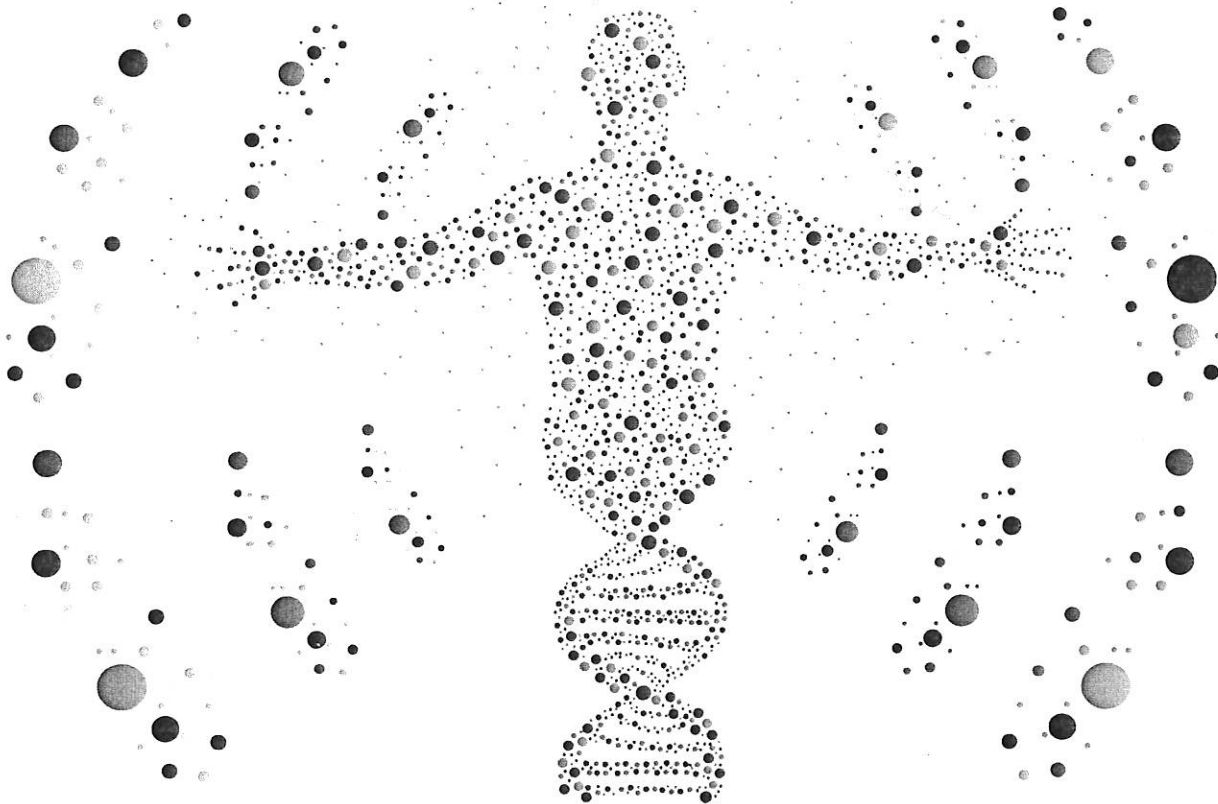


L'Association Libanaise
pour l'Avancement des
Sciences (LAAS)

CNRS

Conseil National de la Recherche Scientifique

23^{ème} Conférence Scientifique Internationale
**La Science et la Recherche
au Service de l'Homme**



6 - 7 Avril 2017

Campus Universitaire Rafic Hariri – Hadath
Salle des Conférences

RÉSUMÉS

Organisée par
L'Association Libanaise pour l'Avancement des Sciences
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en collaboration avec
Le Conseil National de la Recherche Scientifique au Liban



The Lebanese
Association for the
Advancement of
Science (LAAS)



National Council for Scientific Research

23rd International Scientific Conference of LAAS

“Research and Science in the Service of Humanity”

Faculty of Sciences- Lebanese University
Rafic Hariri Campus - Hadath
Congress Palace

6 and 7 April, 2017

Introduction

The LAAS's International Scientific Conference is an annual conference that will be held this year at the Faculty of Sciences at the Lebanese University in the Rafic Hariri Campus – Hadath in collaboration with the National Council for Scientific Research.

The LAAS's International Scientific Conference is a forum for researchers and a platform of meeting between the enterprises and universities, allowing them to present and discuss the results of their research in all sciences and in various fields of science.

The research axes of the conference are:

- Biological, Medical, Pharmaceutical and Health Sciences
- Theoretical and Experimental Chemistry and Physics
- Environment, Food Security and Agriculture
- Mathematics and Computer Science
- Engineering Sciences
- Social and Human Sciences
- Economics and Management
- Education Sciences, Ethics of Scientific Research
- Arts and World Vision
- Relations: State, Enterprises, Universities.

Lebanese and foreign researchers are invited to participate in this conference by submitting summaries of their research for possible oral presentation or poster or display, in the conference program. In addition to presentations of research in the major already mentioned, this 23rd International Scientific Conference encourages addressing national and international issues, such as the transfer and assessment of new technologies, the inter-university cooperation, the university-industry cooperation and the education and research experiences on the innovative technologies.

polymérase (PARP) a diminué après 48h de traitement par l'EERR et l'EDRR dans les cellules HT-29 et HCT-116 ce qui suggère que cette protéine a été clivée suite au déclenchement de l'apoptose par les deux extraits. En conclusion, nos résultats suggèrent l'importance de l'espèce libanaise *Rheum ribes* dans le traitement du cancer colorectal, en effet, des effets antiprolifératifs, antitumorigènes, et anti migratoires ont été observés après traitement par les extraits éthanolique et dichlorométhane des rhizomes de cette plante.

Structure of Cytochrome P450 1A1 (CYP1A1) in complex with Benzo[a]pyrene (BaP)

Mohammad Ozeir (Lebanese University, Lebanon)

Man is constantly exposed to many foreign substances, called xenobiotics, such as drugs, dietary compounds or air pollutants. The most toxic among them are polycyclic aromatic hydrocarbons (PAH) and are generally formed during incomplete combustion of organic matter, cigarette smoke and broiled food. PAHs constitute a large class of chemical compounds that consist of fused aromatic rings. Moreover, they are lipophilic and may be toxic and carcinogenic, depending on the structure and the number of rings in the molecule. Benzo(a)pyrene (BaP) is an important member of the PAH family and has served as model for the studies of the metabolic pathway and carcinogenic effects of PAHs. Indeed, there are several epidemiological studies showing the association between BaP exposure and different human cancers especially lung cancer. In addition to fixing some specific receptors, BaP can also bind to a small number of xenobiotics metabolic enzymes (XME) including cytochrome P450s (CYP) as the key players. CYPs are involved in many stages of the biosynthesis and biodegradation of endogenous compounds and play an important role in the metabolism of an infinite number of PAHs, allowing their removal from the body. They are mainly involved in the first step of the process of detoxification also known as Phase I (Figure1), where a polar group will be grafted onto the BaP. Depending on the position of hydroxylation, the metabolized BaP will therefore be transformed either to 1) more soluble compound that are then excreted or 2) compound which are more toxic to the cell (Figure1). This raises the question on how can the same substrate (BaP) bind to CYP1A1 and be metabolized at different positions? In this work, we determined 2.35Å structures of human CYP1A1 complexed with B(a)P. This will allow us to gain insight into the metabolism of the most cancerogenic xenobiotic compound.

Nutraceuticals improve Experimental Colitis: Place of Catechins in the 2,4,6-trinitrobenzene sulfonic acid model rats

Alice Geagea (Faculty of Medicine, American University of Beirut, Lebanon); Manfredi Rizzo (University of Palermo, Italy); Assaad Eid and Sahar Al Kattar (American University of Beirut, Lebanon); Marie Noel Zeenny (University of Palermo, Italy); Rosalyn Jurjus (George Washington University, USA); Giovanni Tomasello, Angelo Leone and Francesco Cappello (University of Palermo, Italy); Liliane Massaad-Massade (Institut Gustave Roussy de Cancerologie, France); Abdo Jurjus (American University Of Beirut, Lebanon)

Background: Nutraceuticals provide added health benefits for inflammatory bowel disease (IBD) and Epigallocatechin-3-gallate (EGCG), a green tea catechin, has been shown to possess such anti-inflammatory and anti-oxidant effects. **Aim:** To evaluate the molecular modulation of Reactive Oxygen Species (ROS), Tumor Necrosis Factor- α (TNF- α), nuclear factor Kappa B (NF- κ B), Interleukin 6 (IL-6) by EGCG on experimental colitis. **Materials and Methods:** Thirty five male Sprague-Dawley rats were randomly divided into 4 groups: Normal control group (n=5), EGCG group (n=9), TNBS group (n=9), and TNBS+EGCG group (n=12). For both TNBS and EGCG treated groups, 1mg/Kg EGCG was administered daily by intraperitoneal injection, starting one week before the induction. At days 3, 10 and 17, rats were sacrificed and the descending colon was collected. The mRNA expressions of IL-6, TNF- α and NF- κ B were measured by the polymerase chain reaction. In addition, the oxidative stress was studied by determination of ROS expression using dihydroethinidine (DHE) staining. **Results:** The results showed that EGCG caused a significant decrease in the mRNA expression of pro-inflammatory cytokines IL-6, TNF- α and NF- κ B compared to respective non-treated groups. In addition, ROS expression was reduced. **Conclusion:** These data provide evidence that EGCG is beneficial in TNBS-induced colitis; it exerts an antioxidant activity via decreasing ROS, and an anti-inflammatory effect via ameliorating histological findings and reducing IL-6, TNF- α and NF- κ B.

THE RELATIONSHIP BETWEEN VITAMIN D AND METABOLIC SYNDROME (MetS): A CROSS SECTIONAL STUDY AMONG EMPLOYEES AT A UNIVERSITY IN LEBANON

Rachelle Ghadieh (NDU, Lebanon)

Background: Despite the fact that vitamin D plays an important role in a broad range of physiological processes, low level of vitamin D is still widespread globally. In recent years, there have been reports suggesting a high prevalence of low vitamin D intakes and vitamin D deficiency in Lebanon. This is assumed to be the result of inadequate exposure to sun (ultraviolet radiation) and insufficient consumption of vitamin D rich foods. Several studies have shown that poor vitamin D status may increase the risk of developing the metabolic syndrome (MetS), a cluster of conditions that include three of the following five conditions: abdominal obesity, elevated blood pressure (BP), elevated triglycerides (Tg), elevated fasting blood glucose (FBG), and reduced high-density lipoprotein (HDL) cholesterol. **Objectives and Rationale:** The main objectives of this study are to assess the prevalence of MetS/its components as well as investigate the association between serum 25-hydroxyvitamin D (25(OH)D) concentrations and MetS/its components among a sample of Lebanese adults. **Methods:** A cross-sectional study was carried out on Notre Dame University staff/faculty members (n=256) in the main, North and Shouf campuses. An e-invite was sent to all staff and faculty members and graduate students were visiting their offices to encourage them to participate. Those who agreed to participate were asked to sign an informed consent form. The study questionnaires including a background questionnaire, a short-form of the International Physical Activity Questionnaire and a food frequency questionnaire to estimate vitamin D intake were filled out during a 30-minute face-to-face interview. The Nutritionist Pro diet analysis software was used to generate estimates of dietary intake of vitamin D. Participants were invited to the nutrition laboratory to collect anthropometric measurements (weight, height, waist circumference (WC), body composition (measured by InBody720) and a fasting blood sample by trained dietitians and nurse, respectively. Blood samples collected at the regional campuses were transported on ice to the main campus. Blood samples were stored at -20°C for a maximum of 6 weeks before analysis at the Biology Lab at NDU-Main Campus. 25(OH)D was measured using ELISA, while serum Tg, HDL-cholesterol and fasting FBG were measured using a dry chemistry analyzer Vitros 250. MetS components were classified according to the National Cholesterol Education Programme, Adult Treatment Panel III (NCEP-ATP III), FBG ≥ 110 mg/dL, obesity: WC > 102 cm in men and > 88 cm in women, BP $\geq 130/85$ mmHg, Tg ≥ 150 mg/dL, HDL < 40 mg/dL in men and < 50 mg/dL in women. Vitamin D status was defined according the institute of medicine (IOM) as deficient if 25(OH)D was below 30 nmol/L (12 ng/mL), inadequate if 25(OH)D is between 30 and < 50 nmol/L (12 and < 20 ng/mL) and sufficient if 25(OH)D levels were at least 50 nmol/L (20 ng/mL). **Statistical analysis:** Descriptive statistics for the total sample were performed. Quantitative and qualitative measurements were summarized as means \pm standard deviation and n (%), respectively. Comparisons of continuous and categorical variables were performed using independent 2-sample T Test and the chi square test or Fischer's exact test respectively. Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 22 for Windows. A p-value less than 0.05 were considered statistically significant. **Results:** A total of 256 participants (49% men and 51% women) were included in the analysis with a mean age of 42.4 ± 11.5 years, waist circumference of 96.4 ± 12.2 cm and mean dietary vitamin D intake of 2.2 ± 3.2 μ g. Among participants, 53.0% held a graduate degree, 62.1% were non-smokers and 71.0% did not use sunscreen. The mean vitamin D level was 25.3 ± 12.9 ng/mL. Among participants, 12.1% had vitamin D deficiency, 26.6% were generally considered inadequate, and 61.3% were sufficient. The prevalence of MetS was 23.4% in the overall study population; men had a higher prevalence of MetS (34.3%) compared to women (12.8%) ($p < 0.05$). The prevalence of central obesity was 51.2%