scientists around the world have been studying the role of the immune system in the fight against cancer. However, it is only recently that the long-term benefits of immuno-oncological treatments have been observed in patients who previously had few therapeutic options. These treatments represent a "real breakthrough" in cancer therapy and could revolutionize the way we treat many forms of cancer. The aim of this study is to understand these new treatments, how they differ from existing treatments and what role they will play in the years to come. Immuno-oncological treatments use the body's natural immune system to fight cancer. Immuno-oncological treatments differ from existing treatments because they target the immune system of the body, not the tumor itself; they allow the immune system to selectively recognize and attack cancer cells; Give the immune system long-term memory, allowing it to adapt to cancer over time and to ensure a long-term, sustainable response to cancer. Immuno-oncological treatments should represent a significant part of anticancer therapy in the next few years, along with surgery, radiotherapy, chemotherapy and "targeted" therapies via antibodies directed against targets expressed by tumor cells (monoclonal antibodies).

Keywords: Immuno-oncology; Cancer; Treatments.

Biosciences

P116

Biochemical characterization and gene screening of bacteriocins produced by *Enterococcus* strains isolated from dried figs fermented in olive oil

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Abstract

Lactic acid bacteria can eliminate undesirable bacteria and preserve food from contamination, especially by producing bacteriocins. Our work focused on the study of the bacteriocinogenic activity of twelve lactic acid bacteria isolated from the traditional fermented dried figs with olive oil of Oran, and also on physicochemical and genetic characterization of their bacteriocins. Eight strains have inhibited the indicator strain HFM9, three of which were selected for the physicochemical characterization of their inhibitory substances. They have first been identified with API-20E test strip and then tested for their antimicrobial activities by using the double layer method as well as agar well diffusion method. The inhibitory substances have been identified through physicochemical tests and by using PCR-based screening. All strains belong to the genus *Enterococcus*. The three bacteriocins studied have shown a high tolerance to pH variation (pH2-pH12) as well as to the different chemicals (SDS, β -mercaptoethanol and EDTA), however, they have shown totally sensitivities to proteases (pepsin, trypsin, protease S and α -chymotrypsin) and to high temperatures (80°C). They are, thus, heatlabiles and belong probably to Class III of bacteriocins. Screening of enterocin genes as well as vancomycin gene by PCR from total DNA of the eight inhibitory strains indicated the absence of *entP*, *ent31*, *cyl* and *vanA* genes and the presence of the two genes *entA* and *entB* in all inhibitory strains, either as single gene

or together. Bacteriocins characterized during this study are interesting for food technology applications as potential biopreservatives. Strains can be used directly as starters of fermentation, in this case the GRAS status should be checked. Pure bacteriocins can also be used but innocuity should first be checked in order to be approved.

Keywords: *Enterococcus*; Bacteriocins; Class III; Enterocins; Vancomycin.

P117

Toxic hazard associated with vaccination

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Abstract

Vaccination is the administration of an antigenic agent (the vaccine) to stimulate the immune system of a living organism to develop adaptive immunity against an infectious agent. The active substance of a vaccine is an antigen whose pathogenicity of the carrier is attenuated in order to stimulate the body's natural defenses (the immune system). The vaccine comprises: an antigenic agent, adjuvants for increasing the amplitude and durability of the vaccine response, and additives used as stabilizers and preservatives. Among the most used adjuvants; the aluminum salts, saponin, calcium phosphate, the preservatives used are formaldehyde and thiomersal, however the vaccines can contain contaminants in this case heavy metals (cadmium, mercury, lead ...). The risks associated with aluminum are the immunoallergic effects, the macrophage myofasciitis and the neurotoxic effects (Alzheimer, ALS, Parkinson...), the mercury meanwhile gives rise to allergic effects, neurological and renal disorders. These inorganic vaccine contaminants are controlled by instrumental methods such as atomic absorption spectroscopy, and ICP coupled to a mass

detector. The work that has been developed at the National Center for Toxicology is concerned with the determination of thiomersal, mercury, and aluminum in a framework of toxicological expertise, all the results obtained are in line with the standards. Vaccination allows each year to save millions of people, however, the vaccine-related toxic risk exists. Among the risk management approaches is the substitution of aluminum adjuvants by other immunostimulatory molecules, strict control of vaccines, and alarming the immune system. toxicovigilance if a risk occurs in the population

Keywords: vaccine, adjuvants, additives, toxicity, vaccine controls.

P118

Antioxidant profile of the polyphenol extract prepared by infusion of *Juglans regia* bark

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Abstract

There is much epidemiological evidence that treatment with medicinal plant could lower the risk of certain cancers. The effect has been attributed, in part, to natural polyphenols. Besides, numerous studies have demonstrated that natural polyphenols could be used for the prevention and treatment of cancer. Potential mechanisms included antioxidant as well as the modulation of multiple molecular events involved in carcinogenesis. The current results summarized the antioxidant efficiency of major polyphenol classes extracted from *Juglans regia* 's barks. An extraction by infusion was prepared from the barks of *Juglans regia*, the extract obtained underwent an evaluation of their antioxidant activity according to three techniques: one consists in trapping the free radical DPPH, a second consists in reduction of

the Iron III present in the complex K₃Fe(CN)₆ (FRAP method) and the third technique, consists of the evaluation of the total antioxidant capacity CAT. The extract studied shows an important capacity to reduce the absorbance at 515 nm by reducing the concentration of DPPH radical in solution with an IC₅₀ at 50 µg/ml, However, the concentration effective against the reducing power was 700 µg/ml, for the total antioxidant activity was 160mg EAG g⁻¹. This important activity was attributed to the phenolic contents due to their redox properties, which allowed them to act as reducing agents. The results show an antioxidant efficacy of the polyphenol extract isolated from *Juglans regia*. It would therefore be interesting to consider as a perspective to deepen the search for optimization of the extraction processes, and a possible screening of the antitumor activity in vivo and in vitro

Keywords: *Juglans regia*; polyphenol extract; antioxidant activity; extraction by infusion.

P119

Research about the antioxidant activity of *Citrullus colocynthis* chloroformic extract

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Abstract

This study was carried out to identify and quantify the total polyphenols and flavonoids content in the chloroformic extract of *Citrullus colocynthis* fruit. In the other hand, the evaluation of its antioxidant activity using the antiradical test on DPPH and the ferric reducing power FRAP. The free radical scavenging effect of *Citrullus colocynthis* was determined according to the method described by EL Hacı et al and The reducing power of *Citrullus colocynthis* extract was assessed according to the method of Karagözler *et al.* The quantity of total polyphenols and flavonoids in the extract made by maceration was 117.27 ± 5.68 µg EGA/mg E and 42.4 ± 1.44 µg EC/mg E. The results of antioxidant power revealed a remarkable

antiradical effect on DPPH with an IC_{50} of 274.28 $\mu\text{g/ml}$ and the ferric reducing power was expressed by the value of EC_{50} of 267.96 $\mu\text{g/ml}$. The literature indicates that medicinal plants with high amounts of flavonoids and phenol have potent antioxidant activity actions. This may explain the antioxidant activity of *Citrullus colocynthis*. The results obtained during this study are promising, they inform us about the antioxidant activities of *C. colocynthis* fruits by confirming with a certain degree their traditional use. These results remain preliminary and they deserve to be thorough in order to identify and characterize the compounds responsible for these activities and to try to know their mechanisms of action for their incorporation in the care system.

Keywords: Citrullus colocynthis; polyphenols; DPPH; FRAP.

P120

Antioxidative response to lead in *Hordeum vulgare* L

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Abstract

Among heavy metals lead is considered as a major pollutant. Once absorbed by plants heavy metals can generate an oxidative stress. The aim of this work is to determine the effects of lead at different concentrations (100 mg/l, 500 mg/l and 900 mg/l) on barley *Hordeum vulgare* L. After 30 days of growth, the plants were harvested; the evaluation of oxidative stress was carried out on the roots (hydrogen peroxide H_2O_2 , proteins content, catalase and peroxidase activity). The results show that lead induced an increase in hydrogen peroxide production, proteins content and an enhancement in the activity of antioxidant enzymes (catalase and peroxidase). It has been demonstrated that H_2O_2 production play an important role in case of stress, the

increase in proteins content can be explained by the synthesis of proteins involved in intracellular sequestration of heavy metals like phytochelatin, the activation of antioxidant enzymes may be due to the increase in the concentration of their substrates such as H_2O_2 . This activation is involved in the process of detoxification. Lead induces oxidative stress at the origin of the production of H_2O_2 . Nevertheless, the plant resorted to the use of antioxidant systems and therefore, the activation of enzymes such as catalase and peroxidase, the understanding of the defense processes involved, could be at the origin of discovery of substances with ecological and pharmacological outlets in phytoremediation and phytotherapy.

Keywords: antioxidant enzymes, *Hordeum vulgare* L, lead, oxidative stress.

P121

Improvement of antivenom immunotherapy by Alum nanoparticulate adjuvant

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Abstract

Snake envenomation is a major public health problem. Many symptomatic treatments are administrated, but Immunotherapy is the only effective treatment. Immunizing was producing by animals needs strongly immunogenic formulations without being toxic to animals. Alum adjuvant is the most suited to the task due to its high-security profile and effectiveness. However, applying this adjuvant to immunize large animals requires using large quantities of venom antigens to produce sufficiently effective. Improving Alum efficiency in stimulating the production of neutralizing antibodies seems possible through the formulation of a nanoparticulate adjuvant based on the chemistry of Alum. In this study, synthesized aluminum

hydroxide nanoparticles (Nps) are characterized and tested for their capacity to induce an effective specific immune response and lower inflammation, compared to classic Alum to improve the current immunotherapy approach. Alum-Nps were synthesized and characterized by Scanning Electron Microscopy, Transmission Electron Microscopy, and Fourier Transform Infra-Red spectroscopy to compare the shape, size and chemical composition with the Alum. Two immunizing formulations were prepared using *cerastescerastes* venom conjugated to either Alum or Alum-Nps, then injected to two groups of rabbits according to an established schedule. Blood samples were used to study inflammatory cells activation status via cell count and specific enzymatic markers activity. Specific immune response was also assessed by peripheral lymphocytes count and specific antibody titers evaluation. After one month from the last immunization, was collected from rabbits were challenged with different lethal doses of venom to evaluate their effectiveness in protecting in non-immunized mice. Results showed that Alum-Nps have 50-200 nm spherical shapes with the same chemical composition of Alum, induced lower inflammation, greater effectiveness in activating lymphocytes and higher anti-venom antibody titers compared to Alum. This observation may be due to the profound infiltration of Alum-Nps to the secondary lymphatic organs. These antibody titers are the origin of the more potent passive immunoprotection of sera extracted from Nps-immunized rabbits until 1LD50 of native venom. Altogether, these results showed that reducing the size of classic Alum to nanoparticles increased its activity and security profile for a more ethical and effective anti-venom sera production.

Keywords: Snake envenomation; Aluminum hydroxide nanoparticles, Alum adjuvant, immunotherapy.

P122

Isolation and characterization of endophytic actinobacteria associated with *Artemisia* sp from Batna region

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Abstract

Cancer disease is one of the most serious human health problems in the world and actually many research studies are focused on the discovery of natural antioxidant and anticancer agents from microbial sources. The phylum *Actinobacteria* is a great source of antitumor compounds and the genus *Streptomyces* is a good source of anticancer drugs—exhibit strong antioxidant activity cytotoxicity against colon cancer cell. Actinobacterial diversity has been extensively researched in a variety of environments because of its unique biotechnological potential. However, such studies have focused mainly on soil communities and recently, endophytic plant tissue actinobacteria, have attracted the attention of researchers in recent years. Our aim is the study of biodiversity and the development and exploitation of the endophytic actinobacteria of *Artemisia* medicinal plant harvested from Arris Mountain in the Batna region. Our interest is to look into the potential antioxidant and anticancer activities of *Streptomyces* from this underexplored areas. To search for new taxa; we collected for this study 12 plants of *Artemisia* spp, of Djebel Arris (Batna-Algeria). Isolation, purification and morphological study of the isolates were performed using three specific culture media: ISP1, ISP2 and ISP3 (International Streptomyces Project). The cultures are observed after 15 days of incubation at a temperature of 28 ° C. Microscopic observations of the isolates allowed us to select colonies with an appearance similar to actinobacteria (presence of filaments and spores). Forty-six (46) actinomycetes were selected and cultured on ISP1 and ISP3 specific media and categorization was performed according to colony color, pigment production and diffusion, and presence of inclusions. The results of the culturing of isolates on ISP1 and

ISP3 allowed us to classify them in 8 different groups according to the color of aerial mycelium. We note that the gray series represents the major group, which is followed by the white series generally it is the group of *Streptomyces* that have the most these two colors. The abundance of gray series in the actinobacteria collection has been reported in several studies. These tests allowed us to group the majority of isolates among the genus *Streptomyces*. We can deduce from these preliminary analyzes that the genus *Streptomyces* is very present in association with the medicinal plants of the Arris region ecosystem.

Keywords: Arris mountain; endophytic actinobacteria ; *Streptomyces*.

P123

Phenolic extract, study of antimicrobial and antioxidant activities of *Coffea arabica* green seeds

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Abstract

Natural plant substances have multiple interests in biotechnology and in different industries. Coffee is considered the second foodstuff in the world. Several studies have shown that coffee has beneficial biological properties for humans. In this work, we investigated the antimicrobial and antioxidant activity of the phenolic extract of *Coffea arabica*. The antimicrobial activity tests were performed using the agar disk diffusion method and the MIC determination against 14 bacterial strains (Gram-positive and Gram-negative) and three reference *Candida albicans* yeasts. The evaluation of the antioxidant activity of this extract was carried out by the DPPH free radical scavenging method. The results of the antimicrobial tests showed that the phenolic extract has the best antibacterial activity against Gram-positive bacteria with diameters of the zones of inhibition

of between 10 and 14 mm, and a strong antifungal activity against yeast *Candida albicans* ATCC 10231 with inhibition zones ranging from 19 to 24 mm. MICs were 100 µg / mL for all bacteria and 10 mg / mL for yeasts. The evaluation of the antiradical activity showed that the phenolic extract has an IC₅₀ of DPPH interesting of the order of 0.182 mg / mL. The results confirm that *Coffea arabica* coffee beans have potent antimicrobial and antioxidant activity due to their high secondary metabolites.

Keywords: *Coffea arabica*, phenolic extract, antibacterial activity, antifungal activity and antioxidant activity.

P124

Antistaphylococcal compound produced by thermophilic *Bacillus licheniformis* LMB3704 isolated from the hot spring Dbagh in Algeria

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Abstract

The rapid emergence of multi drug -resistant microorganisms poses a major threat for human health. The aim of this study was to determine the potency of crude extract produced by thermophilic bacterium LMB3704 isolated from the thermophilic environment, Dbagh hot spring in Algeria against two MDR human pathogens. The first objective was to combine cultural approaches (Gram reaction, API 20E, enzymes production and physiological characterization) with molecular methods (sequencing of 16S rRNA) in order to specify the taxonomic rank and discriminate isolate up to subspecies. The second objective was to highlight the antimicrobial potential and determine the chemical composition of extract. Supernatants from isolate LMB3704 were extracted with ethyl acetate. The antimicrobial activity was tested by the Radial Diffusion Assay (RDA) technique against two

MDR bacteria: *Pseudomonas aeruginosa* (NR_0754828.1) and *Staphylococcus aureus* (NR_075000.1). Gas Chromatography–Mass Spectrometry (GC–MS) was used to determine the composition of extract. Partial phylogenetic analysis of the amplified 16S rDNA gene (number of base pairs) showed that the isolate named LMB3704 was attributed to *Bacillus licheniformis* with a similarity 99.64% according to the EZBiocloud database. The sequence was deposited in GenBank data base under number MK027022. On the basis of cultural approaches, significant differences were observed compared with *Bacillus licheniformis* ATCC 14580. The isolate exhibited extracellular amylase, protease, lipase, nitrate-reductase and cellulase activities at 55°C. The ethyl acetate extract of *Bacillus licheniformis* LMB3704 showed high biological activity just against *Staphylococcus aureus* (NR_075000.1), multidrug-resistant using Radial Diffusion Assay (RDA). Characterization of the antibacterial compounds produced by LMB3704 strain using Gas Chromatography–Mass Spectrometry (GC–MS) analyses showed the presence of 1-Fluorododecane at 48.166%. According to our biological studies, we showed in this work that this compound was produced at 55°C and possess specific antibacterial activity against *Staphylococcus aureus* (NR_075000.1). Dbagh hot springs are poorly understood and are a source of biotechnological potential of *Bacillus* genus. These results also indicate the importance of therapeutic and industrial value on an unprecedented scale from hot spring. To the best of our knowledge, this is the first report showing production of bioactive molecules as extremolytes compounds biosynthesized at 55°C by thermophilic *Bacillus*.

Keywords: Thermophilic *Bacillus licheniformis*; hot spring; Antistaphylococcic compound; GC–MS.

P125

Contribution to the assessment of metallic pollution of the quality of marine waters by the use of two bioindicators sole *Solea solea* (Linnaeus, 1758) and pageot acne (Pagellusacarné (Risso, 1827) sins in the littoral oranais

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Abstract

The introduction by humans, directly or indirectly, of substances or energy in the marine environment causing adverse effects such as nuisance against biological resources, risks to human health, obstacles to maritime activities, an alteration of the quality of seawater. The present study consists in evaluating the quality of the Oran littoral using a biological approach based on the estimation of the contents and the bioavailability of two metallic trace elements copper and lead in two species of teleost fishes: the Soleasolea (Linnaeus, 1758) and Pagellusacarne (Risso, 1827) sins in the bay of Oran. Sampling was carried out over a six-month period from October 2018 to March 2019 on 90 individuals. The analysis of metals focused on the entire population, two organs were removed, muscle and liver. The determination of the metals was carried out by flame atomic absorption spectrophotometry (S.A.A). The comparative analysis of the average lead and cupric concentrations in muscle and liver tissue shows that the importance of metal accumulation is in descending order of the following: liver> muscle in the two species caught in the Bay of Oran. Several studies have shown that trace metal metals accumulate mainly in organs with a large metabolism as the case of the liver. Our results indicate that there is a trend of increasing average levels of both pollutants in spring compared to winter. Our results also coincide with those found in several species caught in the

western Algerian coast. From the comparative study of our two species, it is generally apparent that sole tends to average high accumulation of heavy metals compared to the page, this can be explained by its position in the food chain and its mode of benthic life. The major reservoir of pollutants in the marine environment is sediment. Our study showed that the Sole has an average accumulation of heavy metals (Cu, Pb) generally higher than that of the pageot mite, which can be explained by the position of Soleasolea in the food chain and its way of life benthic. In perspective, it is interesting to develop in the future more in-depth research to better assess the current level of pollution and its impact on the coastal environment, by identifying mechanisms of detoxification by certain proteins.

Keywords: *Solea solea*, *Pagellusacarne*, metallic pollution, Oran bay.

P126

Association between the C677T polymorphism of MTHFR, blood folate and vitamin B12 deficiency, and elevated serum total homocysteine in young patients with myocardial infarction in Aures region (Algeria)

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Abstract

Homocysteine (Hcy) is one of the biochemical markers of cardiovascular disease, many studies have already demonstrated a link between Hcy and cardiovascular disease (Vesin et al., 2007). The 5,10-Methylenetetrahydrofolate reductase (MTHFR) is one of the main regulatory enzymes of homocysteine metabolism (Frosst et al., 1995; Klerk et al., 2002). The hyperhomocysteinemia (Hhcy) is common, and may be caused by genetic disorders, nutritional or therapeutic. Moderate

Hhcy is observed in fasting state either because of the mutation of the gene encoding MTHFR, or because of an alteration of vitamin B₉ or B₁₂ status (Guilland et al., 2002). The aim of this study was to evaluate a possible association between hyperhomocysteinemia and the different genotypes of the polymorphism C677T of MTHFR gene, based on clinical and biochemical data, in pathological population, residing in Aures region (Northeast Algeria). The present study included 14 young patients (under 40 years), all patients were in the chronic phase of myocardial infarction (MI). Different biological methods were used to evaluate the biochemical and genetic status of our study population. The Competitive immunoassay was used for the determination of vitamins (B₉ et B₁₂). The identification of C677T polymorphism was determined by using the Real-Time Polymerase Chain Reaction - Fluorescence Resonance Energy Transfer (Real-Time PCR -FRET) technic; it was carried out with a Light Cycler ® 480 II Instrument. Our results show no significant association of moderate Hhcy with different genotypes of C677T polymorphism (P=0,117). However, a decrease in folate and B₁₂ was recorded with moderate Hhcy for (TT) genotype but remains non significant (P=0,901, P=0,304 respectively). This could indicate the deleterious effect of the muted genotype on the concentrations of tHcy, B₁₂, and B₉ in patients. Our results are in agreement with those of Tanis and his collaborators (2004), who have shown that genotype (TT) is associated with an increased risk of MI, only when the folic acid status is low. A study recently conducted by Liu et al., (2015) including patients with coronary artery disease, from different categories, revealed that Hhcy was independently associated with the severity of coronary artery disease and significantly correlated with low levels of folic acid. In the C677T mutation of the MTHFR gene, the MTHFR enzyme becomes thermolabile and MTHFR activity decreases by 65% and 30% respectively in homozygotes mutant (TT) and heterozygous (CT) (Frosst et al., 1995). In conclusion, our study supports the hypothesis that polymorphism C677T MTHFR can be a risk factor for MI in the presence of moderate Hhcy. We therefore suggest a strategy for the biological exploration of Hhcy to allow the assessment of a moderate or intermediate Hhcy as quickly as possible, in order to inform the general public in our region (Aures) and country about the risks of

the disease. Furthermore, genetic investigation of various MI markers would be helpful to treat and predict the risks of this pathology.

Keywords: Algeria; Aures; genetic polymorphism; Hyperhomocysteinemia; MTHFR C 677T; Myocardial infarction; RT-PCR.

P127

A Computational Tool for Calculation of Absorbed Dose to Patients Following Bone Scan with ^{99m}Tc-Marked Diphosphonates

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Abstract

A computational toolkit called (IntDos) has been developed to calculate absorbed dose in nuclear medicine technology based on the MIRD Pamphlet, using previous work based of International Commission on Radiological Protection (ICRP) established a committee on permission internal exposure. Where the most radionuclides used in therapy or in imaging can enter human body, cause damage effect and lead to health risk. on the other hand, radionuclides can cure cancers by irradiating the tissues. In this work, The toolkit includes a Matlab (The Mathworks, Natick MA) is used to calculate the radiation doses delivered to the organs during the nuclear medicine exam. A biokinetic models and the dosimetric formula generalized by ICRP and Committee on Medical Internal Radiation Dose (MIRD) are used. At last, a several calculation of nuclear medicine imaging case is presented and internal absorbed dose obtained were discussed in detail.

Keywords: Monte Carlo, Dosimetry, radiation, ICRP

P128

Natural products to prevent oxidative stress and cancer: dose-manner response effect in human leukemia cells (HL60) and cervical cancer cells (HeLa)

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Abstract

Cancer is a leading cause of morbidity and mortality worldwide. Chemotherapeutic drugs kill rapidly proliferating cancer cells, but these drugs also damage normal cells and result in a high incidence of complications. Overproduction of free radicals and reactive oxygen species lead to various cancers and degenerative diseases caused by oxidative stress. Phytochemicals are considered suitable candidates for anticancer drug development due to their pleiotropic actions on target events with multiple manners. The aim of this study is to display the antioxidant and the anticancer properties by natural products from endemic plant of the Algerian Sahara against human cancer cell lines and its growth inhibition was followed through dose-manner. The anticancer of NPs towards cancer cells was evaluated by MTT assay in dose and dose-time manners against cervical cancer cells (HeLa) and human leukemia cell (HL60), comparing to the paclitaxel (Taxol), as positive standard. Whereas oxidative stress inhibitory assays were measured by spectrophotometry methods scavenging radical (DPPH, Superoxide scavenger assays) and acting as reducing and chelating agents assays. The NPs exhibited a marker anticancer effects on cancer cells in a dose- (1 to 100 μ M) and time-dependent manner on decreasing the growth rate of cancer cells, and had little inhibition to normal keratinocyte (No cytotoxicity inhibitory activity on normal cells by live dead method has been reported after 72 hrs of exposure). In addition, the NPs had a significant effects NPs as antioxidative agents

were exhibited an important role in the prevention of the damaging effects of free radicals by their neutralization through donation of hydrogen to manage the oxidative stress and diminish its damages in cell health process as well as cancer. Experimentally, a number of phytochemicals have been shown to attenuate angiogenesis, migration, adhesion, invasion, and metastasis and/or to promote apoptosis and autophagy of cancer cell lines. Phytochemicals belong to different chemical categories including polyphenols such as cyanidin-3-glucoside, epigallocatechingallate derivatives, quercetin, myricetin, rutin, the isoflavonebarbigerone. Based on results derived from this study, we conclude that NPs had a potential anticancer effects in low time of exposure in HL-60 and HeLa cancer cell lines. The observed pro-cell death activities of NPs coupled with its low toxicity towards normal cells indicate that this natural product could be used as a future anticancer modality. Beside, we can consider NPs as a potential agent's with dual action in the development of new drugs to protecting cells from oxidative stress and cancer complications. Therefore, further analysis to determine the exact mechanism of action and *in vivo* studies on animal models are warranted.

Keywords: Oxidative stress; Cancer; Cytotoxicity; Natural product.

P129

Ethnobotanic Study Of Aloe vera In Western Algeria

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Abstract

For a very long time, traditional medicine has been risky to be neglected or to disappear little by little, that may be due to the intervention and evolution of modern medicine. In this study, we describe the medicinal plants *Aloe vera* that have been reported to be antitumor agents and that have been used in ethnobotanic research in Algeria. Ethnobotanical data were collected

during the years 2017-2019; using 189 structured interviews, field observations, preference and direct matrix ranking with traditional medicine practitioners of *Aloe vera* in western Algeria. The results obtained in this study also showed that 94.4% of aloe gel was the most used part. The recipes are mainly prepared from fresh plants and fresh gel. In addition, among all the diseases treated: skin diseases and skin problems are the most common and gastric and digestive problems 53%. Cancer prevention, and in the first stage 34%, use after chemotherapy to protect the skin to side effects 9%. According to MILAN 2011. Tumors from patients who received *Aloe vera* were more quickly reduce. *Aloe vera* used for cancer and tumor prevention or treatment; 69.05% of these were cited as being used for the treatment of tumors and cancer in general and 30.95% for specific tumors or cancers. The vulnerability of *Aloe vera* plants to over exploitation and extinction needs to be dealt with seriously. Our results can be considered as a source of information for scientific research in the field of phytochemistry and anti-cancer pharmacology.

Keywords: Aloe vera, Ethnobotany, Traditional medicine, West Algeria.

P130

Oxidative stress and nutritional profile in an affected population of colorectal cancer in region of Tlemcen

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Abstract

Colorectal cancer (CRC) is the second largest in terms of incidence and mortality in Algeria. The objective of this work is the study of risk factors for CRC in a population at western Algeria. A case-control study was conducted among 70 people, including 30 patients and 40 controls, to determine some parameters of oxidant / antioxidant status in CRC cases. Markers of oxidative stress (Malonaldehyde (MDA), the protein carbonyl (PC) and markers of antioxidant

enzymes (catalase, glutathione (GSH) were investigated in cancer patients and controls. Our results show that Malonaldehyde and carbonylated proteins are higher in cancer patients than in controls with 42.85% and 80% respectively, a deficit of GSH (83.3%) and catalase (79.31%). Scientific studies highlight the interaction between markers of oxidative status, lifestyle and genetic predisposition to colorectal cancer. In conclusion, this study suggests that the CRC is associated with elevated oxidative stress lifestyle and genetic predispositions are identified as risk factors for CRC.

Keywords: Colorectal cancer; Oxidative stress; The Malonaldehydes; The Protein carbonyl.

P131

Mass spectrometry imaging an innovative tool in anticancer drug discovery

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Abstract

Mass spectrometry imaging (MSI) is a powerful tool for bioanalysis at many stages of the anticancer drug discovery process including pharmacological target screening and evaluating the distribution of drug and drug metabolites in cells and tissues. This technique has both qualitative and quantitative uses. A variety of techniques can be used to detect and visualize the spatial distributions of biomolecules directly from biological tissues. In this mini review we aimed to highlight the MSI principles with examples of their application in anticancer drug discovery. A review was carried out by searching PubMed® /Medline® databases of mass spectrometry imaging (MSI) in anticancer drug discovery, for the last ten years. Search terms included mass spectrometry imaging (MSI),

anticancer drug. Among the results of this review it was found a growing number of studies (all types of articles), it clearly indicate that mass spectrometry imaging (MSI) is a valuable method for direct structural analysis of molecules, it allows to quickly identify or/ and optimize a drug candidate, pharmacological target screening and quantification. It was found that the most publications discussed the use of MALDI-MSI; it allows identifying specific drug/target protein interactions in tissue sections carrying typical regions of diseased cells. Other types of instruments, such as secondary ion mass spectrometer (SIMS) and desorption electrospray ionization (DESI) mass spectrometer, can be employed within MS imaging (MSI). These techniques provide also invaluable information relating to treatment efficacy. In fact, latest major developments of new methodologies and applications touching all aspects of MSI in this field across multiple research centers are considered as a source of promising method in the drug discovery as well as the drug development process within the pharmaceutical industry. Available evidence shows the important opportunities for understanding about the mode of action of drug activity in cancer disease. Recently, the significant technological improvements of the performance of MSI are contributing in the adaptation of this technique more and more in anticancer drug discovery.

Keywords: Cancer; Discovery; Drug; Mass Spectrometry Imaging.

P132

Does Argan Oil affect Nitroso compounds formation?

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Abstract

Recent epidemiologic, experimental, and mechanistic evidence suggest that dietary heme

iron has a central role in the promotion of colorectal cancer by promoting the formation of N-nitroso compounds. However, diet rich in fruits and vegetables may reduce the risk of colorectal cancer. Argan oil is among many natural products with several health benefits and wide range compounds that are very beneficial. This oil takes origin from argan tree, endemic to Morocco and Algeria. The aim of this study is to assess the effect of argan oil extracts on the modulation of the in vitro formation of ATNC (Apparent Total Nitroso Compounds), potent agents in the etiology of colorectal cancer. In vitro incubations in simulated gastric juice were conducted to assess the effect of polyphenols from argan oil on ATNC formation. Different concentrations of argan oil extracts were incubated with bovine serum albumin, HCL 1M and 1.56 μM of NaNO_2 at 37°C. Samples were collected and analyzed by chemical denitrosation with chemiluminescence detection for different types of nitroso compound 975. The preliminary results of this study show that argan oil has no relevant protective effect on the in vitro modulation of ATNC compounds formation, nitrosothiol and nitrosyl haem products. Although this findings suggest no evidence of argan oil effect, this remains beneficial oil for human health and the great source of healthy dietary fat.

Keywords: Nitroso Compounds; ATNC; Argan Oil; Simulated Gastric Juice; Cancer Colorectal.

P133

Screening of lipases, amylases, cellulases and proteases from thermophilic *Pseudomonas* and *Bacillus* strains

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Abstract

Thermophilic enzymes have several advantages over mesophilic enzymes, in particular because of their greater resistance to thermal and chemical denaturation. Demand for thermozyms for biotechnology applications is growing rapidly. Lipases, esterases, amylases,

cellulases and proteases are the most sought after thermophilic enzymes in various industrial sectors. In this perspective, this study aims to highlight the enzymatic potential of strains isolated from thermal springs of Saida (Hamam Sidi Aissa) and Mascara (Hamam Bouhanifia). From the samples of thermal waters, samples were stroke on different agar plates (M9, Mossel, nutrient agar and TSA) and incubated (24h at 45°C). The isolates obtained were screened for cellulolytic, proteolytic (gelatinase and caseinase), amylolytic and lipolytic activities. Following this selection, the best isolates (HMZ, H2, H1) were selected identification (phenotypically), through the macro-morphological and micro-morphological characteristics (Gram stain, spore observation) and biochemistry (indole, catalase, cytochrome oxidase, urease and fermentation of sugars - glucose, lactose, sucrose, mannitol, Simmons citrate and the study of mixed acid fermentation pathways). The three isolates were tested for their ability to grow at different pH and temperature (60, 70 and 80 ° C). At the end of the isolation, 20 strains were obtained (with different macromorphological characteristics). The best isolates showed good potential in terms of enzymatic activities. The strains grow well at pH 10 and pH 7, but were unable to grow at pH 4, as well as above 70 ° C. By means of a heuristic identification by the ABIS online program, the interpretation of the phenotypic profiles allowed to assign the strain HMZ to the species *Bacillus licheniformis* with a similarity score of 81.4%, the strain H2 to the species *Pseudomonas alcaligenes* with a score of similarity of 84.2% and finally the strain H1 to the species *Bacillus tequilensis*, the latter with a similarity score of 84.3%. According to their properties (optimal pH, optimal temperature, thermostability, specificity), these enzymes could be the object of a complete analysis, including the optimization of their production and purification.

Keywords: Protease, Amylase, Lipase, Cellulase, Thermophilic bacteria, *Bacillus*, *Pseudomonas*

P134**Effect of solvents on antibacterial activity of Tirmanianivea (Desf.) Trappe from Algeria****Samir Neggaz**^{1*}, Mohammed Reda Missoum¹, Zohra Fortas¹, Nadia Kambouche² and Mohammed Chenni³¹Laboratoire de Biologie des Microorganismes et de Biotechnologie (LBMB), Department of Biotechnology, University Oran1 Ahmed Ben Bella, Oran, Algeria;²Laboratoire de synthèse organique appliquée (LSOA), Department of Chemistry, University Oran1 Ahmed Ben Bella, Oran, Algeria;³Laboratoire de Chimie Fine (LCF), Department of Chemistry, University Oran1 Ahmed Ben Bella, Oran, Algeria.*samir_neggaz@yahoo.fr, +213 550 312 007**Abstract**

The aim of this study is to evaluate the influence of different extraction solvent on antibacterial activity of desert truffle *Tirmanianivea*(Desf.) Trappe from Algeria and to determine the best solvent that can be used to obtain higher antibacterial performance. To perform the extraction of bioactive compound, Soxhlet apparatus was used with four solvents like dichloromethane, chloroform, ethyl acetate and methanol. The diameter of growth inhibition was measured and statistically evaluated using one-way ANOVA to determine the extract with the greatest antibacterial activity. We investigated the *in Vitro* antibacterial activity against two Gram positive bacteria (*Staphylococcus aureus* ATCC 6538 and *Enterococcus faecalis* ATCC 2035) and two Gram negative (*Escherichia coli* ATCC 25922 and *Salmonella enterica*). The statistical analysis showed that the type of solvent had an effect on diameters inhibition ($F= 5.39$; $df = 3$; $p= 0.0024$). The results revealed that the ethyl acetate extract of *T. nivea* and is very significantly higher ($p < 0.001$) than dichloromethane and chloroform extracts, however the methanolic extract has a very weak effect. Likewise, *Staphylococcus aureus* ATCC 6538 is the most sensitive to different extracts, meanwhile, *Salmonella enterica* is the most resistant.

Keywords: Desert truffle, Antibacterial activity, Soxhlet extraction, Solvents, One-way ANOVA.

P135**Use of FISH sperm technique for the study of aneuploidies in men with abnormal sperm parameters****O. Liamani**^{*1}, L.H. Labga¹, S. Moulessehou¹, I. Benzeguir².¹ Department of Biology, university Djillali Liabes, Sidi Bel Abbas, Algeria.² Laboratory of analyses of medical biology
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Today, in industrial countries, about 15 % of the couples are confronted to problems of infertility, in 1/3 of cases, the etiology is masculine. The production of gametes chromosomal destabilized existent of meiotic particular segregation in every anomaly can explain the infertility of these men, partly. The exploration of masculine infertility remains first of all based on the classical analysis of the parameters of semen. However, other techniques aiming at assessing the chromosome equipment, come today to supplement it. Our job consists in being studying, by technology FISH (Fluorescent in situ Hybridization) for chromosomes 13, 18, 21, X and Y, analysis of the rate of aneuploidies of the gametes of 12 infertile men who were subjected to a spermatoc exam. The analysis of the rate of aneuploidies in spermatozoons shows a medium rate of 11.78 % and which is significantly more well brought up in comparison with the group witness. In conclusion, FISH can be considered to be an additional test for the exploration of masculine infertility besides the spermatoc analysis, playing so a role mattering during diagnosis and treatment appropriated by infertility. As the injection intracytoplasmic by spermatozoons (ICSI) for the patients attained by OAT, is often used, it is important to inform the patients if they could have a risk augmented by aneuploidies to embryos.

Keywords: Oligoasthenoteratozoospermia, aneuploidies, FISH, infertility.

P136**Halophilic microalgae *Dunaliella*: biological resource of beta carotene for pharmacology****Khaled Touati**^{1*}, Fatma Belhoucine¹, Amel Alioua Berrebah¹, Ali Tabeche¹.¹*Department of living and the environment, Faculty SNV, University of Science and Technology of Oran Mohamed Boudiaf, 31000, Oran, Algeria.**k_touati2003@yahoo.fr**Abstract**

Known for more than a century, microalgae have never been more interesting than in the last decade and are constantly attracting attention in all fields, particularly the field of green biotechnology, which is supported by the immense possibilities offered by these autotrophic organisms for different field from pharmacology, bio-fuels to aquaculture. The biodiversity of these organisms is such important that we can find them in all the component of the biosphere. More important that in our country, with the diversity of climatic area, the potential is immense. In our work, we are particularly interested in halophilic species and local varieties including the species *Dunaliella* which in addition to being valuable, its extremophile character in terms of tolerance to high salinity and temperatures makes their exploitation uncompetitive in water resources with other activities, particularly the agricultural sector. The potential of these microalgae in beta carotene as one of the most important natural resource in the world, and the estimation of this potential, for our local varieties, is highlighted for its future exploitation in the sector of biotechnology, phytotherapy and alternative medicine. Algal samples were collected from slatterns in west Algeria in Relizane province, and grown with salinity corresponding to the collection site with Jonson medium. Chlorophyll was determined by heating and extracting with acetone, using an absorbance coefficient. Total carotenoids were determined spectrophotometrically. The halotolerant Chlorophyta *Dunaliella* is well known due to its ability to produce large quantities of b carotene under different conditions of stress. In fact many conditions that affect microalgae growth negatively seem to induce carotenoid biosynthesis. The production of carotenoids occurs when microalgae cells

grown in full nutrient culture media are incubated under specific conditions that limit cell growth including nutrient imbalance, illumination of high intensity and high concentration of salt. Our results show that the obtained concentrations of carotenoids produced by *Dunaliella* cells in nitrogen deficient culture medium are according with data reported in literature for *Dunaliella* producing carotenoids under same conditions. Light of high intensity and nitrogen starvation significantly increased total carotenoids content in *Dunaliella*, but such accumulation of carotenoids can be also induced by S-starvation and, to less extend (50%), by P-starvation. The studied microalgae present a good potential for beta-carotenoid production and can be considered as a potential novel source of bioactive molecules, including a wide range of different carotenoids as the same as several carotenoids from marine microalgae have been associated with beneficial health effects.

Keywords: beta carotene; biotechnology; microalgae; recovery.

P136**Impact of cultivation conditions and media content on *Nannochloropsis* gradation composition****Asfouri Nadia Yasmine**^{*}, Baba Hamed Mohammed Bey, Abi-Ayad Sidi-Mohammed El-Amine, Lamara Sid-Ahmed Chawki.*Aquaculture and Bioremediation Laboratory (AQUABIOR), Algeria, Department of Biotechnology University of Oran1 Ahmed Benbella, Oran, Algeria.**asfouri.n@gmail.com**Abstract**

Microalgae based biofuels are getting attention due to energy crisis and environmental protection. There is potential to increase yields by manipulating environmental factors, which cause stress for microalgae. Sources of stress include manipulating environmental conditions such as salinity, pH, temperature, and nutrients. In the present study, we observe how various nitrogen treatments can impact the growth, lipid

and pigments accumulation on *Nannochloropsisgaditana*. Growth experiments were done at f/2 medium, with an alternative source of nitrogen, we had a total of five nitrogen treatments (NH₄Cl, NH₄OH, NaNO₃, CH₄N₂O and a mixture of all these sources). Each treatment consisted of this same concentration of nitrogen. The Most microalgae are able to utilize various forms of nitrogen, including nitrate, nitrite, ammonium and organic nitrogen sources such as urea, each nitrogen source is first reduced to the ammonium form and assimilated into amino acids through a variety of pathways. Typically, ammonium was known to be preferred by many microalgae.

Significant differences in growth and cellular components of microalgal cells have been observed depending on how the alga will act in response to variations in culture conditions, depending on the source of nitrogen, biochemical composition can also be changed.

Keywords: Lipid accumulation; *Nannochloropsisgaditana*; Nitrogen source; Pigment accumulation.

P137

Ethnobotanic and floristic study of medicinal plants used in the region of Oran, Algeria

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Abstract

Medicinal plants are since antiquity used to relieve and cure the human diseases. In fact, their therapeutic properties are due to the presence of hundreds even thousands of natural compounds bioactive called secondary metabolite. In Oran the second most important city of Algeria the appeal to the herbalist to cure diseases which resist to the conventional medicine became recurring in Oran, an ethnobotanical study was made in order to gather general information about the therapeutic uses practiced in the

region of Oran. To improve knowledge on the use of medicinal plants an ethnobotanical survey in the city of Oran was conducted during the period of 4 months (February to may 2018) in collaboration with the inhabitants of the city using a questionnaire. All investigations based on the questionnaire allowed as to gather information about research area (district, village), details about informants (name, age, sex, educational level), scientific name of plant, local name of plant, part of the plant used, usage purpose of the plant, dosage, how to use it (decoction, infusion, etc), usage period of the plant, side effects of the plant. We interviewed 500 people of different ages, gender and intellectual levels. Who informed us about the most medicinal plants used in the city of Oran. The survey allowed us to identify 62 species belonging to 30 botanical families. The family of *Lamiaceae* is the most dominant followed by *Apiaceae*. In addition, the leaves are the most used part (38%). Furthermore, the infusion was the major mode of preparation (66%). In terms of diseases treated, digestive disorders rank first (50%), followed by respiratory diseases (28%). The results obtained will be a very valuable source of information for the region studied. They could be a database for further research in the fields of pharmacology and for the purpose of evaluating the therapeutic efficacy of medicinal plants.

Keywords: Ethnobotanical study; Medicinal plants; Oran: Traditional medicine.

P138

The research of human Papillomavirus at the level of genital cancers by PCR and Amplicor test

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Abstract

Cervical cancer cases are generally consequent upon the infection by human papillomavirus (HPV), and a variable proportion of some tricky cervical tumors, including vulvar and vaginal

cancers. The contributions of this project are twofold, firstable, to realise a retrospective study for epidemiological profile of genital cancers, histologically proved during a five (05) years period (2012/2016) in Tlemcen. The second part sets out the detection of HPV DNA starting by genital cancers biopsies through classical PCR and Amplicor test. Overall, in the five (05) latest years, 476 cases of genital cancers have been registered reaching with that a peak of 30% in 2014, head lighted by 233 cases (48,94%) cervix cancer. The detection of HPV comes by the genital biopsy samples, where 70,7% of them have been revealed positive. The HPV frequency was at 100% (25/25) in the cervix cancer with an average age of 45 years (29-80); 40% (2/5) related to vaginal cancers with an average age of 55 years (35-75), 17% (1/6) concern vulvar cancers with an average age of 47 years (30-80). The cervix cancer is essentially targeted by the strategies of prevention, where screening program and vaccination against HPV offer an optimism through which genital cancers can be avoided.

Keywords: Amplicor; genital cancer; HPV; PCR.

P139

Contribution to the assessment of the level of contamination of the water quality of the Oran coast by hydrocarbons and methodological developments for the extraction and analysis of hydrocarbons

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Abstract

Marine pollution is a topical issue. It poses a risk to human health, by consumption of fishing product. Hydrocarbons are considered as priority contaminants of both terrestrial and marine ecosystems because of their mutagenic and carcinogenic activity. These compounds have the

particularity of being present at very low levels in the dissolved phase in view of their hydrophobicity and / or their volatility. The analysis of volatile organic substances in water requires a particular methodology. Our work is focused on the development of SPME / GC / MS (Solid Phase Micro-Extraction with Gas Chromatography and Mass Spectrometry), which consists mainly of determining whether hydrocarbons are present in the seawater of the Oran littoral. It notably allows a fast, efficient and low-cost analysis of dissolved hydrocarbons in different aqueous samples. Sampling of seawater from Oran bay is spread over a period of 11 months from October 2018 to July 2019. The method used is the SPME / GC / MS. the screening carried out by Gas Chromatography with mass detector GC / MS in seawater of the Oran region has revealed the presence of organic chemicals: n-C10, Decane ; n-C16, Hexadecane ; n-C12, Dodecane ; n-C14, tetradecane ; n-C18, Octadecane ; n-C20, Eicosane ; n-C22, Docosane, n-C24, tetracosane ; n-C26, Hexacosane and n-C28, Octacosane. These found molecules are part of the composition of GAZOLE which it is classified as carcinogens by the World Health Organization, associated with lung and bladder cancer. Following our present study, we observed that the contamination of the water of the Oran littoral is varied according to the meteorological conditions. Generally, low during the winter period and high during the summer period. The results obtained show that the waters of the Oran littoral are contaminated by the hydrocarbons.

Keywords: GC / MS; hydrocarbons; Oran littoral; SPME.

P140

Study of seminal oxidative status and sperm DNA fragmentation in men with idiopathic infertility

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Abstract

Oxidative stress (OS) in the male reproductive tract is now a major concern due to the potential mischievous effects of high levels of reactive oxygen species (ROS) on sperm quality and function including damage to sperm nuclear DNA. The aim of our work is to establish an association between seminal oxidative status, DNA fragmentation, and semen parameters, and to search for their possible impact on the risk for idiopathic male infertility. We conducted a study on 168 infertile men and 131 fertile controls from the city of Batna. Standard semen parameters, DNA fragmentation, seminal activities of SOD, CAT, and MDA concentration were evaluated for each participant. Our results show that Seminal activities of SOD and CAT were significantly decreased ($P < 0.001$) in cases compared to controls, they were also attenuated in the majority of infertile men subgroups. We noted that the seminal MDA in the cases was higher than controls (1.795 ± 0.607 nmol/mL vs 1.620 ± 0.533 nmol/mL, $P = 0.007$). Positive correlations between enzymatic activities, sperm parameters, and DNA fragmentation were detected ($P \leq 0.05$), MDA was exclusively correlated with sperm DNA fragmentation. Our findings are in agreement with many literature data, which indicated that CAT and SOD provide the most effective antioxidant protection against the effects of lipid peroxidation. Our results can prove the importance of seminal oxidative status and DNA fragmentation evaluation as useful tools for the diagnostics and the management of idiopathic male infertility.

Keywords: SOD; CAT; MDA; idiopathic male infertility; DNA fragmentation.

P141

Role of *Artemisia arborescens* on Aluminium induced hepatic and renal dysfunctions in rats

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Abstract

Aluminum is an omnipresent metal in the environment and in our everyday use. In addition it is determined that it causes deleterious effects in the body; the use of plant extracts to correct and restore these effects is a simple process without toxic effect to the organism. The present study was designed to investigate the adverse effects of sub-chronic exposure to aluminium chloride on body weight and some biochemical parameters and lipid peroxydation in female rats and to performed the effect of the aqueous extract of *Artemisia arborescens* to reduce and correcte the alterations caused by aluminium. Female rats weighing between 110 and 140 g of Wistar strain received intraperitoneal (IP) injections of aluminum chloride at a dose of 20 mg / kg. bw twice a week for 6 weeks. 48 rats are divided into 4 groups: group of control rats (T) (non-intoxicated and untreated): received distilled water as drinking water, intoxicated group (Al): receiving aluminum chloride (AlCl₃) administered by intraperitoneal route (IP) at a dose of 20 mg/kg.bw and with two injections per week, the group treated intoxicated (AL+EA): simultaneously received aluminum chloride (AlCl₃) intraperitoneally (IP), at dose of 20 mg / kg. bw and the aqueous extract of the plant *Artemisia arborescens* orally at dose of 200 mg / l and the group of plant-treated rats (EA) received only the aqueous extract of the plant *Artemisia arborescens* at a dose of 200 mg / l orally. The exploration of renal and hepatic function revealed an increase in the level of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and lactate dehydrogenase (LDH) in serum as well as thiobarbituric acid-reactive substances (TBARS) in liver, while, creatinine, urea and uric acid in urine were decreased. In contrast, we observed that the administration of the aqueous extract of

Artemisia arborescens rats intoxicated with AlCl₃ improved significantly all parameters. We concluded that the aqueous extract of the plant *Artemisia arborescens* can play a protective role against the harmful effects of AlCl₃ toxicity in wistar rat.

Keywords: Aluminum, *Artemisia arborescens*, hepatic and renal function, lipid peroxidation.

P142

Current status of the use of local medicinal plants by breast cancer patients in Northwest Algeria

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Abstract

The use of alternative medicines is common among cancer patients in developing countries. Recent studies validated the usefulness of medicinal plants as alternative treatments or to manage chemotherapy-related side effects. Recently, we identified some medicinal species used by Algerian breast cancer patients. Indeed, different bioactive molecules from plants were found to possess important anticancer activities in both *in vitro* and *in vivo*. The present study aims to identify the medicinal species used by Algerian cancer patients, and investigates the benefits as estimated by patients. A survey of medicinal plants for the treatment of breast cancer was carried out in northwest Algeria (Sidi Bel-Abbès). Information on the plants' names, parts used and methods of preparation was collected through a questionnaire among 113 breast cancer patients. Our results showed that 52% of breast cancer patients used medicinal plants. Of them, 4% used commercial preparations whereas 61% prepared the medicinal plants by different methods (decoction, maceration, raw...). Moreover, we identified all the species currently used by the patients. The highly cited species were *Ephedra alata*, *Curcuma longa*, and *Atriplex halimus*. In several cases, patients considered that using medicinal plants improved both effectiveness and side effects of chemotherapy. Taken

together, our findings suggest that medicinal plants are widely used by breast cancer patients to avoid chemotherapy-related side effects.

Keywords: Breast cancer; North West Algeria; Medicinal plants; quality of life.

P143

Bioactive compounds of cyanobacteria synechocystis sp isolated from west of Algeria

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Abstract

Cyanobacteria (blue-green algae) are rich sources of structurally novel and biologically active metabolites. Recent studies indicate the presence of some bioactive compounds in the blue green algae which are shown to exhibit anticancer, antimicrobial, antifungal or anti-inflammatory and other pharmacological activities. In the present study, aqueous extract and methanol solvent extract of isolated marine cyanobacteria strain were tested for antimicrobial activity against bacterial pathogens a fungus, Gram-positive and Gram-negative bacteria. For preparation of aqueous and methanolic extracts, the algal cells were harvested every 6-8 weeks, and separated from the medium by centrifugation. Pellets were dried and extracted with methanol and water. The methanol was removed from the extracts using a rotary evaporator. Antimicrobial activity was based on the agar diffusion assay. It was observed that the methanol was the best solvent for extracting of the antibacterial agents from *Synechocystis* sp. Methanol extracts of the blue green alga *Synechocystis* sp exhibited antibacterial activity against Gram-positive and Gram-negative bacteria, except *Salmonella typhi* however aqueous extract it has no activity against Gram-negative bacteria. No inhibitory effects were found against the fungus *Candida albicans*. Our ability to grow both

cyanobacterial species in the laboratory augurs well for the isolation of active compounds in substantial amounts.

Keywords: Cyanobacteria, bioactive compounds, antimicrobial activity, *Synechocystis sp.*

P144

Contribution to the study of antimicrobial activity of the aqueous extract of the white *Artemisia*

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Abstract

Aromatic and medicinal plants possess very important biological properties which find many applications in various fields, namely medicine, pharmacy, cosmetology, agriculture and agro-food. The objective of our work is to highlight the anti-microbial, in vitro, power of the aqueous extract of the plant *Artemisia herba-alba* Asso of the Boussaâda region. After obtaining the aqueous extract by infusion of the plant studied, we carried-out the diffusion test on Muller Hinton agar of the discs soaked in the extract of 9 different strains: *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia*, *Acinetobacter baumannii*, *salmonella typhimurium*, *salmonella enteritidis*, *Salmonella sp*, *staphylococcus aureus* and *escherichia coli*. The results obtained show that the *P.mirabilis*, *P.aeruginosa*, *K.pneumonia* and *A.baumannii* strains are sensitive to the aqueous extract of *Artemisia herba-alba* Asso while the *S.typhimurium* strains, *S.enteritidis*, *S.sp*, *S.aureus* and *E.coli* show resistance to the same extract. These preliminary results show good anti-microbial activity of *A. herba-alba* Asso and open-up experimental perspectives to explore anti-oxidant, anti-tumour and anti-infectious activity from the aqueous extract and essential oil of this plant and advance towards a better

knowledge of the molecular mechanisms involved these biological activities.

Keywords: *Artemisia*, Aqueous extracts, Antibacterial activity.

P145

Research of *Salmonella* in chicken offal: phenotypic characterization and test of sensitivity to antibiotics of isolated strains

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Abstract

In Algeria, since the 1980s, the emergence of poultry industries has increased the consumption of animal protein at a very affordable cost. Chicken meat is one of the main reservoirs of *Salmonella* that are responsible for a major zoonotic disease with serious economic and public health consequences. The objective of this study is to isolate, identify and characterize *Salmonella* isolates and determine resistance profiles for 16 antibiotics. Biochemical identification was performed by the API 20 E miniaturized gallery and by two complementary tests: Oxydase/Catalase test. The antibiotic sensitivity test was performed by Mueller Hinton agar diffusion method. Four isolates are of avian origin collected from chicken offal in two markets located in the town centre of the city of Annaba, and four others are of human origin also collected in the city of Annaba. Of which four are of the genus *Salmonella choleraesuis* ssp serovar Arizonae, two are of the genus *salmonella* spp, one is *Salmonella typhimurium* and the last is *Salmonella enteritidis* were identified, these results are similar to those reported by Zhao *et al.* The antibiotic sensitivity test revealed that the majority of *Salmonella* bacteria are resistant to beta-lactam antibiotics, kanamycin and sulfonamide, they also have strong resistance to macrolide and Cyclines, while they are sensitive to chloramphenicol and Amikacin, these results are comparable to those reported in other studies in France, and Ethiopia. The presence of a

pathogen such as Salmonella in chicken livers or meat and the multi-resistance to the antibiotics makes it a risk to the consumer. It shows the lack of hygiene in the environment of markets. The results of this study open very interesting perspectives in particular: the determination of the genetic factors responsible for their pathogenicity and multi-resistant to antibiotics by other phenotypic and genotypic methods. And the research and circulation of new molecules (synthetic or natural) that should help against the antibiotic crisis.

Keywords: *Salmonella* ssp; Chicken offal; Biochemical identification; Antibiotics multi-resistant.

P146

Chemical characterization and antioxidant activity of the essential oil of *Artemisia arborescens* from the region of Sidi Bel Abbès

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Abstract

The present work focuses on the phytochemical study and antioxidant activity of *Artemisia arborescens* Essential Oil (EO) which is a species belonging to the Asteraceae family. The EO was extracted by hydrodistillation using a Clevenger device and analyzed by gas chromatography coupled to mass spectrometry. Antioxidant activity was evaluated by DPPH radical scavenging and β -carotene bleaching methods. The yield of the extraction was 0.40%. By comparing our results with those in the literature, we found that our yields are close to those of Said *et al.* as the oil yields of *Artemisia arborescens* EO from the region of Ain Sefra in southwest of Algeria were between 0.40 and 0.41% (m/m). The major constituents of the EO of the aerial part of are β -thujone (51.31%) followed by Chamazulene (13.64%) then camphor (11.12%) and finally α -Thujone (4.41). The chemical composition of our EO is in accordance with those previously reported by

the bibliography. Such as those made by BaykanErelet *al.* in 2012 on the EO of *Artemisia arborescens* collected in Turkey which is characterized by its richness of camphor (33.39%) and chamazulène (21.05%). The results of the antioxidant activity revealed that the EO show no inhibitory effect of the DPPH radical compared to the standards used. However, they have preserved the color of β -carotene in a similar way to ascorbic acid. Test of the biological activity of our oils revealed considerable antioxidant power using the β -carotene bleaching method.

Keywords: Antioxidant activity, *Artemisia arborescens*, Chemical composition, Essential Oil.

P147

Construction of a microbial fuel cell using a strain of *Exiguobacterium* sp. isolated from Algerian Sahara

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Abstract

In the midst of the world energy crisis that we are living actually and all the environmental pollutions risks, finding new strategies to produce clean and renewable energy become a real challenge. One of the most important alternatives is microbial fuel cells (MFCs). In this work, we focus to carry out an MFC using an *Exiguobacterium* sp. strain isolated from Algerian Sahara. The experiments were carried out in microbial electrochemical device inoculated with *Exigubacterium* sp. strain in microaerobiosis conditions. Two kinds of electrochemical systems were constructed. In the first one, the MFC consists of a unique compartment system including both of the bioanode and the biocathode. The second one is a two compartments system with separated electrodes.

The results showed that the unique compartment system is able to produce more important electric power than the separate compartment system. This could be due to the total separation between the bioanode and the biocathode in the second system. We were able to prove that the power produced by *Exiguobacterium sp.* is more important than the electric power produced by other bacterium like *Shewanella oneidensis* which is mostly used in this research field. *Exiguobacterium sp.* strain isolated from Algerian Sahara could present advantages and excellent intrinsic properties in energy conversion than other models already tested. This work is always in the early steps. It will be interesting to improve the performance of the device and find a more sophisticated structure of the MFC. We have good reasons to believe that *Exigubacterium sp.* isolated from Algerian Sahara could be an important alternative to produce green energy.

Keywords: Green energy; MFC; *Exigubacterium sp.*; Electric power.

P148

Healthcare waste management status in Eastern Algeria: a case study in the University Hospital of Batna

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Abstract

Healthcare waste (HCW) refers to all wastes generated by the operation of healthcare facilities. The WHO estimates that 85% of these wastes are similar to domestic waste and are not hazardous. The remaining 15% are considered hazardous and may be infectious, toxic or radioactive. Proper management and safe disposal of these wastes is an important step in the prevention of diseases and the protection of the environment. Algeria, like other developing

countries, faces a series of challenges to ensure good HCW management. To better manage HCW, it is important to understand the current situation. The present descriptive cross-sectional study aims to evaluate, for the first time, the process of HCW management in the University Hospital of Batna. This is a cross-sectional descriptive study conducted over a period of eighteen months, during the year 2015/2016, in The University Hospital of Batna. The study used a variety of data sources; on-site observation and study of the hospital's archive. The on-site observation was carried out with the aim to appreciate the process of HCW management. It was carried out using a checklist containing 21 judgment criteria, developed according to WHO recommendations and according to Algerian laws. The study of the archive was carried out with the aim of knowing the quantities of HCW generated from the year 2008 until the year 2015. We have sorted and analysed the registry data. The results were then analysed using Excel 2016. The results showed that, the HCW management process in the University Hospital of Batna is inadequate; segregation, collection, storage, transport and disposal of HCW are important steps for good management that are ignored and not properly applied. The University Hospital of Batna generated an average of 92720.62 kg/year of hazardous HCW during the period 2008-2015; of which 56.20% are infectious waste, 36.06% are chemical and/or toxic waste and 7.74% are anatomical waste. The average waste generation rate of hazardous HCW during the period 2008-2015 was 0.40 kg/bed/day. Similar results to those of our study were recorded in Geneva, Korea, Sudan and Pakistan. A higher waste generation rate than that of our study was recorded in Turkey, Greece and in Iran. This study allowed us to evaluate the process of HCW management in the University Hospital of Batna. In spite of the efforts invested by the government for the good HCW management, the process still inadequate and insufficient; segregation, collection, storage, transport and disposal of HCW are important steps for the good management that are ignored and not applied in accordance with the national regulations, or with the WHO recommendations. The implementation of HCW management plans, based on the improvement of the budget system, the training and capacity building programs of all HCW handlers and the rigorous application of the regulations is therefore highly recommended, to

improve HCW management system and therefore limits the risk to public health and to the environment.

Keywords: Hospital waste; Medical waste; Medical waste management; the University Hospital of Batna.

P149

Extraction and purification of *Bordetella Pertussis* Antigens responsible for whooping cough

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Abstract

One of our priorities in the field of vaccinology is the development of a new strategy that harnesses the immune system. In this context and given the characteristics of the major toxins of *Bordetella pertussis*, the agent responsible for pertussis, we are interested in the extraction and purification of toxic antigens, in order to produce non-toxic immunogenic molecules for protection, and vector used in immunotherapy due to their mechanisms of action and their biotechnological applications. Our work focuses on the *in vitro* study of biochemical, serological and molecular characteristics, and an *in vivo* study of the virulence of three *B. pertussis* strains (B.P ATCC 9797, B.P. 18323 (SII), B.P ATCC 9340) by extracting toxins from bacterial suspensions followed by concentration by membrane filtration [1], [2]. Purification and identification of the antigens was performed by the technique of polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate (SDS-PAGE). The results obtained make it possible to identify the major virulence factors of *B. pertussis*: The pertussis toxin (PT) of 46 kD, Pertactin (PRN) is 69 kD,

Adenylcyclase Hemolysin Ac Hy is approximately 200 kD and the filamentous haemagglutinin (FHA) is 220 kDa. The three strains studied (B.P ATCC 9797, B.P 18323 (SII), B.P ATCC 9340) belong to the type species of *B. pertussis* are virulent and the SDS-PAGE method allows to identify the four major factors of virulence: Pertussis toxin, Pertactin, Adenylcyclase Hemolysin and Filamentous Haemagglutinin.

Keywords: *B. pertussis*, virulence factors, pertussis vaccine, immunotherapy

P150

Contribution to the study of the involvement of rs2070874 polymorphism of IL4 gene and rs3761548 polymorphism of Foxp3 gene in the development of keratoconus in a sample of the population of western Algeria

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Abstract

Keratoconus is a corneal bilateral dystrophy, degenerative, non-inflammatory, characterized by gradual thinning of the cornea that adopts a conical shape and leads to a loss of visual acuity. The etiology of keratoconus is still poorly understood; however, it is probably of genetic origin. Environmental factors (allergy, eye rub) seem necessary for its expression. Keratoconus is classified as a non-inflammatory disease; however, studies refute this theory after the discovery of the expression of inflammatory mediators such as cytokines and interleukins in the tears of patients suffering from keratoconus. The aim of our work was to demonstrate a possible association between allergy and its inflammatory mediators and the development of

keratoconus. For this, we focused on two genetic polymorphisms located at interleukin-4 (IL4) (-33 C / T) and FoxP3 (-3279 C / A) genes. This study was conducted on a sample of 140 individuals, including 70 cases with Keratoconus and 70 healthy controls from western Algeria. DNA extraction was carried out by the Salting Out technique and the genotyping of the individuals according to the -33 C / T and -3279 C / A polymorphisms of the IL4 and FoxP3 genes respectively was carried out using the allelic discrimination technique TaqMan. The difference in the distribution between the allelic and genotypic frequencies of cases and controls was performed by X2 statistical homogeneity test. Our preliminary results showed at first that there is an association between environmental risk factors such as family history with disease, atopy and eye rub with the development of keratoconus. In a second step, our results showed that there is no significant association between the rs2070874 polymorphism of the IL-4 gene and rs3761548 of Foxp3 gene and the risk of keratoconus development in the population of western Algeria. These results would be in favor of the hypothesis considering atopy as a factor indirectly linked to the Keratoconus. Thus, the association of atopy with keratoconus is probably due to the inflammation induced by the rubbing of the eyes. This is the first contribution to the study of the involvement of atopy in the predisposition to the development of Keratoconus in western Algeria. It would be interesting to study, subsequently, the influence of other polymorphisms of the IL-4 and FoxP3 gene and the exploration of other candidate genes involved in atopy and inflammation (IL1, IL2, MMP1, MMP9, ...) in the development of keratoconus. These studies could also explain the physiopathological mechanisms at the origin of this disease.

Keywords: Keratoconus; IL4; FOXP3; Allergy; polymorphism; western Algeria.

P151

Removal of Copper from Aqueous Solutions with Biomass from Forest by-product

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Abstract

Water pollution from heavy metals ions is a main concern in particular in developing countries and Algeria is not an exception. Copper squander sullyng exists in watery waste from copper mining, electronic and electrical enterprises, industries implicated in the manufacture of computer warm sinks, ceramic glazing and glass colouring , severe use of Cu-based agrochemicals, etc. The World Health Organisation (WHO) recommends that the quantity of copper in drinking water should not go over 2.0 mg/L. The utilization of natural material, specifically waste matter from farming or industry, has been to a great extent investigated. The fruit of the oak (*Quercus sp.*), of the family Cupulifers (Fagaceae) is an acorn with dry pericarp. In this work for the first time the acorn pericarp of two species of *Q.ilex* , and *Q.suber* which grows in Norwest Algeria, have been used as a new adsorbent for the removal of copper from artificially contaminated aqueous solutions. The lignocellulosic fraction was characterized before and after adsorption experiments, using Fourier transform infrared spectroscopy (FTIR) to discover functional groups that might be involved in Cu(II) adsorption. The results showed that the amount of Cu (II) adsorbed on both adsorbents increased as the initial concentration of Cu (II) increased, from 23.59 to 48.06 mg/g with lignocellulosic fraction of *Q.suber*, and from 22.56 to 38.19 mg/g with *Q.ilex* for concentrations from 100 to 500 mg/L respectively. The adsorption data obtained were well described by the Langmuir model parameters ($Q_{max}= 53.76$ mg/g) for

lignocellulosic fraction of *Q.suber*, which is higher than *Q.ilex* ($Q_{max} = 36.06$ mg/g). Using Lignocellulosic fraction of acorn pericarp as sorbent is a new and very promising tools for wastewater treatment.

Keywords: Quercus sp; Lignocellulosic fraction; Adsorption, Cu (II).

P152

Biology and ecology of the Coot *Fulica atra* in the Djebbla dam (Tizi-Ouzou, Algeria)

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Abstract

The coot is a diver swimming bird, omnivorous and opportunistic, very common in lakes, ponds and rivers, its regression disrupts environmental functioning. Its distribution in Algeria includes all the North including the highlands. For the aim of preserving this species, we conducted a study of its diet, where the knowledge of the latter appears crucial to keep it and identify its role in the structure and functioning of ecosystems. Our study was carried out at the Djebbla dam (Tizi-Ouzou, Algeria) from December 2014 to February 2015 from the analysis of 75 droppings recovered from the dam, due to 25 droppings per month. The droppings were harvested with forceps and put in paper cornet, while mentioning the place and date of collection, fecal analysis was performed in the laboratory. The diet of this species was determined using a reference catalog of microscopic structures. We have identified 32 plant species belonging to 16 different families. The Poaceae family was the most dominant with a relative abundance of 70%. Cyperaceae and Fabaceae accounted for 20.88; 2.81% respectively, other families occupied a negligible share. Among the Poaceae, two species were the most consumed, they're

Paspalum distichum and *Poa annua*, the species *Panicum repens* has taken a remarkable share. The dominance of the Poaceae family may be explained by the availability of this family around the dam. Our results corroborate with those found by during their study of the diet of coot at the Djebbla dam, they counted 30 plant species consumed, classified into 15 families with the dominance of Poaceae family. in the Djebbla dam noted 28 plant species consumed, classified into 17 families, whose Poaceae family was the most dominant also. This study allowed us to conclude that the adult diet of the coot is essentially vegetarian, its dominated by the Poaceae family, which shows the importance of grasses in the food of this species.

Keywords: Coot; Diet; Djebbla.

P153

The refining impact on the nutritional value and antioxidant potential of some Algerian local cereals

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Abstract

The purpose of this work was to find out the refining impact on the nutritional value and antioxidant potential of some local cereals. Our choice was focused on three kinds of the most consumed and marketed in Algeria namely durum wheat (*Triticum turgidum*), barley (*Hordeum vulgare*) and oats (*Avena sativa*). Whole grains (WG) samples were obtained by electric milling of full grains. Refined grains (RG) were obtained after a processing. Grain envelope and Germ were manually removed before milling. The results showed that the WG contained higher nutrient levels than RG. Indeed, significant differences were noted as follows, from most important to least important: Fiber (76 - 80%), minerals (32 - 40%), protein (19 - 30%), fats (10 - 34%), water (6 - 18%). No

difference in total sugars (reducing sugars) level was observed. However, refining increased starch and total carbohydrates levels (on average +7%). The evaluation of the antioxidant capacity revealed a highest total polyphenols concentrations in WG compared to RG. The estimation of antioxidant potential by DPPH test have demonstrated a strong ability to trap free radicals in WG and RG similar to standards (vit C and BHT), while FRAP test have demonstrated a significantly higher trapping capacity in WG compared to RG. In conclusion, the refining of cereals leads to an important nutritional loss depending on the considered nutrient (protein, fat, fiber, minerals), while the starch level is increased. The refining process also leads to a decrease in antioxidant capacity due to the considerable total polyphenols reduction. An increased consumption of whole grains is recommended in order to fully benefit from their nutritional and antioxidant properties and to prevent some diet-related diseases (diabetes, obesity and cancers).

Keywords: Antioxidant potential; Diet-related diseases; Refined grains; Whole grains.

P154

The effects of some bioactive compounds of star anise (*Illicium verum*) and clove (*Syzygium aromaticum*) and their antioxidant potential

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Abstract

The aim of this study is to estimate the nutritional value of two highly consumed spices by the Algerian population, cloves (*Syzygium aromaticum*) and star anise (*Illicium verum*), on the one hand and to identify their main bioactive molecules and evaluate their antioxidant potential by different in vitro tests, on the other hand. The detection of phenolic

compounds is carried out by two different methods to confirm the presence of phenolic compounds in the samples. The identification of flavonoids is carried out according to the technique of Debrayb *et al.*, (1971). The results show that the phytochemical tests allowed to detect the different families of compounds namely: flavonoids, total and catholic tannins, anthocyanins, coumarins, triterpene sterols and also mucilage in 2 spices. The results of the chromatography are added to the results of the phytochemical screening which reveal a considerable presence of phenolic compounds, flavonoids, total tannins and catechins, anthocyanins, coumarins, triterpene sterols and also mucilages in clove extracts and star anise. The evaluation of the antioxidant potential reveals that the ethanolic extract of clove contains a high content of polyphenols (463 ± 0.7 mg EAG/g) followed by the methanolic extract (303 ± 1.02 mg EAG/g). The aqueous extract has the lowest content (181 ± 0.7 mg EAG / g). In star anise, the polyphenols in the ethanolic extract represent 73 ± 0.7 mg EAG / g followed by the methanolic extract (27 ± 1.2 mg EAG / g). The aqueous extract has the lowest content (4.3 ± 0.2 mg EAG/g). Our results show that clove free radical scavenging (DPPH) is greater with methanolic extract ($78.89 \pm 1.22\%$) compared to ethanolic extract ($61.46 \pm 1, 04\%$) and the aqueous extract 21%. In star anise, the ability to trap free radicals is lower compared to clove regardless of the extract used. The results of the antioxidant activity of the oils extracted from the two spices, shows that the % inhibition of DPPH represents $95.26 \pm 0.07\%$ in clove and $92.66 \pm 0.002\%$ in star anise . In addition, the ability to trap free radicals of clove oil by the FRAP method is higher than that of star anise with values (3.22 ± 0.01 and 0.26 ± 0.001), respectively. Clove and star anise have compounds that are very useful from a nutritional point of view and medicinal by their richness in antioxidants and volatile compounds (essential oil). These substances can be used for the production of food additives in the industrial sector or of healthy foods in the pharmaceutical and nutraceutical sector (food supplements).

Keywords: Medicinal plants; Antioxidants; DPPH; FRAP.

P155**Prevalence of superficial mycosis in breast cancer women**

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Abstract

Mycoses remain a significant cause of morbidity, as the number of immunosuppressed individuals increases worldwide, breast cancer patients receiving chemotherapy might develop superficial mycosis. A cross-sectional study was conducted on 28 breast cancer patients, with fungal mycosis suspicion, the samples collected from each patient were nail scraping and ear swabs, all were examined under microscope and inoculated into Sabouraud's tube media. Fungal identification was based on physical features of the colonies and biochemical tests (auxacolor). Out of the 28 breast cancer patients, 8 women had skin mycosis and skin appendage mycosis, so prevalence rate of skin mycosis was 28,6%. 87,5% of positive patients are employed and 12,5% are housewives. A correlation was found between skin mycosis and the patients aged above 50 years old ($p=0,03$). 87,5% of positive cases had otomycosis and 25% onychomycosis. Fungal isolates were *Candida albicans*, *Candida parapsilosis*, *Candida zeylanoides*, *Trichosporon sp*, *Aspergillus niger*, and *Aspergillus flavus*. Fungal infections in cancer patients can be further divided into five groups: superficial dermatophyte infections with little potential for dissemination; superficial candidiasis; opportunistic fungal skin infections with distinct potential for dissemination. Necrotizing cutaneous breast fungal infection were reported, Truppmann et al reported a case series of fungi-associated breast infections after 700 augmentation mammoplasties over a nine-year period. The most common causes of fungal affections in cancer patients are *Candida*, *Aspergillus*, and *Fusarium sp*, which is in

accordance with our results. Superficial mycoses are typically opportunists; the incidence of mycosis among these patients is expected to raise, significant challenge remains with regard to the prevention.

Keywords: skin mycosis, breast cancer, immunosuppressed

P156**Molecular classification of breast cancer in the region of constantine: an epidemiological and immunohistochemical study**

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Abstract

Breast cancer (CS) is the most common female cancer worldwide, ranking first in Algeria for its frequency and mortality. Molecular classification has distinguished at least four molecular types: luminal A, luminal B, HER2 and basal-like. Our objective is to study the phenotypic profile of breast cancer in women with cancer as well as the different clinical, immunohistochemical and therapeutic aspects of different molecular groups. We undertook a retrospective study between October 2016 and December 2017. This study involved 121 files. The distribution of the population according to age showed that the most affected age group is [53-63] years old with 35%. Molecular classification results showed that the most common type was luminal A at 37.19%, followed by luminal type B at 27.27%, basal-like at 19.83%, and HER2 at 15.70%. Breast cancer of luminal type, expressing [ER], accounts for 70 to 80% of all mammary carcinomas and the work of and demonstrate that the luminal group A is the most common with proportions of 58, 5% and

54.3% respectively while the distinction is observed in the other groups. Molecular classification plays a very important role in the treatment. This result shows that luminal type A is the most common, and that postmenopausal women are most likely to have breast cancer. This classification is very important in the orientation of the treatment. The resulting molecular classification is expected to better classify tumors to a personalized therapy.

Keywords: breast cancer, molecular classification, immunohistochemistry, hormone receptors.

P157

Effects of established blood pressure loci on blood pressure values and hypertension risk in an Algerian population sample

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Abstract

Genome-wide association studies and subsequent replication studies have pinpointed 29 genetic variants associated with blood pressure (BP). None of these studies included North African populations. We therefore looked at whether or not these genetic variants modulated BP and hypertension (HTN) risk in an Algerian population sample. Twenty-nine single nucleotide polymorphisms (SNPs) were

genotyped in a representative sample of 787 subjects from the ISOR (*InSulinresistance In Oran*) study (378 men and 409 women aged between 30 and 64 and recruited from within the city of Oran, Algeria). Genetic variants were considered both individually and when combined as genetic predisposition scores (GPSs) for systolic BP (SBP), diastolic BP (DBP) and hypertension (HTN) risk. The SNPs in *CYP11A1-ULK3*, *HFE*, and *SH2B3* were significantly associated with BP and/or HTN. The SBP-GPS, DBP-GPS and HTN-GPS were associated with higher levels of DBP (+0.24 mmHg $p=0.05$, +0.23 mmHg $p=0.05$ and +0.26 mmHg $p=0.03$, respectively). Moreover, the three GPSs tended to be associated with a 6% higher risk of HTN. Our study is the first to show that some of the BP loci validated in subjects of European descent were associated (either individually or when combined as GPSs) with BP traits and/or the HTN risk in an Algerian population, but to a lesser extent than in European populations. Although larger studies and meta-analyses of North African populations are needed to confirm the present results, our data contribute to a better understanding of genetic susceptibility to HTN.

Keywords: BP, GWAS, HTN, ISOR study.

P158

The importance of data collection and statistical analysis of fishing and flotilla in western coast of Algeria

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Abstract

This work aims to the study of fishing and its statistics at the level of the west and the center of Algeria, six maritime wilayas (Tlemcen, Ain Temouchent, Oran, Mostaganem, Chlef and Algiers), respectively concerning the ports (Marsa Ben M'hedi, Ghazaouet, Honaine, Beni-Saf, Bouzedjar, Oran, Arzew, Sidi Lakhdar,

Mostaganem) over a period stretching from 2010 to 2015. According to our results, the fishing activity of the three segments of the fleet increased during the year 2015, as well as the number of vessels of the trawl and sardine fleet (1799) in 2015. The landings of the five major fish groups show a significant dominance of small pelagic landings (85%) compared with other major groups in the tenth harbors. The landings of the port of Ghazaouet as well as the ports of Beni saf and Bouzadjar occupy the first place compared to the other ports.

Keywords: Data; Harbors; Landings; Statistics.

P159

Isolation of biosurfactant-producing bacteria from a hydrocarbon-contaminated area

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Abstract

Biosurfactants are amphiphilic biomolecules produced mainly by microorganisms. Their main characteristic is to lower the surface and interfacial tension of the solutions. Other than their surface activity, they are slightly toxic and biodegradable and have several other physico-chemical properties, which gives them a wide field of application. Various studies have reported the anticancer activity of biosurfactants, which are involvement in intracellular molecular recognition steps such as signal transduction, cell immune response, cell cycle progression and inhibition of certain cell signalling pathways. In this study, samples of petroleum-contaminated water were collected from hydrocarbon-contaminated sites and then pure colonies were

isolated from them by spreading them on petri dishes. Various tests for screening biosurfactant producing strains have been performed. Several strains were isolated and the strains with the highest surface tension reduction powers and yields were selected for a thorough identification of their growing conditions and the nature of the biosurfactants produced, through a series of biochemical tests. Strains with halo, indicating oil degradation, were isolated, a total of 16 bacterial strains were isolated, each strain was inoculated into an MSM supplemented oil broth and incubated at 37°C for 7 days, for biosurfactant production and each isolated strain was analyzed to reveal bio-surfactant production. Strains with the ability to displace oil from the Oil Displacement test, indicating biosurfactant production, have been selected and stored at -80°C, for previous studies and for further identification of their growing conditions and the nature of the bio-surfactants produced, by a series of biochemical tests. The biosurfactants produced in this way could, thanks to their functional diversity, be applied in various industrial fields.

Keywords: Biosurfactant; hydrocarbon; bacteria; isolation.

P160

The teratogenic effects of thalidomide enantiomers

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Abstract:

Thalidomide is a racemic drug that was administered to pregnant women between 1956–1962. It was immediately withdrawn from the market in late 1961, because of its very

important teratogenesis. Causing serious birth defects in more than 10,000 children were born with severe malformations, including phocomelia because their mothers had taken TD during pregnancy. While the enantiomer (R) thalidomide is effective against morning sickness, which was the intended scope of the drug, the (S) thalidomide is teratogenic. In this work we study difference in structural, electronic and energy of the two enantiomers S and R of thalidomide with 2 methods quantum vacuum by density functional theory (DFT) and Hartree-Fock (HF) quantum chemistry methods play an important role in obtaining molecular geometries and predicting various properties. Here we only investigate the molecular difference between the enantiomers and we discuss our results depending on the computational method used.

Keywords : Thalidomide, Enantiomer , Phocomelia, DFT, HF .

P161

Nhc gold complexes for biomedical applications

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Abstract

Leishmaniasis is a parasitic disease, caused by *Leishmania spp.*, spread by the bite of *Phlebotomus* sandflies. *Leishmania* currently affect 12 million people and around 2 million new cases occur each year. Resistance to current antileishmanial drugs is spreading worldwide and requires an active search for new active molecules. Gold organometallic complexes have been studied for several biomedical applications including their anti-leishmanial activity. A series of mononuclear neutral gold complexes containing *N*-heterocyclic carbene (NHC) ligands for anti-leishmanial activity have been

synthesized, purified and characterized by NMR, Mass spectrometry and X-ray. Our NHC gold complexes have been synthesized with excellent yields. A study of antileishmanial activity has been realized giving very good results with our compounds. Six Gold (I)-NHC-complexes show potent activity against *L. infantum amastigote*, and three of them give encouraging results.

Keywords: GOLD; NHC COMPLEXES; Imidazolium Salt; antileishmanial activity.

P162

Parkinson's Disease: Epidemiological Characteristics of 63 Cases

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Abstract

Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's disease, with an incidence of 6.3 million worldwide, occurring in approximately 1-2% of people over 65 years of age and older. 3.4% aged over 75 years, forms affecting the young adult also exist. The MP is clinically manifested by a triad of akinesia, rigidity and resting tremor, to which are added many non-motor signs. The factors at the origin of the onset of PM remain poorly known in the majority of cases. MP is mostly sporadic, several chromosomal loci then susceptibility genes have been discovered, and in 10% of cases, the presence of a family history is found. Few studies have been established on PM in Algeria, to this end, this modest work aims to establish an epidemiological study on Parkinson's origin in eastern Algeria. A retrospective descriptive study was conducted between October 2018 and January 2019 on 63 medical records of Parkinson's patients followed in specialized consultation at the Ibn Badis Constantine University Hospital. Data were collected and

processed with Epi Info 7. The observed results are: A slight male predominance. The elderly between (50-60 years) are the frequently affected by PD. The family form represents 11% of cases. Geographic diversity of patients whose; 80.95% are from Constantine. These preliminary results show that the PD is answered in Algeria. A deeper study on a larger sample, with a genetic study is underway.

Keywords: Parkinson disease; frequency; epidemiology.

P163

Study of the biological activity of nitrogenous heterocyclic compounds

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Abstract

The synthesis of heterocyclic systems is currently an important area of research, not only from the point of view of basic research, but also because of the broadening of practical applications of these compounds. Indeed, they are of great importance because of the activity of some of them on living organisms and 68% of drugs are actually heterocycles. Several methods have been used to synthesize chromenes and their analogs such as the classical synthesis used by Verma and al For the synthesis of chromene derivatives from β -oxodithioesters with salicylaldehyde in the presence of InCl_3 as a catalyst, synthesis under microwave irradiation followed by Kidwai et for the synthesis of 2-amino-chromenes using K_2CO_3 as a catalyst in water, Or else, the synthesis of chromenes by ultrasound chosen by Datta and Pasha for obtaining 2-amino-4H-chromenes according to a Michael reaction in very short times and with very good yields. In this work, we synthesized and characterized chromenes and their analogs according to two heating methods with the aim of a comparative

study between these two synthesis methods. Then we biologically evaluated the compounds obtained with reference strains. We have therefore established an extremely rapid synthesis of chromenes and their analogs according to a Michael addition reaction from commercial products and olefins variously substituted by the condensation of 2-arylidene malononitrile previously synthesized according to a Knoevenagel condensation reaction with cyclic compounds having active methylene and having a keto-enol equilibrium. After characterization of the products by the usual spectroscopic methods (Fourier transform infrared spectrometer FTIR and Nuclear Magnetic Resonance NMR ^1H and ^{13}C) we evaluated the antibacterial activity of our products on reference sensitive bacteria: *Escherichia coli* (gram-), *pseudomonas aerogenosa* (gram-) and *Staphylococcus aureus* (gram +) as well as the antifungal activity on yeast *Candidas albicans*, and on *Microsporum canis*, both by the simple but effective method "antibiogram". The synthesized products were obtained with better yields under microwave irradiation compared to conventional heating and in very short times (3 minutes instead of 45). The study of the antibacterial and antifungal activity of our products has proved very interesting. Indeed, some of our products exhibited complete inhibition of bacterial and fungal growth while product residues were found to be more effective at inhibiting bacterial growth compared to penicillin G and gentamicin. A simple and efficient method has been developed for the synthesis of chromenes and their analogues with better yields under microwave irradiation compared to conventional heating. The synthesized products gave very promising results after the study of their antibacterial and antifungal activity. These promising results offer the prospect of expanding this study on a variety of active methylene compounds with keto-enol equilibrium as synthons to chromenes. As well as the study of their biological activities in vivo.

Keywords: Biological activitie; Characterization ; Heterocyclic ; Synthesis.

P164**Biodegradation of complex hydrocarbons in used engine oil by Gram negative bacteria isolated from Oran harbor**NILS¹*, ABI AYAD S.M E-A¹

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Abstract

Mixture of complex hydrocarbons which include used engine motor oil and its residues reach the marine water and sediments in different modes, which include deposition from municipal and industrial effluents, wastes burn out, accidental oil spill during transportation or deposits induced by sediment drilling. Used motor oil, contains metals and heavy polycyclic aromatic hydrocarbons that could contribute to chronic hazards including mutagenicity and carcinogenicity. Prolonged exposure to high oil concentration may increase risk of cancer. Bioremediation can be an alternative green technology for remediation of such hydrocarbon-contaminated surface. The isolation and subsequent identification of native water harbour microorganisms could provide relevant candidate taxa for possible exploitation in future biotechnological applications. The primary aim of this work was to isolate native harbour water microorganisms which could be later used in the studies of bioremediation (biostimulation) of harbour waters and assess their potential to oil degrade. Bacterial strains capable to degrade used engine oil have been isolated from samples of Oran harbour water. Phenotypic characterization and phylogenetic analysis of 16S rRNA gene sequences of the strain HAR17 showed that this isolate was related to members of the *Acenitobacter* genus. Spent engine oil degradation potential of this strain was evaluated in Bushnell Haas (BH) medium supplemented with used engine oil (1%). The microbial growth was estimated, every 3 days by the measure of UFC/ml, during a period of 15 days. The degradation of several compounds and the metabolites formed during the microbial oxidation process of spent engine oil were confirmed by Gas chromatography-mass

spectrometry (GC/MS) analyses. The production of the enzyme alkane hydroxylase involved with aromatic hydrocarbons biodegradation process was verified by polymerase chain reaction (PCR) for the presence of the alkane hydroxylase gene (*alkB*). The water harbour isolate *Acenitobacter baumanii*, tested up to 15 days, could grow well using used engine oil 1% as sole carbon source. In the biodegradation analysis, the total viable count increased to $8.67 \pm 2 \cdot 10^8$ CFU mL⁻¹ on the 6th day. The comparison of the chromatogram of used oil before and after treatment with the strain, shows that it could degrade several compounds of used engine oil. This strain is able to grow in the presence of used engine oil because it has the gene coding for the alkane hydroxylase enzyme (*alkB*). Data obtained give important results in order to utilize these isolate native harbour microorganisms in the studies of bioremediation process.

Keywords: alkane hydroxylase; GC/MS; harbour Oran; used motor oil.

P165**Genotypical identification and determination of technological properties of lactic acid bacteria isolated from raw camel's milk**Saidi Yasmine¹, Senouci Djamel-Eddine¹, Kihal Mebrouk¹

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Abstract

In Algeria arid regions, camel milk is considered as one of the most important source of dairy products for human diet with potential therapeutic effects. Lactic Acid Bacteria (LAB) are generally associated to habitats rich in nutrients like many food products (milk, meat, vegetables, drinks). Recent studies showed that camel's milk is a natural source for probiotics. The aim of the study was then to isolate, from raw camel's milk, bacteria showing similar traits to LAB, to identify them using genotypic method and to study some of their technologically important properties. Microbiological diversity

of Algerian raw camel's milk was determined by phenotypical, physiological, biochemical and genotypic characteristics. Biodiversity of 41 lactic acid bacteria isolated from 12 Algerian raw camels milk samples, was determined by means of microbiological, biochemical, and genetic methods. Based on their shape and fermented pattern, 21 isolates, shaped as cocci and homofermentative, were identified as presumptively belonging to the genus *Enterococcus*; 7 heterofermentative coccobacilli isolates were considered as *Leuconostoc* and the rods forms were assigned to *Lactobacillus* genus (7 isolates). The molecular identification by sequencing the 16S rRNA and superoxide dismutase genes allowed us to identify them as *Enterococcus faecium* (19 isolates), *Enterococcus hirae* (2 isolates), *Leuconostoc mesenteroides* (7 isolates) and *Lactobacillus rhamnosus* (7 isolates). The technological traits have been examined and the aptitude of each isolates, have been determined. Almost all of the isolates were able to use citrate as source of carbon to grow in the medium and to produce acetoin. These two traits are desirable characteristics since its metabolism produces aromatic compounds such as diacetyl, acetoin and butanediol essential in dairy industry. Concerning dextran production only *Leuconostoc* isolates were able to produce it. The production of such substance has to be taken into account as an important feature for LAB used in dairy environments not only by improving their appearance, stability and rheological properties, but also by their potentially beneficial properties for human health for example, as an antitumoural substance. Proteolysis is a critical process for LAB to grow in milk, producing organic acids, mainly lactic acid, peptides and aromatic compounds essential in dairy fermentation. In our study the best result was given by *Lactococcus lactis* isolates gave the best result. In other work, lactococci isolates are found to be frequently used as starter cultures thanks to their high proteolytic activity. The potential production of antimicrobial substances by the camel's milk LAB isolated in this work was assayed by testing the isolates against a variety of indicator strains. *Enterococcus faecium* isolates showed interesting results, inhibiting various indicator strains. In conclusion, Algerian raw camel's milk could be considered as a good source of new strains of LAB to be used in the production of fermented dairy food by showing

interesting and desirable technological abilities such as proteolytic activity, production of acetoin responsible of flavoring of fermented food and production of dextran involved in the natural texturing of dairy products. Further studies concerning the safety aspects of these isolates should be done before using them as starter culture in dairy industry.

Keywords: raw camel's milk, lactic acid bacteria, genotypic identification, technological traits

P166

Baseline risk factors that predict the development of Age-related macular degeneration in a sample of the population of the east of Algeria

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Abstract

Age-related macular degeneration (AMD) is the main cause of blindness and vision loss in old people. The development of the disease is a complex interplay of age, environmental, genetic, and metabolic and many other factors. The association between these factors and AMD in the population of Algeria is still unclear. The goal of this study is to determine whether environmental factors are risk factors for AMD in a sample of the population of the east of Algeria. A questionnaire was distributed to all patients presenting to Hassani Abk Hospital, Sidi Belabess, Algeria. Patients were asked to sign an informed consent form and were divided into two groups: cases with neovascular AMD, in at least one eye, which were diagnosed by the attending ophthalmologist, and controls free of systemic and ocular conditions associated with

AMD. Univariate analyses were performed using Chi-square test (χ^2) for categorical variables and t tests for continuous variables if the normality assumption was satisfied. Crude odds ratio (OR) and 95% confidence intervals (95% CI) were calculated to determine whether any exposure factor was significantly associated with AMD. Analyses were done by using SPSS, version 21. Twenty cases and fifty controls participated in the study. Groups were similar with respect to sex and age. Univariate analyses found a significant association between AMD and alcohol (OR=5.385, P value=0.019), sun exposure (p=0.041), and goiter (OR= 3,857 [1,020-14,581], P value= 0.038). However, smoking, body mass index (BMI), diabetes, high blood pressure and consanguinity were not. Our results on the known risk factors were similar to other published data and different to other. This study confirmed the association of alcohol, sun exposure and goiter in development of the disease in the Algerian population. However it is interesting to expand the study by increasing the number of sample size.

Key words: AMD; risk factors; Algerian population; univariate analyses.

P167

Ameliorative impact of Omega 3 and Vitamin E co-treatment on fluoride induced oxidative stress and renal cell carcinoma in rats

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Abstract

Renal cell carcinoma (RCC), is the commonest and most lethal adults urological cancer forming 3.79% of all malignancies in adults. The incidence and mortality of RCC is increasing in developing countries while plateaued in Europe and North American in the past few years. The link between all the risk factors mentioned in study of Al-Bayatiet al (2019) is the free radicals. We aimed in this study to evaluate the beneficial effect of Omega3 and Vitamin E

combination on RCC caused by a high dose of fluoride administration as a strongest oxidant in Wistar albino Rats. To reach our objective, twelve female albino Wistar rats were randomly divided into 3 groups (n=4); the first group used as a control group. Group II exposed to fluoride as fluoride sodium (NaF) in drinking water (400 ppm) for 70 days. Group III rats exposed to fluoride and treated with Omega 3-Vitamin E association in feed as (1.825g Eicosapentaenoic acid (EPA)+1.21g docosahexaenoic acid (DHA)+83.3 mg Vitamin E /kg) of diet for 15 days. The histological examination of the cellular structure of the kidney tissue of fluoride administered rats, when compared with the control group, recorded a big change in the glomerulus and tubules of kidney tissue, also we observed a clear renal cell carcinoma (RCC); with a very high significant elevation (P<0.001) in the relative kidney weight, also creatinine, Urea and uric acid as renal function biochemical biomarker revealed a significant (P<0.05) increase in fluoride exposed rats when compared to the control group; however, the administration of Omega3-Vitamin E combination ameliorated the histological appearance of kidney tissue and minimized the proliferation of RCC; with a highly significant amelioration (P<0.01) in the relative kidney weight, but no significant (P<0.05) improving biochemical biomarkers. Kidney hypertrophy (nephromegaly) and loss of kidney function can be interpreted by the appearance of hydronephrosis which occurs when the renal collecting system of one or both kidneys becomes dilated from the obstruction of urine outflow. Tumor is one of the hydronephrosis causes. Prolonged hydronephrosis destroys the tubules in the cortex resulting in renal parenchymal atrophy, scarring, or irreversible renal damage. This condition progressively leads to the loss of renal function. Histological renal alterations and RCC refer to damage effects of free radicals resulting from excess fluoride because F⁻ is known to induce free radical generation and consequently results in oxidative stress [6] and the assessment of oxidative stress parameters confirmed our interpretation. The findings showed that fluoride affected antioxidant defense system by decreasing Glutathione (GSH) level and increasing malondialdehyde (MDA) level in kidney tissues with the rate of 55% and 26% respectively while the GST activity present a non-significant variation in fluoride exposed rats when compared to the control group which

showed an oxidative stress state. Treated with Omega3 and Vitamin E combination improved this state, and therefore ameliorated the histological appearance of kidney tissue and minimized of RCC proliferation because of antioxidant and anti-inflammatory effects of Omega3 and Vitamin E. In conclusion, the present study demonstrated the beneficial effects of Omega3 and Vitamin E co-treatment on histological kidney alterations, oxidative stress and RCC caused by fluoride but this co-supplementation not restored some biochemical markers of renal function, which can be requires a long time of treatment. Further studies are needed to understand the molecular basis behind this co-treatment and the necessary time for the total remove of renal cell carcinoma.

Keywords: Kidney; Omega3-Vitamin E; Oxidative stress; RCC.

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HLA-G as an inhibitor molecule of immune responses in renal transplantation

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Abstract

Kidney transplantation has become the treatment of choice for end stage renal disease. However, despite the considerable progress in both surgical techniques and the use of immunosuppressive therapies, organ rejection remains a major obstacle in kidney transplantation. This study aims first of all to show the implication of HLA-G in the tolerance of the renal transplantation in particular, but also to categorize patients according to their immune status with respect to their HLA-G expression, in order to consider a personalized prescription for the reduction of immunosuppressive doses in these same patients. We followed 7 transplant

patients between April 4th to June 16th, 2016 at the Nephrology Department (CHU Mustapha Pasha). We performed the HLA-G assay in the patient's sera, using an enzyme immunoassay (ELISA) which allows us to visualize an antigen-antibody reaction by means of a colored reaction produced by the action of the enzyme on its chromogenic substrate, this sandwich reaction based on the use of an anti-HLA-G monoclonal antibody. 2 of the patients tested (with a genotypical HLA showed a high level of HLA-G, while 2 HLA Haplo-identical presented an average rate, finally 3 patients (identical haplo or HLA different), are of HLA-G negative. The preliminary results does not make it possible to judge the parameters correlated with the expression of this biomarker, the definitive ones which will be obtained at the end of the study, will make it possible to consider the use in current practice to adapt and personalize the treatment of transplant patients in Algeria.

Keywords: HLA-G; Kidney transplantation; immunosuppressive therapies; tolerance.

P169

Study of genotypes and alleles distribution of CYP3A5 polymorphisms in the western Algerian population: preliminary results

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Abstract

Cytochrome P450 3A5 (CYP3A5) enzymes are regarded as an important pharmacogenetics marker in the development of the personalized medicine due to the enzymes impact on the efficacy of drugs based on genetic background of individuals or populations. The aim of our study is to explore genetic polymorphisms of CYP3A5*3 (rs776746) in a west Algerian population and compare these genotypes and allelic distributions among different ethnicities. The genotype distribution and frequencies for the c.6986A>G SNP of the CYP3A5 gene were

determined in 143 healthy subjects from the Western Algerian population. Genotyping was performed by the Taq Man allelic discrimination assay. The genotype frequency of mutant homozygote CYP3A5*3/*3 was 62% (n=89), 5% (n=8) for the wild type CYP3A5*1/*1 and 39% (n=46) for heterozygote type CYP3A5*1/*3*. The distribution of allele frequencies was 78% concerning CYP3A5*3(G) and 21% for CYP3A5*1(A). The results showed that minor allele frequencies (MAF) in our population were similar to those of the Africans populations, as in Sudan and Morocco, whereas there were distinct differences with some Asians populations as Japanese and Chinese populations. The size of the sample must be increased to confirm these preliminary results. Also, it seems important for a complete study to explore other polymorphisms on other genes implicated in drugs polymorphisms to enhance the characterization of pharmacogenetics profiles in the Algerian population.

Keywords: CYP3A5; genetic polymorphism; pharmacogenetics; west Algerian.

P170

Biology and diversity of potato aphids in Tizi Ouzou region

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Abstract

Potato cultivation is highly susceptible to pest attacks, notably, aphids which are the group of insects cause the most problems for this crop. Aphids are very common, more than 4700 aphid species are reported in the world, approximately 450 species are identified as pests of cultivated plants. Aphids cause damage and reduce agricultural yields in several ways. They can build to high population densities, removing plant nutrients, and may damage plants by removing enough sap to cause withering and death. The most serious problem posed by aphids is the vectoring of plant viruses. The present

study was carried in the TiziOuzou region, in a field of *Solanum tuberosum*, consists of determining the diversity and abundance of aphids. The study plot was divided into 9 blocks. In the middle of each block was placed a yellow trap filled with water for the purpose of trapping winged aphids during their flight. In each block of the plot, one plant was selected, and the aphids found on the potato leaves were collected and preserved in 70% ethanol, for later identification. In total, 1571 individuals were trapped and identified. 55 species divided into 32 genera, 6 tribes and 5 sub-families were enumerated. The quantitative analysis of the data shows that *Myzus persicae* is the dominant species, this can be explained by the presence of its primary and secondary hosts. The method of visual counting of the aphidian populations installed on the foliage made it possible to highlight the presence of 3 wingless species: *Aphis gossypii*, *Myzus persicae* and *Macrosiphum euphorbiae* with the predominance of the latter. According to, these three species are characteristic of this culture. *M. persicae* is reported in Sétif. In the region of Guellal in Biskra, note the presence of *M. euphorbiae* and *M. persicae* on a potato crop. During this study, 55 species were captured using yellow traps. The diversity of the species identified is related to the weeds present in the study plot as well as the nearby fruit plants and trees. Three aphid species grow on potato leaves and can therefore cause damage and loss to this crop.

Keywords: aphid; biology; diversity; potato.

P171

Evaluation of the antibacterial activity of *Artémisia campestris* L

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Abstract

Several researches have confirmed the pharmacological efficiency of medicinal plants that grow in arid zone, *Artémisia campestris* L is a

plant that grows in El bayadh region (Western Algeria) and used in traditional therapy. The present work deals with the antibacterial activities and phytochemical studies of ethanolic extract. The antibacterial activities of the extract was evaluated by the diffusion method in solid medium on bacteria: *Pseudomonas aeruginosa* ATCC 270853, *Staphylococcus aureus* ATCC 43300, and *Escherichia coli* ATCC 25922. The extract was chromatographed on thin silica gel and observed at 254 nm in the darkroom. The inhibition diameters vary between 11 to 21 mm for *Pseudomonas aeruginosa*, and 11 to 14 for *Staphylococcus aureus*, and 12 to 22 for *Escherichia coli*. The qualitative analyses realized by thin layer chromatography (TLC) shows the presence of coumarins and flavonoids which may be responsible for antimicrobial power of this plant. In light of the results obtained, it appears that the extract exert antibacterial effect. This effect depends on the concentrations. We plan to complete this work by identify other compounds that are responsible for the antimicrobial potency.

Keywords: *Artémisia campestris* L, Ethanolic extract, Antibacterial activity, Chromatography,

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Phytochemical screening and antimicrobial activity of extracts of *Phlomis crinita* Cav., *Mentha pulegium* L. and *Origanum vulgare* L. from the mount of Tessala (Western Algeria)

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Abstract

The aims of the present study were to evaluate the phytochemical screening of several secondary metabolites and the antimicrobial activities of the ethanolic, decoction and infused extracts of *Phlomis crinita* Cav., *Mentha pulegium* L. and *Origanum vulgare* L. These species of *Lamiaceae* are used in traditional medicine and pharmacopeia. The ethanolic, decoction and infused extracts were prepared according to the

method of ref. The phytochemical tests of the various extracts are carried out according to the protocols described by ref. The sensitivity test of bacteria and fungi is performed by the diffusion method (the disk method). Phytochemistry screening allowed to highlight the presence of substances of high therapeutic value (flavonoids, tannins, coumarins, Anthocyanins, Alkaloids.....). The antimicrobial activity of the extracts of the taxa selected from the mount of Tessala against three bacterial strains (*Escherichia coli* ATCC 25922, *Bacillus cereus* ATCC 10876 and *Proteus mirabilis* ATCC 35659) and two fungal strains (*Candida albicans* ATCC 10231 and *Aspergillus brasiliensis* ATCC 16404) showed a moderate antibacterial effect on bacteria and a remarkable activity especially against *C. albicans*. The antimicrobial potential of the extracts of the leaves of three studied varied depending on the taxa, on the tested extract and its concentration and on the type of microbial strain. The extracts produces areas of inhibition with diameters between 7 and 19 mm, which indicates sensitivity rates varying between 8,33 and 66,67% in the microbial strains studied. These findings have brought additional data for the better knowledge of these taxa especially highlight the differences between these *Lamiaceae*. These results confirm the biological powers of these species. These *Lamiaceae* of western Algeria and surely the other taxa of the same family of our country contain a lot of active substances, which confirms the necessity to explore these ways for their use in applied herbal medicine.

Keywords: Antimicrobial; extracts ; *Lamiaceae*; Screening.

P173

Genetic relationships and structuration of six African local chicken populations

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Abstract

Local chickens represent an important animal genetic resource for improving farmers' income in Africa. The present study provides a comparative analysis of the genetic diversity of village chickens across a subset of African countries. The genotypes of six African local chicken populations (Algeria, Morocco, Cameroon, Benin, Ghana and Côte d'Ivoire) for 22 microsatellite markers were used to estimate genetic diversity within and between these populations. High levels of heterozygosity, ranging from 0.56 to 0.65, were reported for all local populations. The allelic richness varied from 5.68 to 6.35. Very low values of differentiation and genetic distance were observed between the populations of Benin, Ghana and Côte d'Ivoire; and this was translated by the formation of a single cluster on the phylogenetic tree. This result is explained by the proximity between the three countries and the high level of commercial exchange between them. The same result was observed between Algerian and Moroccan populations who formed a second cluster that also included the Cameroon population. A more in-depth study of genetic differentiation among African populations, taking into account climatic conditions, agricultural systems and cultural practices is needed. The result will enable us to study the influence of these parameters on the genetic diversity of local chickens.

Keywords: Genetic distance, genetic diversity, local chickens, microsatellites.

P174

The relationship between sweet foods and non-alcoholic fatty liver disease in type 2 diabetics

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Abstract

Excessive consumption of sugary foods has been associated with an increased prevalence of metabolic diseases and there is growing evidence that it may also contribute to the development and severity of non-alcoholic fatty liver disease (NAFLD), a chronic, often silent, it is characterized by the accumulation of triglycerides in hepatocytes. The aim of our work is to conduct a retro-prospective study on the relationship between the consumption of sugary products and non-alcoholic fatty liver disease in type 2 diabetics. We recruited 40 type 2 diabetics residing in the wilaya of Ain Témouchent with an average age of 57 years divided into two groups, 20 diabetics with NAFLD and 20 diabetic controls, not affected, which we realized firstly, anthropometric measurements and establishes a questionnaire on their eating habits. Then, we carried out a biological assessment including blood parameters (blood glucose and lipid balance). The results of the dietary survey show that the proportion of daily caloric and carbohydrate intake is higher in steatotic diabetics compared to non-steatotic diabetics, since sweetened products are frequently consumed in NAFLD diabetics. In contrast, a significant disturbance in the lipid profile was observed in diabetic steatotics. Our results implicate the excessive consumption of added sugars as a risk factor for the development of non-alcoholic fatty liver disease in type 2 diabetics.

Key words: added sugars; diabetes Type 2; NAFLD; sweet products.

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Preliminary study on the probiotic effect of *Lactobacillus plantarum* NSC5C strain on neurobehavioral disorders and oxidative stress induced by lead intoxication in Wistar rats

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Abstract

Lead is a metal that is ubiquitous in the environment and has a well-established toxicity; it is considered a non-essential element for the vital functions of the body. Exposure to this metal, even at very low doses, causes significant dysfunctions in various organs, particularly the central nervous system, which can lead to neurobehavioral disorders. To this end, our work focuses on the impact of lead intoxication on anxiety, depression and oxidative stress *in vivo* and the ability of the probiotic strain *Lactobacillus plantarum* NSC5C to counter squeals generated by this metal. The experiment was conducted for 7 weeks on Wistar rats. Animals were divided into 3 batches (a non-intoxicated control batch, an untreated intoxicated batch, and an intoxicated batch receiving probiotics as a dietary supplement). Daily intoxication is carried out orally by diluting 2 g/l of lead acetate in the drinking water; the probiotic strain is presented in the form of fermented milk diluted at 10% in the water presented to the treated batch. At the end of the 7th week of study, behavioral tests indicative of depression and anxiety are carried out, specifically tests of forced swimming, labyrinth of raised cross and open field. The blood and the brain are taken after the sacrifice of rats to assay respectively glycemia and malondialdehyde (MDA) which represent one of oxidative stress biomarkers. Results show that daily exposure to lead causes neurobehavioral abnormalities resulting in locomotor hypoactivity and reduced

environmental scanning behavior that reflects the onset of stress, anxiety and depression. This intoxication also revealed a disruption of the various biochemical parameters tested, in particular the biomarkers of cerebral stress (MDA). In addition, probiotic treatment resulted in decreased blood glucose and MDA rate in brain tissue, decreased body weight, and increased brain weight in young rats compared to intoxicated animals. In addition, the use of the various behavioral test techniques reveals that the probiotic corrects the depressive state, anxiety and locomotor hypoactivity observed in the rats exposed to Lead. *The action of Lactobacillus plantarum NSC5C strain showed a protective effect against depression and anxiety as well as on the oxidative stress induced by lead intoxication, it would be interesting to deepen this line of research by measuring more biomarkers of oxidative stress on brain and liver and compare the efficacy of NSC5C strain against other probiotics and antioxidant substances. Safety of the strain should also be checked before considering clinical studies.*

Keywords: Lead; Neurobehavioral disorders; Depression; Anxiety; Probiotics; *Lactobacillus plantarum*; Oxidative stress.

P176

Phytochemical study and biological activity of a medicinal plant "*Cotula cinerea*" of the South-West of Algeria

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Abstract

In the context of the plant valorization, the present work is interested in the phytochemical study and the antioxidant activity of essential oil of the flowers of a medicinal plant from the South-west Algerian (*Cotula cinerea*, El guertoufa lbayda) which is a specie belonging to the family Asteraceae. The essential oil was extracted by hydrodistillation using a Clevenger type apparatus. Then, the antioxidant activity of this oil was evaluated by the two methods which are

the trapping of the radical DPPH and the bleaching of β -carotene. Thus, the study of the chemical composition is done by the GC-SM technique. The results of the antioxidant activity reveal that the essential oil of the flowers has no inhibitory effect of the DPPH radical in comparison with the standards used (ascorbic acid, gallic acid and catechin). On the other hand, our oil has shown considerable antioxidant power by preserving the color of β -carotene in a manner similar to that of catechin and gallic acid. As regards the chemical composition, the essential oil components of flowers are β -thujone; santolinatriene and camphor. These results suggest that our species could serve as an alternative source of active ingredients producing pharmacological activity.

Keywords: Algerian *Cotula cinerea*, essential oil, antioxidant activity, chemical composition.

P177

Combined effect of established BMI loci on obesity-related traits in an Algerian population sample

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Abstract

Obesity (as characterized by excess body fat) is an established risk factor for cardiovascular and

metabolic diseases. Indeed, each unit increase in the body mass index (BMI) increases the risk of hypertension by a factor of 5 and the risks of coronary artery disease and stroke by a factor of 3.6. It is noteworthy that 80% of people with type 2 diabetes are obese. We sought to establish whether genetic variants that are robustly associated with BMI could modulate anthropometric traits and the obesity risk in an Algerian population sample, the ISOR study. The ISOR study of 787 adult subjects (aged between 30 and 64) provided a representative sample of the population living in the city of Oran (north-west of Algeria). We investigated the combined effect of 29 BMI established genetic variants using a genetic predisposition score (GPS) on anthropometric traits and obesity risk in 740 subjects. We found that each additional risk allele in the GPS was associated with an increment in the mean [95% CI] for BMI of 0.15 [0.06 - 0.24] kg/m² ($p = 0.001$). Although the GPS was also associated with higher waist ($p = 0.02$) and hip ($p = 0.02$) circumferences, these associations were in fact driven by BMI. The GPS was also associated with an 11% higher risk of obesity (OR [95%CI] = 1.11 [1.05 - 1.18], $p = 0.0004$). We also observed that few SNPs presented significant allele frequency differences between the ISOR and Speliotes et al. studies. Differences in allele frequencies may contribute to differences in disease prevalence between ethnic groups. The overall known genetic susceptibility associated with the GPS explained only 1.0% of the variance in BMI, whereas the combined effect of genetic and known environmental factors accounted for 14.1%. Our data showed that a GPS comprising 29 BMI established loci developed from Europeans seems to be a valid score in a North African population. Our findings contribute to a better understanding of the genetic susceptibility to obesity in Algeria.

Keywords: Genetic predisposition score, Polymorphism, BMI, Obesity, Algerian population, ISOR study.

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Multi-mycotoxin occurrence and risk characterization in foodstuffs from Algeria

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Abstract

Mycotoxins are toxic compounds produced by different types of fungus, belonging mainly to the *Aspergillus*, *Penicillium*, *Fusarium* and *Claviceps* genera. European Union and many others countries had established maximum levels for those mycotoxins considered as chemical hazards in Regulation and subsequent amendments. However, other countries such as Algeria have not established any regulation concerning those contaminants, and scarce controls on the products susceptible of contamination are carried out, with the subsequent risk for the consumers. The aim of this study was to evaluate the mycotoxin contamination of 190 samples of different cereals (maize, rice, wheat and barley) and cereals based-product (couscous and semolina of barley) obtained from Algerian markets. Subsequently the risk exposure of Algerian population over the consumption of these foodstuffs was evaluated. A method based on a QuEChERS-based extraction and ultra-high performance liquid chromatography coupled to tandem mass spectrometry (UHPLC-MS/MS) was developed and validated for the analysis of (aflatoxin B1, B2, G1 and G2, ochratoxin A, deoxynivalenol, zearalenone, fumonisin B1 and B2, T-2, HT-2 toxin, fusarenon-X, citrinin, sterigmatocystin, beauvericin, enniatin A, A1, B and B1) in cereals. An UHPLC-MS/MS method was developed and validated for the simultaneous determination of 12 ergot alkaloids (ergotamine, egometrine, egocristine, ergokryptine, ergocronine, ergosine, ergotaminine, egometrinine, egocristinine,

ergokryptinine, ergocroninine and ergosinine) in cereal samples. The analytes were extracted using an acetonitrile and ammonium carbonate solution, followed by purification with C-18 and Z + sep sorbent. A simple method for the determination of aflatoxin B1, B2, G1, G2 and ochratoxin A in cereals based-product using immunoaffinity column extraction in combination with quantification with UHPLC. Analytical results showed that 99 cereal samples (52%) were contaminated with at least one toxin, while 36% of the samples were contaminated with two to nine mycotoxins. Moreover, aflatoxin G1, T-2, citrinin, beauvericin and deoxynivalenol were the most commonly found mycotoxins with a frequency of 41.6%, 36.4%, 25.8%, 23.5% and 20.9%, respectively. Fumonisin, enniatins B and B1, deoxynivalenol and zearalenone registered high concentrations, ranging from 4-48878 µg/kg, 1.2-5288 µg/kg, 15-4569 µg/kg, 48-2055 µg/kg and 10.4-579 µg/kg, respectively. Furthermore, mycotoxin concentrations higher than those allowed by the European Union were observed in 27, 17, 6, 2 and 1 samples for fumonisin, the sum of aflatoxins, zearalenone, ochratoxin A and deoxynivalenol. The risk exposure assessment concluded that the high levels found for fumonisin (FB1+FB2) in maize and for DON, ZEA and the sum of (HT-2+T-2) in wheat, represent a high health risk for the average adult consumers in Algeria. The obtained results pointed out the necessity for a consistent control over these contaminants and the definition of their maximum allowed levels in different foodstuffs. Hence, more data about these mycotoxins with further works with higher number of samples and other susceptible food products would be needed to assess the situation. On the other hand, the focus should also be directed towards reduction and control of mycotoxins in the food chain.

Keywords: Mycotoxins, liquid chromatography, risk assessment, Algeria.

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Antioxydant Activity of the Essential Oil of *Sature jacandidissima* (Munby) Briq. Native Plant from West Algeria

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Abstract:

For many years, a variety of different chemical and synthetic compounds has been used as antimicrobial agents, but the widespread of their use causes ecological and medical problems (Bernadet, 2000). That's why; there is a renewal interest in the use of herbs and spices that have been used since ancient times for their perfume, flavor and preservative properties. Among natural antimicrobials are the essential oils extracted from many plants, and have been reported to possess a wide spectrum of antibacterial activity (Kar, 2007). *Sature jacandidissima* (Munby.) Briq. is an aromatic medicinal plant belonging to family Lamiaceae, harvested between rocky lawns in west Algeria and still used by locals to flavor culinary dishes and also to treat flu and fever, intestinal worms and painful periods. It's called by locals "Nabta el beda" or "Zaatercheleuh" (Quezel and Santa, 1963). Our sample of *Saturejacandidissima* (Munby.) Briq. from west Algeria (Ain Temouchent) has been subjected to hydrodistillation for 3 hours and then analysis using a GC/MS clarus model. The essential oil yield from the whole aerial parts of *Saturejacandidissima* is 0.90% (w/w), it's an important yield compared to other species of *Satureja* genus. Twelve constituents were identified, representing 90.61% of the total oil fraction. The major constituents of the oil were pulegone (47.62%), menthone (24.50%) and terpinen-4-ol (11.63%). The evaluation of the antioxydant activity by three chemical methods,

revealed remarkable antioxydant capacities; this essential oil is active with IC₅₀ (concentration inhibiting 50% of DPPH) of about 272.52 µg / ml and EC50 (the median effective concentration to reduce iron) of 28.89 mg / ml. The total antioxydant capacity (CAT) was very important and it exceeds 329 mg equivalent of ascorbic acid per gram of essential oil.

Keywords: Essential oil, *Sature jacandidissima* (Munby.) Briq., GC/MS, Antioxydant activity.

P180

Assesment of the knowledge of pharmacists community on oral anticancer therapy in the treatment of breast cancer

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Abstract

Oral anticancer agents (OAA) have allowed breast cancer patients to take their treatment in the comfort of their home. However, this kind of therapy brings patients to assume greater responsibility in the management of their therapeutics. Pharmacists, who delivered these products, can support patients by providing a therapeutic education of their treatment. The main aim of our study is to assess the knowledge of the pharmacists community on oral anticancer therapy in the treatment of breast cancer. We conducted a cross-sectional study from March 10th, 2016 to March 31st, 2016 in 50 pharmacies nearby the Oran University Hospital "CHUO", University Hospital EHU 1st November of Oran and the anti-cancer center of Oran (CAC) that treat breast cancer patients taking OAA. The survey was realized by using a self-administered questionnaire. The study has showed that 64% of pharmacists thought their knowledge level about OAA was average. 72% said that some questions asked by patients put them in difficulty and 28% felt that their ability to ensure an education and to counsel patients on OAA use was low. These results have showed the problem of Algerian pharmacists to ensure the safety of OAA delivery. Many surveys noticed the same

concern on the subject: in Japan, a study has established that only 6-10% of pharmacists felt that they had received adequate education in oncology or oral chemotherapy. Only 54% felt comfortable dispensing OAA and only 40% felt comfortable educating patients about oral chemotherapy. In Saudi Arabia, a study has revealed that about 20% of Pharmacists had adequate knowledge about oral anticancer agents, and only 26% felt somewhat confident to dispense OAA. In USA, a study in Arkansas has pointed out that only 22% of respondents reported confidence in their ability to manage an influx of OAAs, and the majority of respondents (77%) reported that their level of training or knowledge was the main barrier to counseling patients. The main reason of the knowledge gaps among pharmacists could be the limited formal education about OAA as well as the lack of medical training after their graduation.

One study performed in Canada has showed that only about 14% of pharmacists felt that they had adequate oncology education during their pharmacy school curriculum and that fewer than 20% had attended an educational program related to oncology in the past 2 years. Fewer than 10% of them

felt comfortable educating patients on OAA. To resolve these problems, in Germany, Health programs have been established by the German Society for Oncology Pharmacy « DGOP » and the German Cancer Society to develop training programs and to provide tools to support community pharmacists interacting with cancer patients taking OAA. Our study has revealed knowledge gaps in Algerian pharmacists' community about OAA and low confidence in dispensing these medications. The need of specialized university lectures on oncology medications and medical training programs after graduation is important to improve safety of delivery by pharmacists and therapeutic education of patients.

Keywords: breast cancer; oral anticancer agents; pharmacists.

P181

Characterization and immunomodulation of exopolysaccharides-producing lactic acid bacteria strains of technological interest

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Abstract

Lactic acid bacteria belonging to the genus *Leuconostoc* are Gram positive bacteria with technological interest related to their properties to: 1) ferment food product matrices; 2) produce carbon dioxide during the production of cheeses; 3) produce of aroma compounds; 4) produce exopolysaccharides (EPS), which are used as food additives; and 5) probiotic potential of interest for the elaboration of functional foods. The aim of this study is characterization of strains of lactic acid bacteria (LAB) and their exopolysaccharides (EPS). Six *Leuconostoc mesenteroides* strains isolated from camel milk and sheep milk were selected according to the level of production of EPS both in liquid medium as solid. EPS were produced in the presence of sucrose, purified from bacterial culture supernatants by ethanol precipitation, dialyzed and lyophilized. The purified EPS and producing bacteria were used in several studies, as well as, metabolic study, physicochemical analysis and determination of immunomodulation ability. The metabolic study of these strains in the presence of sucrose showed a correlation between sugar consumption and the synthesis of their intermediate (glucose and fructose) and final metabolites (lactate and mannitol). The production, precipitation and purification of the exopolysaccharides showed a final yield of the polymers between 1.2 and 3.6 g L⁻¹. Methylation analyzes and the determination of the composition of the monomers revealed that the homopolysaccharides are dextrans with a main chain of glucopyranose units linked by α - (1,6) bonds, and partially branched (between 6.6%

and 10, 3%) in the O-3 position. Size exclusion chromatography coupled with multiangle laser light scattering (SEC-MALLS) detection analysis demonstrated that the dextrans had high molecular masses which varies between 1.74×10^8 Da and 4.41×10^8 Da. In addition, dextrans clearly showed anti-inflammatory immunomodulatory activity *in vitro*, using THP-1 macrophages cell line. The LAB and their dextrans showed a particular technological interest that qualified them to be used in the agri-food industry producing functional foods. As perspective, the characterization of dextransucrase enzyme, responsible to produce dextrans, is crucial to complete the study of EPS.

Keywords: exopolysaccharides; immune-modulation; lactic acid bacteria; metabolim.

P182

Alzheimer's disease: epidemiological characteristics

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Abstract :

Alzheimer's disease (AD) is the most common neurodegenerative disease. It affects more than 44 million people worldwide, and is associated with atrophy of the cerebral cortex, following the formation of beta amyloid plaques and neurofibrillary tangles. It is characterized by cognitive disorders, temporal-spatial disorientation, behavioral disturbances, executive functions and leads in the end to a loss of autonomy. Risk factors are being evaluated around the world. Given the lack of scientific work on AM in Algeria, our goal is to establish a retrospective study on medical records of AM patients. The retrospective descriptive study is based on the medical records of 40 patients followed in specialized consultation at the University Hospital Center Ben Badis,

Constantine for Alzheimer's disease. The data is collected following a questionnaire. All the data in our study were processed using the Epi Info 7 software. The results found show that the mean age in AM patients is 71.65 ± 8.82 years, with a mean onset of 68.55 ± 8.19 years, Our results are consistent with those of the literature. The sex ratio is 0.7 in favor of the female sex, our results are consistent with those of Ben Djebara and Gouider. The majority of the affected subjects are housewives. Alzheimer's disease has become a serious public health problem as it is responsible for about half of the current dementia syndromes. A genetic study is in progress.

Mots clés: maladie d'Alzheimer; épidémiologie.

P183

Epidemiological survey of the seroprevalence of toxoplasmosis in pregnant women in the region of Tizi-Ouzou

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Abstract:

Toxoplasmosis is a cosmopolitan anthroozoonosis caused by *Toxoplasma gondii*. It is often benign in immunocompetent individuals but may be formidable in the immunocompromised and when it occurs during pregnancy, due to the transmission of the parasite to the fetus which exposes it to congenital toxoplasmosis. The purpose of our study is to estimate the seroprevalence of toxoplasmosis in pregnant women in the region of Tizi-Ouzou and see if there is a relationship between age, parity and acquisition of toxoplasmic infection. Our study is a cross-sectional survey, which took place from February

25th, 2018 to April 05th, 2018, involving a sample of 355 pregnant women. It was carried out in three places namely: the city of Tizi-Ouzou, TiziRachid and Larbaa Nathlathen. An information sheet produced for this purpose enabled the collection of various epidemiological data. Data interpretation is performed by software: Excel and Statistica. The presence of association between two variables is measured by a test (X²), a value of $p < 0.05$ was considered statistically significant. A total of 355 questionnaires were retrieved, but the analysis was limited to 329 questionnaires for which the women's immune status is known. The seroprevalence of toxoplasmosis in pregnant women according to our study in the region of Tizi-Ouzou is 44.98%. Our study revealed a higher prevalence than that reported in 2015 in the region on Tizi-Ouzou, which was 34.5%. On the other hand, it is slightly lower than that obtained in 2017 in the region of Tizi-Ouzou which was 48.34%. These differences could be explained by some improvement in hygiene conditions but especially by the nature of the very different sampling in the studies. In our study seroprevalence increases with age. Several studies have reported an increase in seroprevalence with age. In our study parity was not identified as a predictor of toxoplasma immunization ($p = 0.07$). Our observation is consistent with that made in Agadir and Rabat. So, in our study area, women whether primiparous or multiparous, could have the same possibilities to be infected with toxoplasma gondii. The toxoplasma seroprevalence obtained during our study is 44.98%. This result showed that pregnant women are highly exposed to toxoplasma gondii in the region of Tizi-Ouzou. Today, there is no vaccine to prevent toxoplasmosis in humans. So, the compliance with dietary and lifestyle measures remains the only prevention available to all non-immunized pregnant women.

Keywords: pregnant women; Seroprevalence; Tizi-Ouzou; Toxoplasmosis.

P184

Beneficial Effect of *Paronychia capitata* L. aqueous Extract on Ethylene Glycol-Induced Urolithiasis in Rats

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Abstract:

Herbal plants and their extracts are the best remedy for prevention and cure of urolithiasis as they play roles in controlling the process of crystallization events. *Paronychia capitata* L. known under the name of (Atai el Djebel). It is also used as cholagogue, dermatologic, anti-infective, lithotritic, diuretic, digestive and antihypertensive. The aim of the current study is to evaluate the beneficial effect of the aqueous extract (decoction) of the plant *Paronychia capitata* L. as a preventive agent in experimentally induced nephrolithiasis in a rat model. Ethylene glycol (EG) was used in the experiment to induce calcium oxalate (CaOx) deposition into kidneys. In preventive protocol, *Paronychia capitata* decoction extract was administered in the same day with EG to evaluate the ability of the extract to prevent crystal deposition. Nephrolithiasis was induced in male Wistar rats by adding ethylene glycol (0.75%) in drinking water for 28 days. Animals divided in six groups each containing six animals. Vehicle control, model control and *P. capitata* aqueous extract in dose of 500 mg/kg of b. w the rat. The animals were sacrificed under 10% chloral anesthesia at a dose of 3 mg / kg b w of the rat 24 hours after the last dose. After which different dosages were carried out: urinary volume of 24 hours, urinary pH and crystalluria. As well; the urinary concentration of crucial ions contributing to renal stone formation was evaluated: calcium,

phosphate, uric acid and magnesium in urine. The aqueous extract of *Paronychia capitata* L. was tested for its antilithiasis activity. A significant decrease in calculus weight was observed after treatment in the animals receiving the aqueous extract compared to the control groups. This extract showed an increase in urinary volume of 24 h compared to the control. Impairment of renal function and oxidative imbalance in kidney observed in calculi induce group. Treatment with *P. capitata* decreases hyperoxaluria, calcium, uric acid, improves renal function. Crystalluria was characterized by excretion of large calcium oxalate crystals in lithogenic group but smaller in drug treated group. The histology showed depositions of large number of calcium oxalate crystals in kidney in calculi induced group while in the treated group small and fewer deposits. This extract showed a 24-hour increase in urinary volume compared to the control. The diuretic activity observed may help prevent the deposition of oxalate stones. The present investigation has shown that the plant extract clearly prevents the formation of urolithiasis. The result indicates antiurolithiatic activity of *P. capitata* mediated possibly by calcium oxalate crystal inhibition and maintaining balance between stone promoters and inhibitors constituents and this study rationalized its medicinal use in urolithiasis. In perspective, further studies are needed to identify the anti-lithiasis component of this plant.

Keywords: *Paronychiacapitata* L., ethylene glycol, urolithiasis, calcium oxalate, Crystalluria.

P185

Effect of maternal exposure to a pyrethroid on the renal function of Wistar rat offspring

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Abstract

Alpha-cypermethrin, a type II pyrethroid insecticide, is widely used throughout the world in several domains. Long-term exposure to these

compounds has been shown to be detrimental to human health especially during sensitive periods of life including *in utero* exposure. This work aims to study metabolic and redox effects on serum and kidneys, and histological changes of long-term exposure to alpha-cypermethrin (1.5 mg/ kg body weight / day) in offspring of female Wistar rats, themselves exposed before and during pregnancy to the same dose, in order to establish if maternal exposure to alpha-CYP during gestation and lactation affected offspring metabolism and redox status and kidneys function in adulthood. Wistar female rats aged 6 weeks and weighting about 110 ± 20 received before and during gestation the standard diet contaminated or not with alpha-cypermethrin at the no observed effect level (NOEL, 1.5 mg / kg / day). This exposure is maintained during lactation and, after weaning, the offspring is followed until adulthood (3 and 5 months of postnatal life). Weight and ingested food are noted, energy intake is calculated. At the end of the experimental protocol, the rats are sacrificed; Serum and kidneys biochemical parameters and markers of oxidant/antioxidant status are determined. Histological sections are made in the kidneys to detect possible tissue alteration. Our results show that long-term exposure to alpha-cypermethrin induces, in both sexes, a significant reduction in body weight, food intake and energy intake; hyperglycemia and increased plasma levels of urea, creatinine and uric acid, often accentuated during pre- and post-natal exposure. Oxidant / antioxidant status was impaired in insecticide-treated rats, with increased plasma, erythrocyte and kidney levels of malondialdehyde and carbonyl proteins, and a significant reduction in catalase activity and reduced glutathione, in males and females at day 90 and day 150, with an accentuation of this imbalance during prenatal exposure. Contamination by type II pyrethroids induces a reduction in body weight. Increased serum levels of creatinine and urea and the impaired Redox status may be due to kidney tissue damage and disruption of kidney function. Histological changes in renal tissue architecture are marked by the presence of an inflammatory infiltrate and cellular degeneration, aggravated by combined pre- and postnatal exposure. Repeated oral exposure of cypermethrin has considerable harmful effects on body organs, section of kidney displayed hemorrhage and sloughing off renal epithelial cell in the convoluted tubules,

shrinkage of glomeruli, and necrosis of renal tubules.

Chronic exposure to alpha-cypermethrin affects metabolism, resulting in permanent changes in biochemical parameters and redox markers, as well as kidney tissue damage. These abnormalities are exacerbated in offspring with maternal exposure. Alpha-cypermethrin should be used with caution especially during pregnancy. It is strongly recommended to limit the use of synthetic pesticides and replace them with bio-pesticides in the different fields, whether agricultural or domestic.

Keywords: Alpha-cypermethrin; kidney; Offspring; Oxidative stress.

P186

Artificial neural network models based on QSAR for predicting and screening of novel AChE inhibitors as anti- Alzheimer drugs

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Abstract:

Acetylcholinesterase (AChE) is an enzyme that catalyzes the breakdown of the neurotransmitter acetylcholine (ACh) this one is essential for cognition and memory. Since low levels of this signaling molecule are associated with the development of Alzheimer's disease (AD) characterized by loss of cognition and impaired intellectual ability and functionality. The main aim of our research was to build a neural model, which could be used for screening of new anti-AChE inhibitors without need of expensive experimental test. The artificial neural network (ANN) models were based on a quantitative structure-activity relationship (QSAR) study was investigated in a series of 53 pyridazine derivatives acting as AChE inhibitors (AChEIs). The principal component analysis (PCA) has been used to select descriptors that show a high correlation with activities. The k-means method was used to divide the dataset into training and test sets. The QSAR models developed (MLR and

ANN) were built in accordance with the OECD guidelines including internal, external validation and chemical applicability domain (AD). The ANN method, considering the relevant descriptors obtained from the MLR. Stability and predictive ability of model ANN is more significantly that MLR model. The best computational neural network model was with $R^2=0.96$ and $MSE = 0.06$. Furthermore, Y-scrambling was applied to evaluate the possibility of chance correlation of the predictive model. All validations showed that the ANN model can be used quite satisfactorily for the screening of new series of molecules with anti-AChE activity.

Key-words: - Acetylcholinesterase, ANN, QSAR, Virtual screening.

P187

Study of the effects of lemon balm (*Melissa officinalis*) on long-term memory in Wistar male rats

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Abstract

This work focuses on the research of effects of lemon balm (*Melissa officinalis*) on long-term memory, it is a perennial plant of the Lamiaceae family, used for centuries in traditional medicine as an antispasmodic, antiviral, and anti-stress agent. The active substances of *Melissa officinalis* are obtained after ethanolic extraction of the fresh leaves, the therapeutic effects of our product are then tested on male Wistar rats, which receive by oral administration different concentrations (50, 150, 300 mg / kg) on a period of 10 days. Our rats are then evaluated using a behavioral device that measures the long-term memory state (MWM: The Morris water maze). Our results suggest that animals treated with *Melissa officinalis* have longer-term memory more developed than controls. Oral ingestion of *Melissa officinalis* has positive effects

on long-term memory. It is important to note that the duration of the administration had a significant impact on the observed behavioral pattern.

Keywords: *Melissa officinalis*; Wistar; herbal medicine; long-term memory.

P188

In vitro chemical and biological evaluation of a forage plant from arid zones

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Abstract

This work aims to evaluate in vitro the activity of saponins extracted from *Astragalus gombiformis*. It will also focus on the determination of its nutritional value. In our experimental protocol we carried out several techniques to determine the mineral salts, dry matter and organic matter of our plant, as well as an extraction of saponins and an in vitro fermentation study. The results show that our plant *Astragalus gombiformis* has 48.48% of the dry matter, and 22.25% of the mineral elements, as well as 76.48% of organic matter. In addition, extraction of saponins indicates a concentration of 0.8ml / ml. Indeed, the results of counts of protozoa reveal a reduction in the number of protozoa at different incubation times and different doses used. The forage studied has a very positive effect on protozoan reduction. This suggests another mechanism of inhibition of methane production.

Keywords: *Astragalus gombiformis*; Chemical analysis; Ruminants.

P189

Antioxidant property of hydrolysates derived from the hydrolysis of goat's milk caseins by *Lactobacillus* Proteases

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Abstract:

It is well known that lactic acid bacteria, widely used in the dairy industry, play an important role in the production of peptides derived from milk proteins, which can perform beneficial biological activities in addition to their nutritional roles. These bioactive peptides could be involved in maintaining or improving human health. The objective of our study was to select a proteolytic lactic strain and investigate its ability to generate antioxidant peptides. A strain of *Lactobacillus* labeled LBBS1 with proteolytic potential has been selected by screening on agar-milk medium from 14 strains. This strain has shown the ability to release proteases into the culture medium, their activities on caseins from goat's milk have been evaluated by biochemical methods. The detection of antioxidant activity by trapping the free radical diphenylpicrylhydrazyl (DPPH) of the hydrolysates obtained revealed an antioxidant power. This study showed that *Lactobacillus* proteases are able to hydrolyze caseins at cleavage sites leading to peptide sequences with antioxidant activity. Antioxidants contribute to the prevention of chronic diseases such as cardiovascular diseases and cancer due to oxidative stress. The ingestion of natural peptides derived from food can delay the onset of diseases by reducing oxidative damages.

Keywords: Antioxidant Activity; Casein Hydrolysates; *Lactobacillus*; Protease

P190**Evaluation of the antioxidant activity of the aqueous extract of Cucumis melo seeds****Amira imane bahmed**^{1*},
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amira_im@hotmail.fr***Abstract**

The seeds of melon (*Cucumis melo*) are used in traditional medicine to cure various diseases. Indeed, they are used against dysuria, and possess antitussive properties, vermifuges and febrifuges, etc ... The objective of this study is to quantify the phenolic compounds and to evaluate the antioxidant activity of the aqueous extract. Phytochemical analyzes were performed on the seeds of the plant, in order to determine their levels of phenolic compounds (total polyphenols, flavonoids, flavonols and condensed tannins), and to evaluate the antioxidant activity using the DPPH method. The composition of the aqueous extract of *C.melo* polyphenols found was as follows: total polyphenols $21,123 \pm 0.408$ mg / g.lyo, flavonols 216.623 ± 1.848 mg / g.lyo, condensed tannins 65.955 ± 9.916 mg / g.lyo, flavonoids $1,995 \pm 0,116$ mg / g.lyo). The inhibition rate of the extract was 4.885 ± 1.561 (at 20 mg / ml). The presence of these compounds would explain the existence of an antiradical activity detected by the DPPH method. The therapeutic activity of this plant is due to the presence of secondary metabolites. Indeed, the antioxidant property gives it a major interest that can be used in various parts of the fight against cancer, and can become tomorrow a natural drug replacing synthetic drugs.

Keywords: Cucumis melo; Phenolic compounds; Antioxidant activity; phytochemistry.

P191**Evaluation of the antioxidant activity of the aqueous extract of Citrullus lanatus seeds****Amira imane bahmed**^{1*}, HaniarimBahmed²,
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Watermelon (*Citrullus lanatus*) is a plant used in herbal medicine for its many healing properties. The objective of this study is to quantify the phenolic compounds and determine the antioxidant activity in the aqueous extract of the seeds of this species. The seeds of the plant have undergone phytochemical assays, in order to determine their levels of phenolic compounds (total polyphenols, flavonoids, flavonols and condensed tannins), and to evaluate the antioxidant activity using two methods: DPPH and ABTS. The results indicated the presence of phenolic compounds in different proportions (total polyphenols 7.37 ± 0.711 mg / g.lyo, flavonoids 3.555 ± 0.1 mg / g.lyo, flavonols 110.419 ± 3.967 mg / g.lyo, condensed tannins $70,5 \pm 13.18$ mg / g.lyo), which would explain the existence of an anti-radical activity detected by the method of DPPH $12,907 \pm 3,437$ (at 20mg / ml) and ABTS ($75,315 \pm 0,946$ (at 20mg / ml) ml). Our results justify the use of this plant in herbal medicine and is a potential exploitable in various fields: agri-food (to replace synthetic antioxidants), cosmetics, and pharmaceuticals, for the development of an alternative to synthetic drugs.

Keywords: Citrullus lanatus; polyphenols; antioxidant activity; phytochemistry.

P192

Biochemical profile and risk factor's assessment among women with breast cancer in Sétif, Algeria: case-control study

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Abstract

Breast cancer (BC) is a malignant disease which represents the most common type of cancers among women. It has increased universally and is considered as the second chief mortality cause in women. This study aims to evaluate some epidemiological and biochemical parameters among 60 women with breast cancer aged between 35 and 70 years compared to 30 age-matched healthy women in Sétif, Algeria. This study was conducted at the anti-cancer center of Sétif. The epidemiological characteristics were collected by self-administered questionnaire. Biomarkers of venous blood were analyzed by standard methods. Statistical comparison was made between study groups with Student's *t* test, the significance was $p < 0.05$. Positive breast cancer family history and diet behavior were found to be significantly associated with the occurrence of breast cancer. However, education level and oral contraceptive, were not related to the development of BC. The results showed an average age of women with breast cancer ($31,00 \pm 1,24$) compared to controls ($30,00 \pm 1,11$ years). Breast cancer was significantly associated with high levels of cholesterol (1.90 ± 0.83 vs 1.52 ± 0.07) and triglycerides (1.51 ± 0.12 vs 1.10 ± 0.03). Recent study showed a significantly higher alteration of these parameters in cancer patients compared with the healthy control groups and in growing aged patients and more especially in women. No significant relation was established regarding hyperglycemia and obesity among BC group, despite that hyperinsulinemia has been shown to be an independent risk factor for breast cancer in nondiabetic postmenopausal women and may help to explain the relationship between obesity and breast cancer. There was significant decreasing risk of breast cancer with enhancing periods of lactation. It has been estimated that there is a 4.3% reduction for

every one-year of breast-feeding. Breast cancer remains a serious women health problem, which requires early diagnosis and new treatment and prevention strategies to reduce its occurrence in our country. This can be achieved by increasing woman's awareness for this disease, especially those at high risk, as well as the evaluation of lipid parameters which may be helpful to early detection of the possible neoplastic transformation.

Keywords: Biochemical parameters; Breast cancer; Risk factors; Sétif.

P193

Impact of plant protection products on some microorganisms in soil cultivated by potatoe (*Solanum tuberosum* L. var Sylvana)

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Abstract

Phytosanitary products are used in agriculture to protect the crop from harmful organisms but can have undesirable side effects on the environment including humans. The work undertaken focused on soil aspect, precisely the impact of plant protection products applied at two different doses on the growth of soil microflora (bacteria and fungi) cultivated by *Solanum tuberosum* L. var Sylvana. the potato crop was treated with three plant protection products (Medamec, Equation Pro and Folio Gold) at two different agronomic doses. Collected soil samples were analyzed for their physicochemical and microbiological characteristics. The results obtained showed that the application of the first dose has a significant effect on the decrease of bacterial and fungal populations of the order of 28% and 48%, respectively. These results are confirmed by the values recorded with the NPP technique (23%) and the microbial biomass technique (47%). The application of dose 2 increased this microbial decrease to 50% and 67%, respectively. On the other hand, the solid medium enumeration technique revealed slightly

higher microbial densities (bacterial and fungal) than that observed for the control. Herbicides and pesticides affect various microbial soil processes and, depending on the type and dose of application, may alter biomass quantitatively and qualitatively in the short and long term. These results affirm that plant protection products act on soil microflora because its increase and decrease reflect a disruption of its activity.

Keywords: Plant protection products; microbial biomass; soil microflora ; bacteria ; fungi.

P194

Aluminium-induced acute neurotoxicity in rats: Treatment with omega-6/omega-3 ratio

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Abstract

We are currently living in the "aluminum age" and its exposure is inevitable. Today, its toxicity is well established in animals, and an epidemiological link has indeed been demonstrated between its exposure and neurodegenerative diseases, following an overproduction of free radicals responsible for damage to the nervous system and other organs. The present study evaluates neurobehavioral, biochemical and hormonal disturbances at the brain level in 4 weeks old pups born from mothers intoxicated by aluminum and enlarged to investigate the possible ameliorating role of omega-3 and omega-6 fatty acids with low and high ratio. Aluminium was administered intraperitoneally (100 mg kg⁻¹ b. wt., twice a week) to female adult rats. Postnatally (30 days), pups were given orally by gavage the low and high ratio of omega-6/omega-3 for 5 weeks. The antioxidative and protective properties of omega-6/omega-3 ratio against the effects of

aluminium toxicity (Al) on behavior, redox status and leptin level was analysed by using the one way Anova test. The results revealed that AlCl₃ significantly increased the level of TBARS, NO, the antioxidant enzymes such as SOD, CAT and GPx, while GR was significantly decreased in the cerebral cortex in intoxicated pup rats. Moreover, the leptin concentration was significantly increased in cortex. On the other hand, the results exhibited that, omega-6/omega-3 dose were able to ameliorate the mentioned parameters. The Results reported that AlCl₃ is capable to cause marked alterations in some behavior and biochemical parameters by inducing an oxidative damage and inhibiting the antioxidant enzymes activities. Whereas the administration of omega-6/omega-3 combined to aluminium minimize its hazards. In addition, omega-6/omega-3 proved to be beneficial in decreasing free radicals and lipids level and increasing antioxidant enzymes activities. As well as omega-3 and omega-6 consumption could attenuate aluminium toxicity.

Keywords: Aluminum, neurobehavioral disorders, pro/antioxidant balance, omega-6/omega-3 ratio.

P195

Essential trace elements and medicinal tree: When is it safe to use?

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Abstract

Traditional medicinal tree such as *Juniperus thurifera* L. have been largely used since several centuries for a wide range of ailments related to digestive, endocrine, reproductive, and respiratory systems. Additionally, it is used in decoctions to treat vomiting and diarrhea. The aromatic berries were chewed to counter bleeding of gums. The essential oil of this species has antioxidant, antibacterial and antifungal properties. The present study focuses on the analysis of leaves of *Juniperus thurifera* L., for evaluation of Zinc and Copper in order to

highlight the importance of this spices as a potential source of micronutrients and to test the hypothesis when the practitioners of traditional medicine use this plant during seasons and to determine the better time during the year to harvest plant parts when concentrations of these elements were in optimal levels using a sensitive nuclear analytical technique based on energy dispersive X-ray fluorescence (EDXRF). The accuracy of the method was evaluated by analyzing the Certified Reference Materials (CRMs). The leaves of *J. thurifera* L. contain a higher amount of Cu (969.2 µg/g) during autumn. Zinc contents fluctuate over time, with a peak recorded during the summer (28.61 µg / g). The contents of Zn and Cu in *J. thurifera* L. during the four seasons was determined and compared with the recommended values (RDA) and was found to be well below the permissible limits recommended by the Joint WHO/FAO guidelines. The data obtained in the present work will be helpful in the synthesis of new synthetic drugs which can be used for medicinal purpose.

Keywords: *Juniperus thurifera* L, Essential trace elements, Medicinal tree, Dietary intake.

P196

Neurotoxic effect of a mixture of two pesticides in rabbits and the protective role of a flavonoid: Quercetin

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Abstract

The intensive use of plant protection products, in particular insecticides, causes adverse effects on living organisms and their environment. Food is an important source of consumer exposure to pesticides that are associated with the appearance of various pathologies. The objective of this work was to evaluate the different neurotoxic effects such as the global parameters of animal

growth and the redox status in the brain after exposure to sub-chronic (15 days) oral two pesticides, a pyrethroid; deltamethrin and an organophosphorus; phosalone, on an animal model; rabbits of New Zealand breed, and on the other hand the preventive effect of a polyphenol; quercetin against this toxicity. The experiment was carried out on forty (40) rabbits weighing between 1.7-2.7 kg, were divided into eight groups of 5 animals each; the first group served as a control, they received oral mineral water, the other groups were exposed to pesticides (phosalone and deltamethrin) and quercetin, either alone or as a mixture. Body weight was determined everyday, after sacrifice by decapitation and extraction of the brain, the latter was weighed and reported in percentage of the total body weight. Brain's protein content was assessed according to Bradford (1976). Glutathione peroxidase (GPx) (E.C.1.11.1.9) activity was measured using the method of Flohe and Gunzler (1984). Glutathione (GSH) concentration was measured utilizing the method described by Weckberker and Cory (1988) [3]. Malondialdehyde content was measured in brain tissues according to the method of Esterbauer et al. (1992). Our results show a neurotoxicity by the two pesticides used (PHO and DM), following the analysis of these results, one observes a considerable reduction of body weight of the rabbits exposed to the pesticides and an increase in the relative weight of the brains. The results also showed notable changes in biochemical and enzymatic parameters reflected by a decrease in cytosolic protein content, activity of glutathione peroxidase (GPx) and GSH. While MDA levels have increased. Our results demonstrated that quercetin can correct various disturbed parameters and can reduce the toxicity induced by deltamethrin and phosalone either individually or as a mixture.

Keywords: Neurotoxicity; Oxidative stress; Pesticides; Rabbits.

P197

Contribution to the study of post mortem blood alcohol concentration from peripheral and central blood in putrefied and non-putrefied cadavers

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Abstract

Ethanol known as alcohol is one of the so-called legal drugs in the same way as tobacco when consumption becomes excessive and chronic (ethylism), it can cause significant risks to health. Our current study consists of a cadaveric ethanol assay in blood from different anatomical sites, namely peripheral blood and central blood, in order to highlight the actual level of ethanol ingested and if it occurs. alcohol and to highlight the importance of the anatomical site to ensure a blood sample to have a real post mortem blood alcohol concentration that reflects the state of the person before his death. We targeted the cardiac and peripheral blood of two populations: rotten corpses and non-putrefied corpses. Assays are performed using the gas chromatograph, coupled to a flame ionization detector (GC/FID). This study is carried out in the context of criminalistic cases, received by the Department of Legal Toxicology of the Regional Laboratory of Scientific Police of Oran. In Algeria, the tolerable concentrations are <0,2g/l. In the case of overtaking the measures of criminal sanctions will be put in place (almond/imprisonment). These checks are mandatory in all cases of crime or accidents followed by death. for putrefied cadaver results: the average blood alcohol level in the cardiac blood is significantly higher than the average blood alcohol level in the peripheral blood. This raises as many questions in forensic science interpretation, especially in cases where peripheral blood alcohol has revealed a negative rate and blood alcohol concentration in the cardiac blood is positive for some cases in the first population. This positive alcoholic impregnation is relatively induced by the putrefaction phenomenon caused essentially by

microorganisms directly responsible in the production of ethanol post-mortem in the presence of glucose, lactate, glycerol or amino acids from the degradation of proteins. These bacteria present in the digestive tract at the time of death invade the portal venous system and the intestinal lymphatic vessels in the first hours after death, then the ethanol will be released to finally reach the heart chambers, resulting in a significantly higher blood alcohol concentration. is different than peripheral blood. The average heart blood alcohol levels for non-putrefied cadavers and the blood alcohol level in the peripheral blood. It is not significant enough, this is mainly reflected by the absence of the phenomenon of cadaver rot. The results obtained allow us to make a preliminary observation and to say that the elevation of alcohol levels is proportional to the degree of putrefaction, more than the state of the corpse is in advanced putrefaction more than the alcohol level is important. Our study shows us that in case of request for toxicological analysis by the medical examiner, it is therefore essential to correctly mention on the samples whether it is cardiac blood or peripheral blood. It is currently accepted that the post-mortem blood concentration of a xenobiotic is not always a reflection of its ante-mortem blood concentration. These phenomena, grouped together under the term post-mortem redistribution, can make the interpretation of the results very difficult, especially since they very frequently concern molecules commonly encountered in forensic toxicology, such as ethanol. This experience allows the toxicologist analyst, forensic scientist and investigative department to have an objective and constructive dialogue on the reality of an alcoholic intoxication among cadavers.

Keywords: Post-mortem; Redistribution of alcohol; Cardiac and peripheral blood; Putrefaction.

P198

QSAR Study and Molecular Modeling of POLO Like Kinase 1 inhibitors

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Abstract

Polo-like kinase 1, an important enzyme with various biological actions in cell mitosis, is a promising target for the development of new anticancer drugs. The present work is part of the study of the antitumor activity PLK1 kinase inhibitors using the modeling method QSAR, modeling the pharmacophore and molecular docking approach using the methods molecular modeling. The objective is to develop stable QSAR models, reliable and predictive for the prediction of inhibitory power to target PLK1. A molecular docking approach, structure-based pharmacophore modeling, and a quantitative structure-activity relationship (QSAR) study were performed on a set of molecules as PLK1 inhibitors. The common substructure, molecular docking and pharmacophore alignment were used to develop a 3D-QSAR model. Several QSAR models were obtained using electronic descriptors calculated by the method (DFT / BP86 / def-TZVP basis set (triple-valence polarized) and descriptors that reflect the hydrophobicity /hydrophilicity of the studied molecules, descriptors based on the so-called group contribution method and physico-chemical descriptors. The best model was obtained using the MLR method analysis. It shows that the combination of the HOMO descriptor and the number of H-bond donors (HBD) and H-bond acceptors (HBA), can explain 92% of the variation of antitumor activity, quantified by pIC50 of 41 studied compounds. The retained QSAR model reveals that the low HOMO values combined with HBD and HBA lead to an increase in the efficacy of the PLK1ce inhibitors, which implies that the electronic effects play a very important role in explaining the inhibition mechanism. The calculated surfaces of the sigma profile are compatible with the HBAs and HBDs

resulting from the pharmacophore model, which gives a reliability of the QSAR model. Molecular docking analysis of the ligand-receptor complex using a theoretical DFT OPLS3 basis has shown a correlation with the QSAR model and the pharmacophore model. Comparative analysis of the models obtained yielded statistically significant results. These models showed a good response to the validation of the set of tests. All structural informations obtained from the QSAR, the electronic descriptors calculated by DFT BP86, COSMO, and OPLS3 are compatible with the available crystal structure of PLK1 in combination with BI2536 where the pharmacophore model helps to better interpret the structure-activity relationship.

Key words: PLK1, docking, QSAR, DFT, pharmacophore

P199

Inhibition of *Candida albicans* biofilm by synergistic action of exogenous terpenoids

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Abstract

Candida albicans is opportunistic yeast, responsible for systemic infections in individuals with impaired immune response. Nosocomial *C. albicans* infections are often related to the ability to produce biofilm on mucosal surfaces and implanted medical devices. *Candida albicans* Biofilms contribute to increasing unpleasant mortality rates which pose an important therapeutic challenge in human diseases. Usually, conventional antibiotics agents encounter difficulty in treating and fully eradicating biofilm-related infections. So, several therapeutic approaches are needed to treat recalcitrant *Candida albicans* biofilms. The use of natural compound as an alternative source of antimicrobials has become a necessity given the growing concern over global antimicrobial

resistance. Our study aimed to investigate the possibility of using natural compound within the context of healthcare as a way of inhibiting and preventing the harmful development of *Candida albicans* biofilm. The study of the susceptibility of *Candida albicans* to terpenes was determined using the microdilution method according to CLSI. A Checkerboard assay was employed to evaluate the efficacy of terpenoids combinations. Biofilm susceptibility was determined using a metabolic 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) [3]. Out of the two terpenoids, carvacrol showed a stronger anti-*Candida* activity with MIC ~1 mg/mL. Both carvacrol and cuminaldehyde were able to reduce the viability of pre-formed biofilm at different concentrations. Finally, the combination of these terpenoids (carvacrol/cuminaldehyde) revealed an interesting synergistic effect and may prove more useful as chemotherapeutic agents than such compounds used singly. The results from this study suggested that the combination carvacrol/ cuminaldehyde seems to be a new strategy against *C. albicans* biofilm-related infections, and can be hence used as preservative to surgical devices without developing toxic effects on human

Keywords: *Candida albicans*, *terpenoids*, *antibiofilm activity*.

P200

Neutral lipids for treatment of hyperglycaemia and dyslipidemia: First results on an animal model

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Abstract

This study is an investigation into the effect of neutral lipids of *Nigella sativa* seed on hyperglycemia and blood lipid status in

Nicotinamide/Streptozotocin (N/STZ)-induced diabetic rats. Extraction of *Nigella sativa* oil was carried using methanol/chloroform extraction. Neutral lipids were obtained by fractionation on silica gel column. Both total oil and neutral lipid fractions were assessed by gas chromatography (GC) for their contents on fatty acids, phytosterols and phytosterols. Triglycerides contents were determined using high performance liquid chromatography (HPLC) coupled to an evaporative light scattering detector (ELSD). After N/STZ induction of diabetes in Wistar rats, fractions were administered orally (100mg/kg/daily) for 21 days, and blood glucose and lipids levels were assessed. Neutral fraction is rich in various bioactive lipids. In diabetic rats group treated with either total oil extract or neutral fraction, blood glucose decreased significantly from 123 mg/dL to 83 mg/dL respectively after only 7 days. Afterwards, blood glucose was stabilised to normal levels in both treated animal group from 15th to 21st day of experiment. A significant decrease in triglyceride was observed within only one week of treatment with both fractions. In contrast, treatment with both total oil and neutral lipids fractions lead to an increase in high density lipoprotein (HDL) cholesterol levels to 1.19 ± 0.08 g/L and 0.78 ± 0.08 g/L respectively at the 7th day with no change in body weight of animals during experiment. Neutral lipids play an important role in stabilising blood lipids and reduce significantly hyperglycaemia in diabetic rats. This finding would suggest them for the treatment of diabetes and dyslipidemia.

Keywords: *Nigella sativa*, *Hyperglycemia*, *Dyslipidemia*, *Neutral lipids*.

P201

Acute oral toxicity of the aqueous extract of bryonia dioica roots

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Abstract

Bryonia dioica Jacq is a climbing perennial herb with its roots which is generally used in tradition

al medicine in Algeria for the treatment of breast cancer. Our study aimed to investigate the safety of the aqueous extract of Bryonia dioica roots growing in Algeria by acute toxicity study. The in vivo acute oral toxicity study of aqueous extract of Bryonia dioica was conducted in accordance with Organisation for Economic Co-operation and Development (OECD) 420 Guideline. The aqueous extract of Bryonia dioica root was administered in a single dose of 2000 mg/kg via oral gavage; and the animals were observed for any behavioral changes or mortality for 14 days then the rats were sacrificed for hematological, biochemical and histopathology studies, body weight, organ weight were also evaluated. Acute administration of 2000 mg/kg of the aqueous extract of Bryonia dioica root did not induce any mortality and no toxicological symptoms were observed within 14 days. In addition, there were no significant elevations observed in the hematological parameter such as RBC WBC platelets and no significant changes in ALT, AST, urea and creatinine level. Moreover, no adverse changes in the macroscopical aspect of organs and in relative organs weight like heart, lungs, liver, spleen and kidney in the animals. Our results showed that acute administration of the aqueous extract of Bryonia dioica root did not produce any sign of toxicity or death in rats, suggesting that the LD50 is higher than 2000 mg/kg.

Keywords: *Bryonia dioica* root, acute oral toxicity, biochemical parameters and hematological parameters, aqueous extract.

P202

Inhibition of VEGF during angiogenesis

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Abstract

Angiogenesis is fundamental and essential for tumor development and metastatic spread for

the majority of solid tumors, the early growth phase of a primary tumor and its metastatic dissemination process are largely dependent on the formation of new vessels (angiogenesis tumor), without which the tumor cells remain as dormant cells, stable state intermediate between proliferation and apoptosis. Among the identified angiogenic factors, vascular endothelial growth factor (VEGF) is the key regulator of tumor angiogenesis. It is a glycoprotein expressed deregulated by tumor cells. VEGF-targeting therapies would normalize tumor vascularization and thus facilitate access of chemotherapeutic agents to tumors. We propose in this work to inhibit VEGF and to study the interaction between VEGF and organic molecules, based on data from the literature (Axitinib, Sorafenib, Sunitinib and NSC 35676). Based on the total interaction energy, it was noted that among all inhibitors, Sunitinib 3 is the best inhibitor of all series studied. Calculation of the distances between the Sorafenib 1 and the amino acid side chains constituting the active site and the calculated energies confirm that Sunitinib 3 has a better complementarity with the enzyme VEGFA. We can conclude that Sunitinib 3, has a better inhibition to slow the evolution of the studied enzyme. According to the literature the three ligands Axitinib, Sorafenib and Sunitinib, are inhibitors of VEGFR. According to our theoretical study these three ligands inhibit VEGFR and VEGFA. In perspective the next steps will consist of using other molecular docking programs, among the most recent and the most efficient that we have used, to test all the inhibitors of different enzymes studied so far in order to propose the best ones. We must also take into account the solvent effect that has been neglected in our approach.

Keywords: VEGFR; VEGFA; molecular docking; Axitinib, Sorafenib; sunitinib.

P203

Molecular characterization of multidrug resistant *Proteus mirabilis* isolates from Algerian patients

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Abstract

The aim of this study was to characterise the molecular genotype of multidrug resistance in *Proteus mirabilis* isolated from Algerian patients. A total of 217 *P. mirabilis* isolates were collected from two hospitals and eight private laboratories from four cities located in northwestern Algeria. All isolates were identified by Ap20E system and confirmed matrix-assisted laser desorption/ionisation time-of-flight mass spectrometry (MALDI-TOF/MS) with score up to. Antimicrobial susceptibility testing was performed by the disk diffusion. Genes encoding AmpC β -lactamases, extended-spectrum β -lactamases (ESBLs), quinolone resistance and aminoglycoside-modifying enzymes (AMEs). Clonal relationships were also determined by MALDI-TOF/MS proteomic typing. Of the 217 samples, 6.5% are highly resistant to majority of antibiotics (BHR), of which 4/14 (1.8%) had an ESBL genotype (blaCTX-M-2) and (4.6%) had an AmpC/ESBL genotype (blaCMY-2/blaTEM-1). AME genes were detected in all isolates, including ant(2'')-I, aac(3)-I, aac(6')-Ib-cr and aac(3)-IV. The qnrA gene was identified in majority of isolates (6%). This multiple phenotypes indicated clearly that are new emergence of clonal population in hospital and ambulatory care unit, this can attributed to limited effective antibiotic choose. MALDI-TOF/MS proteomic showed a one clade, include all Extremely Drug Resistant (XDR) *P. mirabilis*, the pseudogel indicated that there are a proteomic similarity between this strains. These results reflect a high degree of discrimination power for the rapid detection of clones with a high epidemiological risk. Here we report the description of plasmid-mediated quinolone resistance genes and ESBL- and/or AmpC β -lactamase-producing *P. mirabilis* isolates from Algerian healthcare centres. The MALDI-TOF/MS

proteomic is considered as rapid instrument for detection the emergence of a XDR strains harboring a new genotype with a high risk in ambulatory and hospital care.

Keywords: *Proteus mirabilis*; AmpC; Extended-spectrum β -lactamase; ESBL; Aminoglycoside-modifying enzyme; Algeria.

P204

Complete chloroplast genome of the diatom *Skeletonema pseudocostatum* from the western mediterranean coast of Algeria

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Abstract

Skeletonema is a genus of centric, planktonic diatoms that belongs to the Thalassiosirales. Members of this genus are distributed worldwide and can produce massive blooms. Some species are commonly used in aquaculture for feeding bivalves and crustaceans and can also serve as models in ecotoxicological. Despite the numerous studies devoted to *Skeletonema*, no chloroplast genome sequence is currently available for any species. In the framework of a collaborative public-private partnership between the University of Oran 1 (Algeria), the ESSBO (Algeria) and the WiraGen company (Algeria) aiming at developing bioprospecting, molecular taxonomy and blue biotechnologies in North Africa, we have undertaken several sampling campaigns of the coastal waters of Algeria. During one of our sampling campaigns, a strain of *Skeletonema pseudocostatum* Medlin was sampled near Cap Falcon and was isolated under inverted microscope. A total cellular DNA was extracted from a scaled-up culture and used for

sequencing the plastid genome. The *Skeletonema pseudocostatum* genome is 127,013 bp long and contains an inverted repeat region of 18, 240 bp. The order of genes on the inverted repeat was found to be highly conserved when compared with the plastid genomes of other Thalassiosirales. As expected, the maximum likelihood phylogeny we inferred from multiple plastid genes placed *Skeletonema pseudocostatum* within the Thalassiosirales. This diatom plastid genome is the first made available for the cosmopolitan and ecologically important genus *Skeletonema*. Similar genomic studies on other diatoms from Algeria are underway.

Keywords: aquaculture; chloroplast genome; phylogeny; *Skeletonema*.

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T-lymphocyte calcium signaling modulation by n-3 fatty acids in obese macrosomic rats

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Abstract

We investigated the effects of a diet containing EPAX-7010, rich in polyunsaturated fatty acid (PUFAs) such as eicosapentaenoic acid [20:5(n-3)] and docosahexaenoic acid [22:6(n-3)], i.e., a PUFA/EPAX regimen, on T-lymphocyte activation in diabetic pregnant rats and their obese pups. Mild hyperglycemia in pregnant rats was induced by intraperitoneal injection of streptozotocin on Day 5 of gestation. T-cell blastogenesis was assayed by using (3)H-thymidine, whereas intracellular free calcium concentrations ([Ca(2+)]i) were measured by using Fura-2 in diabetic pregnant rats and their obese offspring. Concanavalin-A-stimulated T-cell proliferation was decreased in both pregnant diabetic rats and their obese pups as compared with control animals. Feeding the PUFA/EPAX diet restored T-cell proliferation in both groups of animals. We also employed ionomycin, which at 50 nM opens calcium channels, and thapsigargin (TG), which recruits [Ca(2+)]i from endoplasmic reticulum

pool. We observed that ionomycin-induced increases in [Ca(2+)]i in T-cells of diabetic mothers and obese offspring were greater than in those of control rats. Furthermore, feeding PUFA/EPAX diet diminished significantly the ionomycin-evoked rise in [Ca(2+)]i in diabetic and obese animals. TG-induced increases in [Ca(2+)]i in T-cells of diabetic pregnant rats and their obese offspring were greater than in those of control rats. The feeding of the experimental diet significantly curtailed the TG-evoked increases in [Ca(2+)]i in both diabetic and obese rats. Together, these observations provide evidence that T-lymphocyte activation and T-lymphocyte calcium signaling are altered during gestational diabetes and macrosomia. Hence, dietary fish oils, particularly eicosapentaenoic acid and docosahexaenoic acid, may restore these T-lymphocyte abnormalities.

Keywords: Diabetes, rats, T-lymphocytes, PUFA, intracellular free Calcium.

P206

Genotyping by PCR-RFLP analysis of the 16S gene fragment of hydrocarbon-degrading bacteria isolated from contaminated marine sediments at the port of Oran (Algeria)

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Abstract

Identification and molecular typing of bacterial strains is necessary for consideration of outbreaks, epidemiological studies, and differentiation of human reinfection (Benkirane, 2006), and various environmental studies concerning bioremediation. Detection of polymorphisms by PCR-RFLP has several advantages including the rapid and easy application, explanation and use for large numbers of samples. Genotypic characterization, based on the analysis of restriction fragment length polymorphism of the 16S gene fragment PCR product (16S PCR-RFLP), was performed on members of hydrocarbonoclastics bacteria. The

PCR universal primers were allowed for the amplification of approximately 1500 bp DNA fragment from each of the 11 bacteria species. Amplified 16 S fragments were compared using RFLP analysis after digestion using two endonucleases simultaneously (Nco1, Rsa1), thus allowing the detection of characteristic patterns of RFLP products for most interesting bacteria species. Five specific RFLP groups were identified among most of the bacterial species tested. The variability of genetic patterns within these bacteria could be explained in terms of their different genus appurtenance. The results indicated that PCR-RFLP analysis of the 16S gene fragment is a useful molecular tool for identification of species, as well as for differentiation of bacteria strains.

Keywords: DNA 16S; fingerprinting; hydrocarbonoclastic bacteria; PCR-RFLP

P207

Structural Targets Annotation Database – STAD & PR-Proteins selected targets

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Abstract

Available online at the link: <http://www.bioinformaticstools.org/stad/> (main web-site), STAD is a database that annotates and stores information pertaining to structural targets (mainly proteins selected for 3d-structure and function elucidation) under study at laboratories in a number of Algerian, Moroccan and South African institutes; refer to Targets Contributing Member Institutes page: <http://www.bioinformaticstools.org/stad/STsources.php>. Targets in the STAD database have been selected, by the relevant laboratories, serving medical and biotechnology objectives including cancer, HIV, diabetes and may other research axes. The database is used for tracking the progress of the targets as they are moved

from a step to another until their 3d structures are solved and/or work on them has stopped. STAD provides a number of methods for information retrieval; the 'Direct' search method can be used to find out detailed information about the sequence of the targets, the stages of their production and structure determination. 'Patterns/motifs' search allows for finding targets with certain sequence motifs. Targets with overall sequence similarity to other public sequences are found by using the 'Sequence Alignment' search method. In addition to basic annotation of the targets, automatic basic structural and functional prediction is carried out and annotated, for the targets that structure has not been solved yet. Such analyses are also provided in the results page. More tools are provided for further exploration of the targets including a Status page, Statsboard (for overall simple statistics, see main web-site) and a Structural Gallery; http://www.bioinformaticstools.org/stad/gallery.php?Lab_=All. At Saida University, a number of nine (09) targets has been selected for 3D-structural and functional studies including Dihydrofolate Reductase, Insulin and seven Pathogen-Resistant proteins (PR-proteins) a number of are private to be released at later stage; can be seen at the link: http://www.bioinformaticstools.org/stad/srch_trgs.php?lab_=sbb&stp=200 Unless targets are tagged as private based on source lab instructions, targets' details from all contributing institutes and international public targets together with the Document Type Definition (DTD) are made available for download in xml format; <http://www.bioinformaticstools.org/stad/gallery.php?ns=2>.

Keywords: Annotation, Structural Targets, X-ray crystallography, NMR, Cryo-EM, Domains prediction, Function prediction, Cancer, HIV.

P208

Relative Growth of *Sepia officinalis* Linnaeus, 1758 (Cephalopoda: Sepiida) from the Oran bay, Algeria

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Abstract

The importance of cuttlefish as a global resource of fishing continues to increase, but it's very short life cycle and variable growth rates make its stock volatile and vulnerable. Several studies have been devoted to the study of the biology of *Sepia officinalis* on several Mediterranean and Atlantic areas on different aspects. However, in Algeria, no scientific studies on growth and reproduction parameters of this species have been published. While it is necessary to dispose detailed scientific information on its biology for a better management of its stock. The present study reports the weight-length relationships and assesses the relative growth of *S. officinalis* from the Oran bay. *S. officinalis* specimens used in this study were sampled monthly from Oran bay, between January 2013 and December 2013. In total, 581 specimens, 328 females and 253 males were sampled and treated in detail at the laboratory. The length and weight of individuals were recorded to the nearest 0.1 cm and 1 g respectively. The relationship of size - weight was fitted to the equation: $BW = a ML^b$, where BW is the weight (g), ML the dorsal mantle length of the cuttlefish (mm), a constant and b the rate of allometry, parameters a and b of the length-weight relationship was estimated by linear regression analysis based on logarithms: $\log(BW) = \log(a) + b \log(ML)$. The allometric scaling of females and males of *S. officinalis* is lower than 3 indicating a negative allometric growth. Similar findings have been reported by [1] on *S. officinalis* of Senegal, [2] in English Channel, [3] in Mauritania and by [4] in Eastern Libya. In males, females and sexes combined, the W-L relationships were highly significant, and the morphometric parameters were highly

correlated. Regarding relative growth displayed negative allometries, reflecting a slower growth rate in total weight than in mantle length during the species ontogeny.

Keywords: *Sepia officinalis*, Weight-length relationships, Relative growth, negative allometries.

P209

Evaluation of the antioxidant activity by DPPH and FRAP of the crude hydromethanolic extract prepared by maceration of the aerial part of *Salvia officinalis*

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Abstract

The overproduction of free radicals within the human body and the deficit of its defense system can lead to various pathologies including cancer, atherosclerosis, Alzheimer's and Parkinson's diseases. Currently, the research aims to reinforce these endogenous defenses by non-toxic natural substances from medicinal plants, which endowed with antiradical properties[1] (Asadi et al., 2010).The interest of this work is the enhancement of the antioxidant activity of the crude hydromethanolic extract prepared by maceration of the aerial part of *Salvia officinalis*. This activity tested by two methods: the antiradical test, which consists in estimating the trapping capacity of the free radical DPPH and the chelating power of iron. The free radical DPPH is a synthetic radical of violet color that turns to yellow when it captured by the antioxidant compounds tested. To evaluate the chelating power of our extract, we adopted the technique described by Wang et al. (2004). The obtained results demonstrate the effectiveness of the sage extract in trapping the DPPH radical, translated by the inhibition rate according to different concentrations. This evolution is dose-dependent; it increases with the increase of the extract concentrations with an IC50 of $528.17 \pm$

3.23 μ g /mL. In a similar study on methanolic extracts of various organs of the sage, Grzegorzczak et al. (2007)[3] also show efficiency in trapping the DPPH (with IC50 between 18.4 and 81.7 μ g /mL). In addition, this extract has a high chelating power with an EC50 of the order of 357.14 \pm 0,02 μ g /mL. *Salvia officinalis* possesses important medicinal effects that will have to be valued. Thus, it would be very interesting to complete this study by an in vivo experiment using an animal model.

Keywords: DPPH; FRAP; *Salvia officinalis*.

P210

Biological valorization for essential oils of TAFFS in the south-west Algerian

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Abstract

The valorization of natural resources is based on the extraction of their bioactive substances, especially the essential oils with regard to aromatic medicinal plants. Among these plants, we focused on the evaluation of the antioxidant activity of a plant of the Asteraceae family growing spontaneously in Algeria, which is an endemic medicinal species. The aim of our work is to test the efficacy of essential oils of *Naupliusgraveolens* originating from southwestern Algeria against oxidative stress by using two methods (DPPH free radical trapping and β -carotene bleaching test). The extraction of essential oils is carried out by hydrodistillation with the aid of a Clevenger apparatus. Two methods have been chosen for the evaluation of the antioxidant activity, this is the free radical scavenging test (DPPH) and the bleaching test of β -carotene. The results obtained reveal that the essential oils of the leaves and flowers do not represent any inhibitory effect of the DPPH radical in comparison with three standards (gallic acid, catechin and ascorbic acid), these latter showed a considerable antioxidant power. On the other

hand, the β -carotene bleaching test shows that the essential oils of our plant preserve the color of β -carotene in a manner similar to that of catechin and gallic acid, which reveals a considerable antioxidant power. It would be very interesting to complete this phytochemical study by isolating, purifying and identifying other classes of secondary metabolites, as well as checking other biological activities in order to establish a scientific basis for the traditional uses of the plant.

Keywords: *Naupliusgraveolens*, essential oil, antioxidant activity, Algeria

P211

Cytogenetic and clinical study of Turner syndrome and Klinefelter in the population of western Algeria

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Abstract

The heterosomiques diseases are usually caused by aneuploidy nondisjunction, they hit a boy on 400 and 650 on a girl with some form of sex chromosome abnormality [1, 2]. The aim of our study is to analyze mitosis to establish the percentage of the different karyotypes, and prove the existence of a karyotype phenotype correlation. This study was conducted at the Cytogenetics Laboratory of Ophthalmology EHS Oran, on a sample of 2306 patients, she treated two syndromes:

- The Turner syndrome,
- Klinefelter syndrome,

It was extended over a period of ten years (January 2006 to December 2015) because these conditions are relatively rare among live births, although they are common to the design. The medical orientation was established by clinicians practicing in the following specialties: endocrinology, gynecology and pediatrics. A genetic study was performed for each patient, it is to perform an examination to determine the patient's age, sex, the concept of consanguinity,

in the case of death of siblings and their causes, its geographical Providence ...With these results, we demonstrated the role assigned to the cytogenetic study, through chromosomal formulas that reflect the phenotypic differences observed in both syndromes. In Algeria, the hétérosomiques diseases, exist and affect several families [3]. The karyotype is a capricious craftsmanship subject to the vagaries of the cell culture is a valuable tool, it allows confirmation of the diagnosis (syndrome suspected by the clinician), the establishment of a regimen and the establishment of genetic counseling.

Keywords: cytogenetics, sex chromosomes, karyotype, phenotype

P212

Antioxidant and anti-hemolytic effects of phenolic compounds of *Gleditsia triacanthos* L. Pods

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Abstract

Gleditsia triacanthos L. is a plant that belongs to the family of Fabaceae or Legumes [1], widely used in traditional medicine for its therapeutic properties [2]. This study carried out in order to evaluate the anti-hemolytic and antioxidant effect of *Gleditsia triacanthos* L pod extracts. The pods extracted with 70% methanol, 70% ethanol and water. Colorimetric methods using Folin-Ciocalteu reagent, aluminum chloride carried out to estimate total polyphenols and flavonoids. The antioxidant activity were determined by in vitro methods [3,4] and the anti-hemolytic activity by induction of hemolysis by H₂O₂, on red blood cells of a healthy patient. The quantification of phenolic compounds shows the richness of the methanolic extract in total polyphenols ($13,183 \pm 0.873$ mg EAG / g MS) and flavonoids ($6,223 \pm 0,331$ EQ / g MS). The methods of the antioxidant activity in vitro show that all the extracts studied have antioxidant properties at different levels depending on their

phenolic contents. The results of the anti-hemolytic activity show that all the extracts possess a maximal inhibitory effect against the hemolysis caused by H₂O₂ with percentages ranging from 57.48 to 60.52%. Our study shows that the fruit of *Gleditsia triacanthos* is an important source of active ingredients, considered as natural antioxidants and as protective agents against hemolysis induced by oxidative stress, which is involved in several diseases.

Keywords: anti-hemolytic activity; antioxidant activity; extract; *Gleditsia triacanthos*.

P213

Study of the antioxidant activity of extracts of *Scolymus hispanicus* L. leaves

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Abstract

By its geographical location, Algeria offers a vegetation rich in aromatic plants that grow spontaneously [1]. As a result, we focused on the valuation of the wild plant *Scolymus hispanicus* L of the asteraceae family [2] for the purpose of researching new bioactive products of natural origin benefiting from biological activities including antioxidant activities. The quantification of the phenolic compounds was estimated by the Folin-Ciocalteu method [3] and the flavonoids by the AlCl₃ method [4]. The evaluation of the antioxidant activities of the various extracts was determined, in vitro, through the following tests: total antioxidant capacity and DPPH [5]. The results obtained on the tested extracts show that the extracts that the hydroacetic extract gave the best polyphenols (52.69 ± 0.0536 mg EAG / g MS) and flavonoids (44.81 ± 0.014 mg EC / g MS) compared to the other tested solvents. The results of these assays show that the aqueous extract has a strong total antioxidant capacity (66.67 ± 0.015 mg EAG/g MS) compared to other extracts and with a strong

DPPH radical scavenging ability compared to positive control. The results obtained from the study of the antioxidant activity of the leaves of *Scolymus hispanicus* L in vitro are only a first step in the search for substances of biologically active natural origin, an in vivo study is desirable, to obtain a more in-depth view on the antioxidant activities of this plant.

Keywords: DPPH; Phenolic compounds; *Scolymus hispanicus* L; Total antioxidant capacity.

P214

The antioxidant activity of the aerial part of Menthaspicata in region of the AL BAYADH, ALGERIA

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Abstract

Menthaspicata, is an aromatic and medicinal plant, the aerial part of this Lamiaceae is widely used by the local people living in the region of AL BAYADH, for its therapeutic value. The purpose of this study is to evaluate the anti-oxidant effect of the aerial part of the mint (leaves and stems) of an arid zone. The sample harvested from the AL BAYADH zone is dried, then crushed and macerated with ethanol for 24 h, after filtration, the evaluation of the antioxidants was carried out by trapping the free radicals at the DPPH. The free radical scavenging by DFPPH indicated a very high anti-oxidation power at the leaf level with an IC₅₀ of 1,82 mg/L at the 11,33 mg / L stems. These observed antioxidant activities are due to a very large production of secondary metabolites. The results obtained show that the methanolic extracts prepared have a very interesting reducing power, so the aerial part of the mint (leaves, stems) from the AL BAYADH region represents a source of antioxidant.

Keywords: Menthaspicata; lamiaceae; AL BAYADH, ALGERIA; Antioxidant.

P215

Phytochemical analysis and evaluation of the antioxidant activity of the aqueous and methanol extracts of *Rhus pentaphylla* Desf.

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Abstract

Several epidemiological studies suggest that plants rich in antioxidants such as flavonoids and polyphenols play a protective role in health and against diseases, and their consumption lowered the risk of cancer, heart and kidney diseases [1]. The aim of this study is to determine the content of polyphenols, flavonoids, and condensed tannins contents of fruits, leaves and roots of the *Rhus pentaphylla* Desf. The antioxidant activity of methanol and aqueous extracts was then evaluated. Phytochemical screening was carried out by characterization reactions based on coloring or precipitation and observations. The total phenolics (TPC), flavonoids (TFC) and condensed tannins (CTC) contents were determined by using spectrophotometric methods. The antioxidant activity of extracts was evaluated with the use of two assays (FRAP and DPPH). The phytochemical tests revealed the presence of flavonoids, tannins, steroids, mucilage and saponins. The highest levels of TPC and CTC were found in roots extracts, with the values of 44.00 ± 0.09 mg GAE/g and 39.74 ± 0.08 mg QE/g, respectively. Furthermore, lower quantities of TPC (9.30 ± 0.09 mg GAE/g) and CTC (3.86 ± 0.03 mg QE/g) were observed in fruits extracts while the highest quantity of TFC (8.52 ± 0.03 mg CE/g) has been recorded in the leaves extract. Otherwise, aqueous and methanol extract of the roots showed the best antioxidant activity (IC₅₀ values were respectively 0.71 ± 0.04 , 0.11 ± 0.01 mg/mL for DPPH and 0.38 ± 0.05 , 0.10 ± 0.02 mg/mL for FRAP assays). *Rhus pentaphylla* contains bioactive substances that could be used as a new promising source of antioxidant compounds in different applications.

Keywords: antioxidant activity, *Rhus pentaphylla*, phytochemical screening.

P216

**Genetic susceptibility to tuberculosis:
Association of the polymorphism IL10 -1082
G/A to active tuberculosis in a Western
Algerian population**

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Abstract

Tuberculosis remains the leading cause of death due to a single infectious agent in the world with more than 10 million deaths in 2018[1]. Although the exogenous risk factors associated with this disease are commonly known, some endogenous factors such as susceptibility genetics are much less explored. Many polymorphisms within genes involved in antituberculous immunity such as cytokines have been associated with infection in many populations[2]. This study is the first to analyze the link between the IL10-1082 G/A polymorphism and the occurrence of active tuberculosis (pulmonary and extra-pulmonary) in a sample of a Western Algerian population. 114 patients diagnosed with active tuberculosis (56 Pulmonary, 58 Extrapulmonary) were enrolled in this study and 48 healthy blood donors were recruited as. The DNA extraction was carried out according to a "Salting Out" method and quantified by a spectrophotometric method (Nanodrop®). Genotyping was performed using a specific allele PCR technique (ASO-PCR). The sex ratio was very significantly different ($p < 10^{-6}$) depending on the location of the infection with a predominance of extra-pulmonary forms in women (70.7%) and pulmonary form in men (75%). The ganglionic form was the most common form among EPTs (49.2%). Allelic and genotypic frequencies of the polymorphism analysis showed very significant differences: ($p = 0.001$) and ($p = 0.003$) respectively. Indeed, the A allele was predominant in patients (59.3% vs 39.6%) with $OR = 2.22$ [1.36-3.63]. By analyzing the different

genotypic combinations, a greater frequency of the AA genotype was observed in patients: $OR = 2.26$ [0.99-5.16]; $p = 0.049$. On the other hand, the GG genotype was more frequent in the controls: $OR = 0.29$ [0.13-0.62]; $p = 0.001$. Several studies described the functional impact of this polymorphism in the production of IL-10[3]. This polymorphism, associated with tuberculous infection in many populations, seems to be also within Oran's population. The analysis of other polymorphisms located in other genes involved in the host-pathogen interaction would allow to evaluate more precisely the role of the genetic component in susceptibility to tuberculosis.

Keywords: Tuberculosis; IL10 -1082 G/A; Genetic Susceptibility; Immunity.

P217

**Absence of Y-chromosome microdeletions in
patients with Hypospadias with Chordee in
Eastern Algeria**

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Abstract

The most common external male genital malformation is hypospadias, affecting 1/125 to 1/300 live male births. Hypospadias is defined as the abnormal closure of the genital folds during gestational weeks 8-14; it results in a urethral meatus on the ventral surface of the genital tubercle [1]. The human Y chromosome is essential for human sex determination and spermatogenesis. The long arm contains the azoospermia factor (AZF) region. Microdeletions in this region are responsible for male infertility [2]. Few studies have investigated the relationship between microdeletions and hypospadias in the world [3,4], but no study has

been established in Algeria. For this we assigned as objectives to investigate the possible relationship between Y chromosome microdeletions and hypospadias with chordee in Algerian population. Twenty-six patients with different degrees of hypospadias with chordee operated and treated at the pediatric surgery department specialized mother and child –El Eulma –and at the pediatric surgery department specialized mother and child –El Mansourah– were screened for Y chromosome microdeletions. Genomic DNA was isolated from blood and polymerase chain reaction was carried out with a set of 3 STS markers (sY84, sY134 and sY254) to detect the microdeletions as recommended by the European Academy of Andrology. As well as, SRY272 was used as internal control. All patients showed normal length amplifications for each of the regions evaluated, suggesting that microdeletions of the Y chromosome are not a frequent cause of hypospadias with chordee. This finding is very similar to those of Tateno et al.[3] reported that no patient with isolated hypospadias lacked any of 33 DNA loci studied. The same result was found by Castro et al. [4]. This fact suggests that patients with hypospadias with chordee are rarely associated with genetic alterations. It would be more interesting to analyze other STS markers with larger samples.

Keywords: Hypospadias; Microdeletions; Y-chromosome.

P218

Antioxidant activity and phytochemical composition of two varieties of spinach

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Abstract

Phytochemicals are a diverse, bioactive, and pervasive category of plant secondary metabolites that comprise an essential part of the human diet and are of considerable interest due

to their biological properties [1-3]. The regular consumption of polyphenol-rich foods may help decrease the incidence of cardiovascular diseases, colon cancer [5], liver disorders, obesity, diabetes, etc. [2-3]. The objective of the present study is to determine in vitro antioxidant activity and phytochemical composition of two varieties of spinach: wild spinach (*Chenopodium bonus-henricus* L.) and grown spinach (*Spinacia oleracea* L.). In this context we evaluate in leaves and stems, the levels of total polyphenols, antioxidant capacity and phytochemical analyses. The determination of total polyphenols was performed by the spectrophotometric method of Folin-Ciocalteu. The antioxidant capacity of the samples by determining the ferric reducing antioxidant power (FRAP) and the effect of radical scavenger DPPH. The phytochemical identification of spinach is determined by means of a reaction of characterization and by thin layer chromatography (TLC). Our results showed an important antioxidant activity in both spinach varieties, especially in the wild variety. Total polyphenols were most abundant in the *Chenopodium bonus-henricus* variety than *Spinacia oleracea* and in leaves (105.5 ± 5.1 vs 91.7 ± 3.0 mg/mL) than stems (37.25 ± 1.67 vs 34.01 ± 1.71). Moreover, DPPH radical reducing power was more important in wild leaves compared to grown leaves with inhibition percentages of (96.66% vs 90%), this activity of the extracts may be attributed to its strong proton donating ability also antioxidant activity and radical of the plant is due to the presence of phenolic compounds [4]. Furthermore, phytochemical screenings according to characterization reactions and thin layer chromatography, indicated that the two spinach varieties contained widely an antioxidant molecules (saponins, anthocyanins, coumarins, tannins, quinones, alkaloids and terpenoids). In conclusion, thanks to their antioxidant power, spinach is a food particularly valuable for the prevention of various pathologies. Further studies will be considered to test the spinach extracts on animal models to confirm their antioxidant activity and their capacity to reduce pathologies damages.

Keywords: Antioxydant; DPPH; Polyphenols

P219**Experiments on *Urtica dioica* roots hydro-alcoholic extract activities against benign prostatic hypertrophy-induced in mice by testosterone and a hyper-caloric diet. Phyto-chemical, Biological & Histological Studies**

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NETgroup which weighed 36.64 ± 1.38 g. A decrease in blood glucose in TESTO-NET (0.84 ± 0.13 g / L) was observed compared to TESTO (1.09 ± 0.32 g / L). Prostate-specific antigen (PSA) was increased in TESTO (0.25 ng / mL) and decreased in TESTO-NET (0.18 ng / mL). In TESTO, prostatic glands and fibro-muscular tissue exhibited an enlarged appearance whereas animals treated with nettle extract had narrower glands and acini of regular shape. *Urticadioica* has a preventive effect in mice with BPH probably acting by an antioxidative defense system.

Keywords: Benign prostatic hypertrophy; *Urticadioica*; Testosterone; Hypercaloric diet; prostate specific antigen

Abstract

Benign prostatic hypertrophy (BPH) is one of the most common pathologies affecting the urogenital system of the elderly man[1]. *Urticadioica* or nettle, a plant rich in antioxidants, is used in traditional medicine to treat the BPH urinary symptoms[2]. This study aimed to assess the hydroalcoholic extract of nettle root (NET) against BPH induced in mice by testosterone and a high calorie diet. Antioxidant activity of nettle root extract and polyphenol assay were performed. In vivo experimentation included biochemical assays and histological study of the prostate gland. A population of 16 male mice divided into 4 groups; a control group (CON), a group (TESTO) receiving an intraperitoneal injection of testosterone (0.5 mL / week) and a high calorie diet, group (TESTO-NET) receiving hormone and 0.2 mL of hydroalcoholic extract of the nettle roots (14.8 mg / mL) and hypercaloric diet and a group (NET) receiving the extract of nettle. The inhibition rate and the polyphenol concentration were respectively 21.3% and 60.3 μ g / mL gallic acid. The body weight of the mice (TESTO) was 41.15 ± 1.62 g, in contrast to the TESTO-

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