

cbios

UNIVERSIDADE LUSÓFONA
RESEARCH CENTER IN BIOSCIENCES & HEALTH TECHNOLOGIES

CBiOS Science Sessions - 2013 -

Nutrition: pregnancy counselling website (<http://nutricao.ulusofona.pt>)

Nutrição: website de aconselhamento durante a gravidez

Nelson Alexandre Rodrigues Tavares

CBiOS - Research center for Health Sciences & Technologies, U.
Lusófona, Campo Grande 376,
1749-024 Lisboa, Portugal

Relationship between daily water intake and skin physiology

Impacto Cutâneo do consumo dietário de água

Maria Lídia Laginha Mestre Guerreiro da Palma

CBiOS - Research center for Health Sciences & Technologies, U.
Lusófona, Campo Grande 376,
1749-024 Lisboa, Portugal

Abstract

During pregnancy there is an increase in nutritional needs and food choices are crucial for a proper fetal development. In the global society of the twenty-first century, the internet is not simply a communication technology, but the epicenter of many areas of social activity, economic and political, being, as the technological tool and organizational form that distributes the power of information, the generation of knowledge and the ability to connect to a network in any area of human activity. The Portuguese language is the factor that marks Lusofonia a cultural, social and economic space that affects more than two hundred million people. Being the subject of study of Angelini University Award 2011/2012 - Better Nutrition for better health it was considered as the main objective to implement a project of communication in nutritional sciences, particularly for pregnant women, families and the general public that:

- Provides information, scientifically valid, about the pregnancy as well as the nutritional needs of pregnant women;
- It has some warnings about the use of certain diets and nutrients;
- Provides a calculator to determine the appropriate weight limits for each stage of pregnancy;
- Shows the information in Portuguese, simple and clear, accessible to all.

Lecturer's resumé

MMSc in Human Nutrition, Sheffield University and Ph.D. in Nutrition Sciences, Universidade do Porto. He is currently Director of Nutrition Sciences Degree at Universidade Lusófona. He is an American Society of Nutrition Member and has communications and publications in international peer-reviewed journals and meetings. His main research interest is the impact of nutrients in Human Health

Abstract

The importance of water in human physiology is well known. Regarding skin it is also a crucial component of skin functionality. The present study was conducted to assess the effects of dietary water on skin hydration in healthy females **Methods** healthy females (mean 24.5 ± 6.34 y o) were selected and characterised regarding their dietary daily habits. For 1 month these were asked to add 2L/day of water to their regular dietary habits. General measurements included the Body Mass Index (BMI), the Total Body Water (TBW) and related bioimpedance parameters. Specific measurements were performed in five anatomical sites (ventral forearm, anterior leg, dorsal hand, zygomatic and front) involving the epidermal superficial and deep hydration, by capacitance, and transepidermal water loss (TEWL) and biomechanical by Cutometer. Evaluations took place in days D0, D15 and D30. **Results** this water overload (2L/day/30 days) didn't changed the blood volume or weight of the individuals. However it clearly improved both skin superficial and deep hydration, and this was especially noted in those individuals that regularly consumed less water per day. Regarding biomechanics the results indicated a positive relationship with skin hydration No significant effect was observed in the TEWL. **Conclusions** This study clearly suggests that dietary water intake seems to influence skin water content justifying further in vivo investigations involving other variables.

Lecturer's resumé

Assistant Professor – ULHT
PhD Student in Biomedicine - Alcala
Publications: 3 articles, 9 Posters, 1 Oral presentations



cbios

UNIVERSIDADE LUSÓFONA
RESEARCH CENTER IN BIOSCIENCES & HEALTH TECHNOLOGIES

CBiOS Science Sessions - 2013 -

Development of different types of nanosystems: polymeric, lipid-based and metallic nanoparticles.

Desenvolvimento de diferentes tipos de nanosistemas: poliméricos, lipid-based e de nanopartículas metálicas

Catarina Silva, Patrícia Rijo, Catarina Reis.

CBiOS - Research center for Health Sciences & Technologies, U. Lusófona,
Campo Grande 376,
1749-024 Lisboa, Portugal

Abstract

Currently, there is a major interest in the nanotechnology field for finding complementary approaches to obtain multifunctional and hybrid nanosystems that fulfill the main drawbacks related with poor drug bioavailability and safety. These drug delivery systems intend to become therapeutically more effective, acting as targeting medicines to specific cell pools and, consequently, reducing common side effects and improving patient compliance. In this work, we described three different approaches associated with different nanosystems' formulations, mainly through their physical and chemical characterization, which were developed in our research group. First, we developed polymeric nanoparticles for a sustained release of steroids and local retention at the skin surface for treatment of inflammatory diseases, such as atopic dermatitis. Further, we studied more complex hybrid polymeric-lipid (HPL) nanocapsules for delivery of anti-inflammatory and anti-cancer substances, for skin cancer treatment. Finally, aiming a deeper penetration into the biological barriers, we developed metallic-based multifunctional nanoparticles for their application in cancer photodynamic therapy. In conclusion, we demonstrated that a continuous achievement and conjugation of different biomaterials can lead to different pathways for improvement of the treatment's safety and efficiency. Future work should focus on conducting *in vitro* and *in vivo* studies to confirm the potential of these systems.

Lecturer's resumé

Catarina Silva has a MD in Pharmaceutical Sciences from Universidade Lusófona (2012). She did her master internship in Santiago de Compostela (Spain) about "Development and characterization of nanocapsules as transdermal drug delivery systems". She has already published 5 articles in national and international journals and magazines, more than 10 poster presentations and 2 oral communications at national and international events. She was invited to write 3 book chapters. Currently, she works as a researcher in CBiOS for FCT funding (FCT - PTDC/BBB-BMD/0611/2012) and as a PhD research student for EHEA Doctorate programme of Universidad Alcalá-Henares/ Universidade Lusófona.

Interaction between propofol and HES 130/0.4: Chemical, physiological and toxicological

Interação entre Propofol e HES 130/0.4: Química, Fisiológica e Toxicológica

Aura Silva¹, Ana Ortiz², Carlos Venâncio³, Rui Silva⁴, Joaquim Mendes⁴,
Paula Guedes¹, Helena Vala⁵, David Ferreira⁶

¹.- REQUIMTE, University of Porto, Porto, Portugal

².- University of León, León, Spain

³.- UTAD, Vila Real, Portugal

⁴.- IDMEC, University of Porto, Porto, Portugal

⁵.- CSETH, Polytechnic Institute of Viseu, Viseu, Portugal

⁶.-CBiOS - Research center for Health Sciences & Technologies, U.
Lusófona, Campo Grande 376,
1749-024 Lisboa, Portugal

Abstract

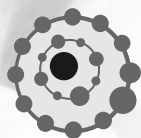
A study was designed to address the possible reasons for these observations to occur, with the objective of analyzing eventual HES 130/0.4-propofol chemical interaction, pharmacokinetic modeling and physiological and toxicological effects in pigs. Also, we propose new software for analysis of EEG signal online.

HES and propofol are predicted as being able to establish hydrogen interactions with the hydroxyl groups of the glucose units of HES. A new propofol pharmacokinetic tricompartmental model was developed for pigs, departing from residual end-tidal sevoflurane concentrations and using NONMEM® software for modelling the propofol data. Using HES 130/0.4 for volume replacement instead of Ringer solution, caused a decrease in renal and intestinal lesions, with associated decrease in the indicators of apoptotic markers.

The software developed automatically synchronizes the EEG signal with the time frames and clinical events desired, and automatically analyses the EEG signal through pre-determined mathematical formulas, displaying the results (numerical and graphical) of the signal processing in real-time.

Lecturer's resumé

Degree in Veterinary Medicine in 1997, and PhD in 2007. Anatomy Professor in the University of Trás-os-Montes and Alto Douro, Vila Real, Portugal in the period 1997-2011, and Associate Professor in the Lusophone University of Humanities and Technologies, Lisbon, Portugal from 2011-2013. Coordinator of research teams in the areas of biosensors, anaesthesiology, mathematical modeling, and brain function and organ perfusion during anaesthesia, and consultant for pharmaceutical companies in the areas of pre-clinical pharmacological trials. He is author and co-author of more than 100 publications in peer-review international journals, books and book chapters.



cbios

UNIVERSIDADE LUSÓFONA
RESEARCH CENTER IN BIOSCIENCES & HEALTH TECHNOLOGIES

CBiOS Science Sessions - 2013 -

Study the potential applicability of the by-products of the *Prunus cerasus* in promoting health and skin care

*Estudo da aplicabilidade dos sub-produtos de Prunus cerasus na
promoção de saúde cutânea*

Elisabete Maurício*, Catarina Rosado*, Diaz Diaz Lanza**

*CBiOS - Research Center for Health Sciences & Technologies, U.
Lusófona, Campo Grande 376, 1749-024 Lisboa, Portugal

** Laboratório de Farmacognosia, Departamento de Ciências Biomédicas,
Universidad de Alcalá, Madrid, España.

Abstract

In recent years many studies on cherries have revealed that they are rich sources of bioactive compounds, mainly due to its polyphenolic phytochemicals. In this work, by-products of the sour cherry (*Prunus cerasus* L.) used in the Obidos liquor from Portugal, were evaluated by determination of their phenolic composition and *in vitro* antioxidant activity. The samples (stems, leaves and pomace) were extracted by maceration with a water-alcohol (30:70) mixture and their phenolic composition was made by HPLC-DAD. The Total Phenolic Content was determined with the Folin-Ciocalteu method and the antioxidant activity was confirmed by determination of their free radical scavenging activity through DPPH and FRAP assay. Additionally, to validate the "antioxidant" claim for the introduction of those extracts as functional ingredients in cosmetic products, efficacy tests of those extracts were made in human skin in order to measure the protective effects of the antioxidant extracts against an irritating substance (methyl nicotinate) in 10 healthy volunteers. The intensity of response was evaluated by measuring the skin color (Chromameter™), microcirculation (laser Doppler perfusion) and trans-epidermal loss of water (Tewameter™).

The results showed that both extracts are rich in flavonoids compounds and phenolic acids, which may be the cause of the antioxidant activity showed *in vitro* tests. In addition, those extracts *in vivo* tests showed that they were able to reduce the intensity of skin color (redness) and the vasodilatory effects of nicotinate on the cutaneous microcirculation, showing a protective effect in human skin that confirms their antioxidant activity.

In conclusion, this study confirmed the importance of the application of the methodology to establish *in vivo* the antioxidant activity of cosmetic ingredients.

Lecturer's resumé

She is currently Technical Director at Elisa Câmara, Lda, an dermocosmetic Company where she is responsible for the Development and Research of Natural Cosmetic formulations, since 1995. Is assistant professor in the faculty of Engineering at Universidade Lusófona, lecturing Microbiology and Cellular Biology, since 1996. She is also Consultant for Microbiological and Toxicology Safety Assessment for Cosmetics and Body Care products recognized by Infarmed since 2001. She is PhD Student at University of Alcalá, Spain in association with CBiOS and UDE at Universidade Lusófona. She attended at new university of Lisbon, faculty of sciences and technology for her graduation (1993) in Engineering and Master degree (2003) in Food Technology/chemistry. In the same faculty did the Pos-Graduation program in Management of Bio-Chemical Analysis Laboratories (1995). In 2006/2007 did the Post-Graduate program in Dermocosmetic Sciences in the Department of Health Sciences at Universidade Lusófona.

Cell migration and adhesion - impact of ROS in tumour metastasis

Migração celular e adesão - impacto de ROS na metástase tumoral

Nuno Saraiva

CBiOS - Research center for Health Sciences & Technologies, U.
Lusófona, Campo Grande 376,
1749-024 Lisboa, Portugal

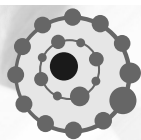
Abstract

Reactive oxygen species (ROS) have been greatly implicated in cancer at different levels. Increased cell migration and invasion are key determinants for the initiation of the metastatic process. Despite modulating processes that may be important for cancer cell invasiveness superoxide dismutase (SOD) mimetics (SODm) have not yet been studied in this context. Therefore, our work currently focuses on the effects of SODm, either alone or in combination with doxorubicin (dox), in modulating cancer cells migration/invasion.

Treatment with a SODm and dox decreased motility, chemotactic migration, and proteolytic invasion of two breast cancer cell lines. A possible but unlikely contribution of apoptosis for the observed cell phenotype is currently being determined. The mechanisms underlining the reduction of cell migration are also currently being dissected using several cell and molecular biology techniques such as cell spread and EDTA detachment assays. Since metalloproteinases are both essential for cell invasiveness and influenced by ROS we are also investigating their activation state under the conditions tested.

Lecturer's resumé

Lecturer in virology, cell and molecular biology at ECTS - ULHT, where he also develops his research projects as a member of CBiOS. Nuno is an MSc in microbiology and molecular biology (from Faculty of Sciences, Lisbon University), and a PhD in virology and cell biology (from Imperial College, London). His main research interest is tumourigenesis, focusing on the molecular mechanisms underlying metastazation. Nuno has published work in molecular virology, apoptosis, Ca²⁺ homeostasis, membrane proteins, cell migration and adhesion.



cbios
UNIVERSIDADE LUSÓFONA
RESEARCH CENTER IN BIOSCIENCES & HEALTH TECHNOLOGIES

CBiOS Science Sessions - 2013 -

Bioactive and Non-Conventional Photoprotection

Fotoproteção Bioactiva e Não-Convencional

André Rolim Baby

Department of Pharmacy, School of Pharmaceutical Sciences, University of São Paulo
CBiOS - Research center for Health Sciences & Technologies, U. Lusófona,
Campo Grande 376, 1749-024 Lisboa, Portugal

Abstract

The main objectives of this presentation were to expose the Cosmetic Science Research Lines from Laboratory of Cosmetology of School of Pharmaceutical Sciences, University of São Paulo, São Paulo (SP) which involves skin and hair care product development until its safety and efficacy evaluation, aiming at establishing academic and scientific partnership between USP and Universidade Lusófona de Humanidades e Tecnologias; and to divulgate the principal results from the post-doctoral activity at CBiOS that originated the abstract entitled "Development of cationic and anionic rutin-loaded gelatin nanoparticles: a platform for innovative sunscreens" (Oliveira, C; Silva, A; Peres, D; Flórido, A; Chacra, N; Saraiva, N; Mota, J; Rosado, C; Velasco, M; Rodrigues, L; Fernandes, A; Baby, A).

Lecturer's resumé

Pharmaceutical, M.Sc. and Ph.D in Drugs and Medicines (FCF-USP), Professor at School of Pharmaceutical Sciences, University of São Paulo, São Paulo (SP), Brazil