



Michael B. Krawinkel.

### Child growth and micronutrient status

Today, the Congress will be holding a session about the Food and Agriculture Organization of the United Nations project on complementary feeding and infant health. **Page 3**



### Interview with Anna Lartey

The President-elect of IUNS talks about the current economic environment for scientific research and explains the values and virtues of a conference like this. **Page 6**

### PREDIMED Study

The latest results of the PREDIMED Study will be presented today. PREDIMED aims to assess the efficacy of the Mediterranean diet in the primary prevention of cardiovascular diseases. **Page 2**

## ★ Plenary Lecture

# Brown adipose tissue plays a key role in metabolism

BAT has potential in the fight against metabolic syndrome due to its vast capacity for triglyceride clearance and glucose disposal



Recent studies have revealed major new roles for brown adipose tissue (BAT) in blood triglyceride clearance and glucose disposal. Jan Nedergaard, researcher at The Wenner-Gren Institute, Stockholm University, Sweden, explained in his lecture how BAT first uses its stored lipid as a substrate to generate heat for thermogenesis. This early phase of thermogenesis corresponds molecularly to norepinephrine released from the sympathetic nerves activating the release of free fatty acids from triglyceride droplets. **Page 4**

Jan Nedergaard with Andreu Palou, from University of the Balearic Islands and CIBERobn, chair of this Plenary Lecture.

## ★ Alzheimer's disease

# Changes in lifestyle and prevention of dementia

New scientific evidence indicates that changes in lifestyle can slow the onset and progression of Alzheimer's disease. In fact, longitudinal studies that have been following patients over five to seven years have shown that very active people have between 20% and 50% lower risk of developing dementia compared to less active people. Yesterday, the Congress hosted a session about physical activity and its role in preventing cognitive impairment and Alzheimer's disease. **Page 2**



## MONOUNSATURATED FATTY ACIDS AND HEALTH

Thursday 19th Room Picasso  
17.00 – 19.00 h. SPS 4-27B

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☆ Parallel Symposium

# From PREDIMED to PREDIMED PLUS

The latest results of the PREDIMED Study will be presented today. PREDIMED is the acronym of a long-term nutritional intervention study aimed at assessing the efficacy of the Mediterranean diet in the primary prevention of cardiovascular diseases. The main objective is to evaluate whether the Mediterranean diet supplemented with extra-virgin olive oil or tree nuts prevents cardiovascular diseases (cardiovascular death, myocardial infarction and/or stroke) in comparison with a low-fat diet. As secondary variables, the preventive efficacy of the Mediterranean diet will also be assessed on all-cause mortality and incidence of heart failure, diabetes, cancer, dementia and other neurodegenerative diseases.

Emili Ros, from the Endocrinology & Nutrition Service of the Hospital Clínic in Barcelona, will present the rationale, design, methods and interventions. The subjects of the study were almost 7500 individuals at high risk of CVD but free of it at enrollment. A 14-item screener was



M.A. Martínez González.

used to assess MedDiet adherence and upgrade it at each visit of the MedDiet groups.

The effect of the Mediterranean diet on classical and emergent risk factors of cardiovascular disease will be analysed by Montserrat Fito, from the IMIM-Institut de Recerca del Hospital del Mar, Barcelona, Spain, while Jordi Salas, from the



Dolores Corella.

University Hospital of Sant Joan, Rovira I Virgili University, Reus, Spain will be discussing the relationship between the Mediterranean diet, metabolic syndrome and diabetes prevention. The PREDIMED-1 trial showed that a Mediterranean diet (with no restrictions on calories) did reduce cardiovascular clinical events. “The aim of our new



Emili Ros.

trial (PREDIMED-PLUS) is to assess whether a calorie-restricted Mediterranean diet together with specific goals for weight loss and physical activity can reduce the risk of cardiovascular events beyond the results obtained in PREDIMED-1”, said Miguel Ángel Martínez-González, from the University of Navarra, who will be explaining the objecti-

ves and implementation of PREDIMED PLUS.

The interactions between Mediterranean diet and genetic variants, and the risk of disease in the PREDIMED Study will be analyzed by Dolores Corella, from the University of Valencia. “We have detected interesting gene-diet interactions in which a greater adherence to the MedDiet, or to some of its typical foods, can reverse the adverse effects that the risk alleles in these genes have on their specific phenotypes”, she said. She has also been investigating the relationship between genetics and the Mediterranean diet, both as a whole and by analyzing the specific relationships of the main components in determining intermediate and final phenotypes (stroke, myocardial infarction, etc) of the most prevalent diseases. The PREDIMED study therefore offers an excellent opportunity to examine the interaction between the Mediterranean Diet and genetic variants in determining intermediate and disease phenotypes.

Finally, Ramon Estruch, from the Institut d'Investigacions Biomèdiques August Pi Sunyer (IDIBAPS) in Barcelona will today be explaining the role of the Mediterranean Diet in the primary prevention of cardiovascular disease. ●

☆ Alzheimer's disease

## Changes in lifestyle can slow the progression of dementia

It's time to solve the clinical and public health problems by developing intervention strategies to prevent the onset of cognitive impairment, experts say

Dementia and its major subtype Alzheimer's disease is an important growing cause of disability in older people, placing enormous pressure on health care systems and society as a whole, unless effective means for decreasing its incidence are found. New scientific evidence indicates that changes in lifestyle can slow the onset and progression of Alzheimer's disease. In fact, longitudinal studies that have been following patients during five or seven years have shown that very active people have between 20 and 50% lower risk of developing dementia compared to less active people.

Yesterday, the congress allowed the session about physical activity and his role to prevent cognitive impairment and Alzheimer's disease. One of the chairs in these meeting, Jonatan Ruiz, professor in Department of Physical Edu-

cation and Sport, School of Sport Sciences at University of Granada, explains that “these studies have shown that an aerobic exercise program of 5 months retards amyloid-B accumulation and improves the rate of learning. In fact, physical activity increases brain plasticity by facilitating regenerative processes, adaptive and pro-

tection through the mediation of neurotrophic factors”.

Epidemiological studies indicate that Alzheimer's disease is a multi-factorial disease with several modifiable risk factors. Previous preventive trials with single agents in elderly or cognitively impaired persons have yielded disappointing results. Finnish Geriatric Inter-

vention Study to Prevent Cognitive Impairment and Disability (FINGER) is an ongoing intervention trial aiming to prevent Alzheimer's disease through a multidomain intervention. Its results were presented yesterday. The participants, 1260 individuals at risk of cognitive decline, were recruited from previous population-based non-intervention studies. Screening began in September 2009 and will be completed early 2014. Baseline clinical characteristics indicate that several vascular risk factors and unhealthy lifestyle related factors are present, creating a window of opportunity for prevention. “A lifelong perspective is needed for managing Alzheimer's disease. The FINGER study is at the forefront of international collaborative efforts to solve the clinical and public health pro-

blems by developing intervention strategies to prevent or delay the onset of cognitive impairment and dementia”, said Tiia Ngandu, from National Institute of Health and Welfare, Helsinki, Finland.

Concepts of exercise prescription in clinical practice were examined by Noël C. Barengo, Unit of Non-Communicable Diseases, Department of Prevention and Health Promotion in Ministry of Health and Social Protection of Colombia. Other evidences about the links between active lifestyle and prevention of dementia were analyzed by Jaakko O. Tuomilehto, Department of Vascular Prevention, Danube-University, Austria.

Last, Jose Alejandro Luchsinger, professor at Columbia University Medical Center, United States, has been researching for years about the effects of dehydration on human cognitive function or about tyrosine that appears to prevent the substantial decline in various aspects of cognitive performance and mood associated with many kinds of acute stress.

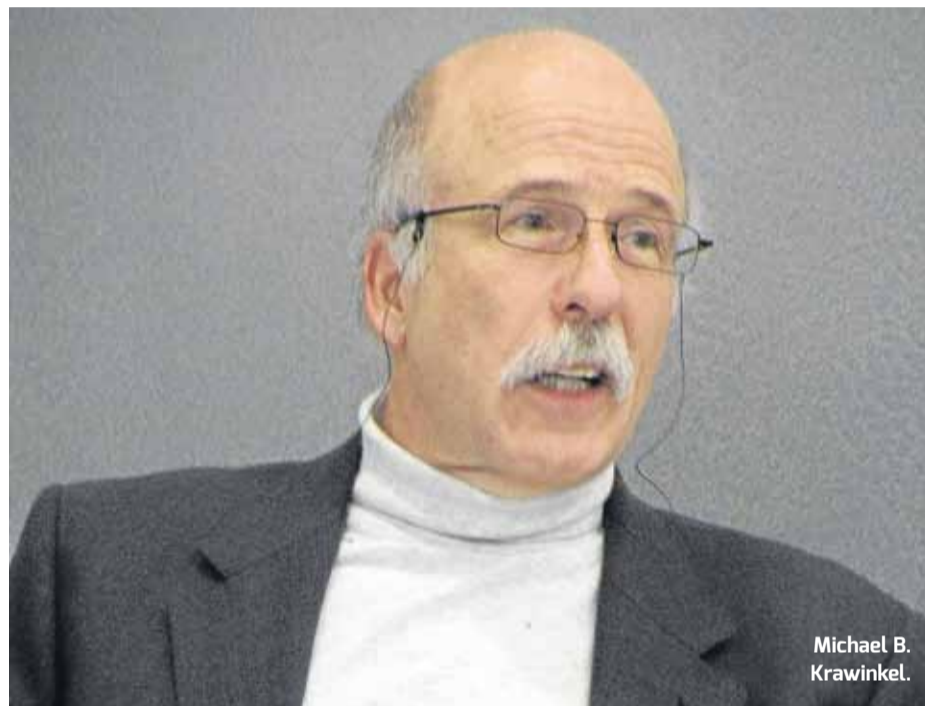
“Specialists in charge of these patients do not have methods to objectively the level of physical activity for their patients. Given the progressive nature of this disease, therapeutic interventions, including physical activity, should be initiated as early as possible in the patient's life”, said professor Ruiz. ●



☆ Session about the FAO project

## Update on complementary feeding and infant health

The impact of fortified foods and home-fortification of local foods on child growth and micronutrient status



Michael B. Krawinkel.

The transition from exclusive breastfeeding to the consumption of solid and semi-solid foods is a critical period for the growth and development of children. There is well-established evidence that breastfeeding results in the reduction of certain health risks. Today, the Congress will be holding a session about the FAO project on complementary feeding and infant health.

There is debate however about the optimal duration of exclusive breastfeeding. The general recommendation is to breastfeed newborn babies for 6 months exclusively and then to introduce complementary foods while continuing breastfeeding. "Considering the evidence about earlier introduction of complementary foods, it remains unclear how long the children have been exclusively and partially breastfed. It may well be that children who are breastfed exclusively for 3 months or less benefit from an introduction of complementary foods as long as they still receive partial breastfeeding", says Michael B. Krawinkel, from Justus Liebig University Giessen, Germany.

Traditional complementary foods often fed to children in Africa are of low energy and nu-

trient densities. The total diet has low diversity due to over-reliance on just a few foods. Anna Lartey, from University of Ghana, explains that "the hygienic conditions under which foods are stored also expose them to contamination and subsequently to food borne diseases. Not surprisingly the prevalence of stunting, wasting and underweight rise during the complementary feeding period". The World Health Organization recommends timely initiation of solids and semi-solids from 6 months, an increase in the amounts and variety of foods and an increase in feeding frequency with maintenance of breastfeeding. "To ensure adequate nutrient density of complementary foods, children must be fed from a minimum of four food groups". The typical diet of African children rarely meets this criterion and it is therefore necessary to consider options to fill the nutrient gaps. According to Lartey, "evidence from intervention studies shows that micronutrient powders, food-based home fortification (involving the use of lipid-based nutrient supplement), bio-fortified staple foods and formulated complementary foods can be used to address nutrient gaps in the interim while efforts are made to identify local foods to complement typical diets". ●

### CALL FOR APPLICATIONS

## 2<sup>ND</sup> PREMIO DANIEL CARASSO\* FOR OUTSTANDING RESEARCH IN SUSTAINABLE FOOD AND DIETS FOR LONG-TERM HEALTH



\*AN INITIATIVE OF THE DANIEL AND NINA CARASSO FOUNDATION

The Premio Daniel Carasso is an international award named after the founder of Danone in France and Dannon Co. in the US. It recognizes and encourages outstanding research in the field of sustainable food and diets for long-term health. The first Premio Daniel Carasso was awarded in 2012 to Jessica Fanzo, an American scientist known for her expertise in nutrition and the promotion of biodiversity. The Premio Daniel Carasso also paid tribute to her unwavering commitment to addressing world hunger through research in sustainable development. The award winner receives an amount of €100,000.

Application conditions for the 2<sup>nd</sup> Premio Daniel Carasso will be available as of November 4<sup>th</sup>, 2013. For more information: [www.premiodanielcarasso.org](http://www.premiodanielcarasso.org).

### Reminder today

The Special Lecture "**Modulation of the gut microbiota by nutrients with prebiotic and probiotic properties**" by Dr. Nathalie Delzenne that was initially scheduled from 16:00 – 16:30 in Room C on Monday, September 16th; **has been rescheduled to Thursday, September 19th from 11:30 to 13:30 at PS4-54 in Room C.**

## ✧ Plenary Lecture

# Brown adipose tissue, an important player in metabolism

This fat has potential in the fight against metabolic syndrome due to its vast capacity for triglyceride clearance and glucose disposal

Recent studies have revealed major new roles for brown adipose tissue (BAT) in blood triglyceride clearance and glucose disposal. Jan Nedergaard, researcher at The Wenner-Gren Institute, Stockholm University, Sweden, explained in his lecture how BAT first uses its stored lipid as a substrate to generate heat for thermogenesis. This early phase of thermogenesis corresponds molecularly to norepinephrine released from the sympathetic nerves activating the release of free fatty acids from triglyceride droplets.

Some of these fatty acids activate UCP1 (uncoupling protein 1) and the remaining fatty acids are imported into the mitochondria and combusted, releasing energy as heat, due to UCP1 action. However, with brown fat comprising such a small percent of total body weight, the stored lipid can sustain thermogenesis for only a short time, and further energy supplies must come from outside the tissue.

Research by Bartelt et al. (2011) reveals the ability of BAT to import and combust triglycerides from the circulation and demonstrates how this uptake delivers substrate for continued thermogenesis. By exposing mice to cold, Bartelt et al. optimized

the acute activity of BAT, and this had dramatic effects on triglyceride levels in the blood.

Specifically, plasma triglycerides (mainly in the form of chylomicrons, i.e. dietary fat) practically disappeared from the circulation, not because fewer chylomicrons were formed, but because they were nearly all cleared by BAT; in fact, nearly half of the triglyceride from a meal ended up in BAT. The clearance capacity of BAT may be even higher: prior to being exposed to cold, the mice had been living at normal environmental temperature and would thus have also shivered in the cold (explaining the fatty acid uptake in the muscles). Had cold-acclimatized mice with recruited BAT been used, the fraction entering BAT might have been even higher.

The findings of Bartelt et al. led to the following scenario for the high triglyceride clearance into BAT: while norepinephrine activates the release of free fatty acids from triglyceride droplets within the brown fat cell, it also induces VEGF and lipoprotein lipase gene expression. VEGF leads to increased capillary permeability, allowing plasma triglycerides to leave the capillaries. LPL degrades the triglycerides and allows fatty acids to become available for com-



Jan Nedergaard, researcher at The Wenner-Gren Institute, Stockholm University.

bustion in the tissue through the action of the plasma membrane transporter CD36; without CD36, the mice could not fight the cold.

In addition to BAT being a major lipidcombusting tissue, Bartelt et al. also point to BAT as being a major organ for glucose disposal, as

(particularly in obese mice) a large fraction of ingested glucose is channeled to BAT, where the glucose, just like lipids, will be combusted. This result reinforces the observation that BAT is an avid glucose uptake organ. Indeed, the realization that adult humans possess active BAT initially arose from the unexpected observations, made by radiologists using glucose uptake to search for tumors, of highly active glucose uptake into areas that turned out to be BAT. Most of the high glucose uptake in BAT is probably due to the intense combustion of glucose (in the form of pyruvate) in the mitochondria, rather than to insulin action.

Norepinephrine activates the release of free fatty acids from triglyceride droplets within the brown fat cell, VEGF and lipoprotein lipase gene expression

Brown fat mitochondria are avid combustors of pyruvate, as long as UCP1 is kept active by free fatty acids. Glucose transporters, specifically GLUT1 and GLUT4, may also be directly involved in the stimulated uptake, since their activity and expression are increased by both cold and norepinephrine. Glucose that is not immediately combusted may accumulate as glycogen and ultimately be converted to lipids to replenish the triglyceride droplets. This high capacity of BAT for both triglyceride clearance and glucose disposal allows a mouse exposed to cold to eat 3–4 times more than a mouse at thermoneutrality without becoming obese. ●

## Active healthy living and prevention of chronic diseases

### Lorca Auditorium

Thursday, September 19

17:00 – 19:00 h. SPS 4-28

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**CHAIRS:** Michael Pratt, National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention (CDC), Atlanta, USA

Marcela Gonzalez-Gross, Sports Physiology and Sports Nutrition, Research group ImFINE, Technical University of Madrid, Madrid, Spain

- **How important is maintaining physical activity levels, compared to reducing obesity and overweight?**  
Steven N. Blair, Prevention Research Center, University of South Carolina, Columbia, USA
- **Athletes or physically active individuals show the effect beneficial exercise in the density of bone**  
Sandra Matsudo, Agita Sao Paulo program, Study Center of Physical Ability of Sao Caetano del Sur (CELAFICSCS) Sao Paulo, Brazil
- **Influence of the doctors in the physical activity habits of the citizens**  
Marianella Herrera, CENDES, Central University of Venezuela, Caracas, Venezuela
- **Nutrition and neuroprotection, cognition and mood effects herbal extracts, nutrients and food supplements**  
Michael Pratt, National Center for Chronic Disease Prevention and Health Promotion Centers for Disease Control and Prevention (CDC), Atlanta, USA

# ELPOZO BienStar, un compromiso con la alimentación saludable

ELPOZO trabaja desde hace años en el desarrollo de productos saludables adaptados a las personas con necesidades específicas, siendo pionero en la creación de los productos **Sin Sal** en cárnicos.

La gama **BienStar** está compuesta por una amplia variedad de productos con un **PERFIL NUTRICIONAL OPTIMIZADO**, que además de tener todos los beneficios de la carne (proteínas, fósforo y vitaminas de Grupo B), destacan también por ser:

- **Bajos en Grasa**, lo que disminuye el contenido calórico.
- **Bajos en Grasas Saturadas**, lo que contribuye a mantener niveles normales de colesterol sanguíneo.
- **Reducidos en Sal** en las variedades de Jamón Cocido y Pechuga de Pavo, ideales para dietas que requieren la restricción de sodio.
- **Sin Lactosa y Sin Gluten**, aptos para personas intolerantes.



La última incorporación a la gama es una destacada INNOVACIÓN dentro del mundo cárnico:

**LA MORTADELA BAJA EN GRASA Y REDUCIDA EN COLESTEROL**, con una composición nutricional similar a un jamón cocido.



Valores medios por 100g

	Mortadela Baja en Grasa BienStar	Mortadela tradicional ELPOZO	Jamón Cocido Extra tradicional ELPOZO
Valor energético	381,5 kJ/ 90,5 kcal	1107,7 kJ/ 265 kcal	443 kJ/ 105 kcal
Grasas	2,5g	22g	3g
Grasas saturadas	0,9g	7g	1,4g
Colesterol	25mg	44,5mg	45mg
Hidratos de carbono	5g	5,8g	1,5g
Proteínas	12g	11g	18g

- **Reducida en Calorías** debido a la reducción del contenido en grasa.
- **Baja en Grasa**, con un **89% menos de grasa que la mortadela tradicional**.
- **Baja en Grasas Saturadas** (0,9g/100g).
- **Reducida en Colesterol**.
- **Sin Lactosa y Sin Gluten**.



## ¿Por qué recomendar Mortadela Baja en Grasa BienStar?

Grandes beneficios nutricionales con el sabor más auténtico de la mortadela tradicional.

Muy recomendable en la alimentación equilibrada de toda la familia y alimento perfecto para los bocadillos de los niños.

Adecuada para grupos con intolerancias específicas: **SIN LACTOSA y SIN GLUTEN**.

Un Estudio de Intervención Nutricional llevado a cabo por la Universidad de Navarra mostró que el consumo de Mortadela Baja en Grasa BienStar, como parte de una dieta equilibrada durante 10 semanas, puede considerarse compatible con una estrategia dietética dirigida al control del peso corporal.



>> Interview | **PROFESSOR ANNA LARTEY** *President-Elect of IUNS*

# “Researchers must maintain their independence”

## What are the main objectives of scientific societies today?

Scientific societies are a group of professionals who have come together with a common goal of promoting their profession through the sharing of information on scientific advances in their field, fostering scientific collaboration among themselves and using their knowledge to serve mankind to promote a better quality of life. Through scientific society conferences, members can update themselves on new information in their field. Additionally, scientific societies use their organization to groom up-and-coming young scientists into the profession. Scientific societies are useful and crucial for the survival of the profession.

## How would you describe the current economic environment for scientific research?

Generally funds for scientific research come from governments, foundations and corporations. These funds have never been sufficient to meet the huge demand for research that must be done. In recent times the financial environment of many of these funding organizations is getting rather tight. Many are cutting down on research funds. This is unfortunate. As a result, getting research funds has become very competitive. This is a real concern especially for young professionals who want to take up a research career. This often means spending a lot of time writing applications for research grants, many of which will not get funded. As you know, as research scientists our progression

depends on research outputs. Cuts in research funds can drive our young scientists into other less demanding professions, which can be a big loss. It is also important for researchers to maintain their independence regarding their research and the source of funds for research. Research funding cuts like those we are currently seeing can drive researchers to seek funds from non-traditional sources and can compromise their independence.

## What do you think are the main values or virtues of a conference like this?

Professional conferences like this provide the opportunity to learn and update ourselves about all the latest information in the field. Most of the presentations being made here have not been in publications yet so participants get to know first-hand the emerging cutting-edge technologies and the latest advances in research. These conferences are a great way to meet scientists whose work one has read about but never met. Young scientists get the opportunity to link up with relevant seasoned scientists for post-doctoral positions and to identify professors they would like to do their graduate training with. Many organizations take advantage of the presence of so many people here to hold face-to-face side meetings at very little cost. Scientific and social networking is at its peak at conferences like this one.

## Organizations and agencies of the UN System (WHO, FAO, UNICEF, IAEA etc.) consider the IUNS as a NGO in a special relationship with



## the individual bodies. Do you think there is fluid collaboration?

The IUNS is a global organization with a vision that “to live a life without malnutrition is a fundamental human right...” and a mission to “promote the advancement of science of nutrition, research and development through international cooperation globally”, we should collaborate with all like-minded organizations, including UN organizations, academic institutions,

Most of the presentations being made here have not been in publications yet so participants get to know first-hand the emerging cutting-edge technologies and the latest advances in research

other NGOs and our sister Unions of Professional Organizations such as the International Union of Pediatric Associations. The complexity of the malnutrition problem requires partnerships to fight it. No one organization or group can do it alone. We need effective global partnerships. I dare to say that IUNS would make itself irrelevant if we failed to build and nurture our partnerships with all these relevant organizations.

## What can be done to convert the results of research into improvements in public health?

First, the research must be relevant and must address a pressing need. Secondly, we must engage with the relevant organizations or government ministries that will take up the results at early stages of the research. Thirdly, in addition to the results being published in peer-reviewed journals, they must also be expressed in a form that policy makers can access and understand. Fourth, the results must be scalable at reasonable cost. Fifth, there must be adequate human and infrastructural capacity to support the uptake. Sixth, it must be culturally sensitive and acceptable.

## Is there one issue that you consider important to emphasize this week?

I urge all of us (our Adhering and Affiliated Bodies) to support the incoming Council to make the IUNS mission of promoting the advancement of the science of nutrition, research and development through international cooperation globally a reality. I wish everybody a wonderful time at this Congress.



## ROLE of DIETARY FATS in PREVENTION and TREATMENT of the METABOLIC SYNDROME

Thursday 19<sup>th</sup> September 2013 17:00-19:30 Seminar Rooms 3, 4, 5

Sponsored symposium organised by the International Expert Movement (IEM) on the Health Significance of Fat Quality of the Diet, under the auspices of IUNS - held in conjunction with the IUNS 20th International Congress of Nutrition



[www.theiem.org](http://www.theiem.org)

**Chair:** Mrs Connie Diekman, M.Ed., RD, CSSD, LD, FADA, Director of University Nutrition at Washington University in St. Louis, USA.

Dietary fat content, energy balance and obesity risk.

**Doctor Susan Jebb**, Head of Diet and Population Health at the Medical Research Council Human Nutrition Research unit, Cambridge, UK.

Fat quality in the control of obesity and insulin resistance.

**Doctor Ulf Riserus**, Department of Public Health and Caring Sciences, Clinical Nutrition and Metabolism, Uppsala University, Sweden

Emerging science on the effects of early lipid nutrition dietary fatty acids intake to reduce metabolic syndrome risk.

**Professor Berthold Koletzko**, Dr med habil (MD PhD) Div. Metabolic and Nutritional Medicine, Dr. von Hauner Children's Hospital Ludwig-Maximilians-University of Munich, Germany

High or low-fat diet (and macronutrient distribution) to counteract the metabolic syndrome?

**Jennifer A. Fleming**, MS, RD, LDN, Department of Nutritional Sciences, The Pennsylvania State University, USA

## ★ Parallel Symposium

# The role of the low-calorie sweeteners in the prevention of obesity and diabetes

**Adam Drewnowski, professor in the Center for Public Health Nutrition, University Of Washington, participated yesterday to discuss users of low-calorie sweeteners and the prevention of obesity and overweight.**

Although low-calorie sweeteners (LCS) use was associated with higher obesity rates, most low-calorie sweeteners users indicated that they were trying to actively manage body weight. The exercise, the dietary habits and the use of these sweeteners are an affective toll in the prevention of obesity and diabetes. Recent analyses based on 5 cycles of the National Health and Nutrition Examination Survey explored both demographic and time trends in LCS consumption in the USA. These data were for a nationally representative survey sample of 22,231 non-pregnant adults who completed a 24-hour dietary recall. Additional analyses focused on health behaviors of low-calorie sweeteners users, with an emphasis

on smoking, alcohol intake, physical activity and weight management. Further analyses examined the cross-sectional association between LCS consumption and body mass index category, diabetes and systemic inflammations. "On any given day, 30% of Americans consumed low-calorie sweeteners contained in beverages, foods and tabletop sweeteners. Among those consumers, about 50% consumed LCS beverages, 30% LCS foods, and 20% tabletop LCS", said Drewnowski. The temporal increase in LCS consumption from 1999 to 2008 paralleled a drop in the consumption of added sugars in the US, both in beverages and in solid foods. Although LCS use was associated with higher obesity rates in the cross sectional NHANES database, most LCS users indicated that they were trying to actively manage body weight. This is important evidence for reverse causality, that countering suggestions that it was LCS use that led to overweight. In general, LCS users had better health behaviors, smoked less and exercise more and had better quality diets than did sugar sweetened beverages consumers. It



Adam Drewnowski.

would appear that LCS use may be an index of positive health behaviors that are associated with the prevention of obesity and diabetes.

### Safety evaluation by regulatory authorities

Moreover, Andrew Renwick, emeritus professor at the School of Medicine at the University of Southampton (United Kingdom), analyzed how all LCS are subject to comprehensi-

ve safety evaluation by regulatory authorities, prior to approval. The safety testing of food additives requires studies in animals to determine what effects the compound is capable of producing when administered at high daily doses, or high dietary concentrations. "The studies cover all life phases, including in utero and lactation. Very high dose levels are used to increase the ability of the study to detect any possible adverse effects. The highest level of intake that does not produce any adverse effect, the non-observed adverse effect level, is used to establish a human intake with negligible risk, which is called the acceptable daily intake (ADI)", said Renwick. The ADI is usually calculated as the NOAEL (in mg/kg body weight per day) divided by a 100-fold safety/uncertainty factor, which is to allow for possible species differences and human variability. The concentrations of each sweetener that are permitted in different foods and beverages are established by regulators so that even high intakes from all sources do not exceed the corresponding ADI value. ●



John Sievenpiper (above), from St. Michael's Hospital, Toronto, Canada, was chairing the Symposium with Arturo Anadon (below), from Complutense University of Madrid, Spain.



Connecting people through nutrition



Andrew Sinclair, Australia

"I am particularly interested in stunting in children and low growth in infants throughout the world. We must focus on this. It is our obligation to improve the situation."

### Esi Colecraft and Gloria Otoo, Ghana

"We've come to get updated on nutrition research, especially malnutrition and the new challenges in obesity. It's an issue in our country, we have both of them."



Tatiana Collese, Brasil

"The Congress is a great opportunity for me to explore the subjects I am most interested in greater depth. So far I have specialized in aspects related with cardiology and the study above all of children and adolescents. I am interested in the relationship between nutrition and genetic variations, the field of nutrigenomics and the role of physical activity".

twitter

#20icn

**maurice bloem** @mauricebloem [Seguir](#)  
Zulfiqar Bhutta calls GAVI example of true public private partnership. Just CSR is not enough, it needs to be part of core business. #ICN20

**Pedro Lozano Pastor** @plozanopastor [Seguir](#)  
@20\_icn: Early Nutrition Project tries to find out how and why what one eats in early infancy creates a predisposition to obesity #ICN20

**Maggie Moon, MS, RD** @maggie\_moon\_RD [Seguir](#)  
China's nutrition transition = more snacking, food away from home, more sodium, packaged foods. Sounds familiar :( #20ICN

**Pierrette** @PiDiattian [Seguir](#)  
Next probiotics: particular commensal bacteria, shown to have a desirable effect on particular health outcomes. #ICN20 @GenMillsBellIns

► **Prof. Dr. Carmen Gómez-Candela and Samara Palma Milla** Nutrition Department, University Hospital La Paz, Institute for Health Research (IdiPAZ) · Autonomous University of Madrid, Spain

## The role of sugar in a balanced diet

Sugar is often blamed for numerous “ills” afflicting human beings and although there is no scientific backing for this idea, it is widely believed even in the medical-scientific sector, generating considerable confusion among the population.

One of the claims that seems to have taken a very firm hold on the population, even though it is not founded on scientific evidence, is that sugar is related with obesity. A strong link has been proved to exist between an excessive consumption of fats and an increased risk of overweight and/or obesity. However, the relationship between the consumption of naturally occurring or added sugars in food and weight gain is not so clear. Moreover, different cross-studies conclude that there is no association, or even that there is a negative association, between sugar intake and weight gain. We also know that the satiety and thermogenesis induced by sugars and carbohydrates is greater than that produced by fats and that the conversion of sugars and carbohydrates into fat uses up a lot of energy, so body fat is unlikely to increase purely as a result of excessive consumption of carbohydrates.

It has also been taken for granted that the higher calorie content of sweetened drinks is one of the causes of higher rates of overweight and obesity. However, this theory has been disproved by numerous studies. In fact, certain studies conducted in Australia and the United Kingdom have shown that although more people now drink low-calorie drinks instead of sweetened beverages, neither the incidence nor the prevalence of obesity have fallen (known as the “Australian Paradox”).

Diabetes is another disorder that is often brought up when talking about sugar and health. Yet the nutritional recommendations based on evidence for the treatment and prevention of diabetes consider the overall quantity of carbohydrate intake more important than the specific type consumed. Nowadays, diabetics can consume sucrose (sugar) and foods containing it provided their intake is part of the total pool of carbohydrates within a healthy diet and

with adequate medical control. No causal link has yet been proved between sugar intake and diabetes. However, habits favouring the development of obesity, such as an unbalanced diet and/or lack of physical exercise do have a lot to do with this disease.

Different cross-studies conclude that there is a negative association between sugar intake and weight gain



Sugar can help to include in the diet food that would otherwise not be consumed.

And what about tooth decay? Tooth decay has ceased to be a problem in developed countries thanks to generally proper oral hygiene, exposure to fluoride and regular visits to the dentist. This, together with the advantage of eating sweet foods with the main meals (lunch, afternoon tea, etc.) then brushing one's teeth, has led to a reduction in tooth decay.

### Sugar as part of a healthy diet

Certain rather pessimistic mathematical models suggest that we have reached a point at which the life expectancy curve, which has been constantly rising in industrialised countries over recent years, will for the first time invert its upward trend and level off.

If we want to be successful in our strategy of promoting healthy habits, we must distance ourselves from any kind of repression or prohibition, since this goes against our creative inclination, our lifestyle and the phenomenon of eating for pleasure in today's society. On the other hand, what is clear is that in order to make progress we must accept that no specific food is “guilty”; there are no good or bad foods, but rather correct or incorrect diets. In this regard, the best nutritional advice for people on the whole could be to eat a varied, balanced diet with foods and nutrients from different sources, combined with more exercise.

In a country like Spain, we could add that the Mediterranean diet must be promoted to encourage people to eat better. This diet has a low calorie content because it is rich in fruit, vegetables, pulses, fish and olive oil, allowing sugar to play a role of producing energy and making certain foods more palatable. In fact, sugar helps to make this diet more varied and appetizing, allowing the inclusion of foods that would perhaps otherwise not be consumed (yogurt, acid fruits, infusions...), thus indirectly contributing towards the intake of other essential nutrients.

Therefore, the scientific community still has some important work to do, in the light of high-profile scientific expertise, to clarify and inform on the essential role played by sugar within a healthy diet. In this respect, you are invited to attend the “Scientific Update on Sugars and Health” Symposium to be held tomorrow within this Congress, at which different experts will analyse in depth certain scientific aspects of interest on the role played by sugar in health and nutrition.

El Instituto de Estudios Documentales del Azúcar y la Remolacha-IEDAR (Spanish Sugar Institute) has brought together various experts in order to analyze in depth the different factors of scientific interest of the role of sugar on health and nutrition. We look forward to your attendance at the Scientific Symposium Update on Sugars and Health, which will be held on **September 20th, 2013 at 4 pm. Machado meeting room.**



### AGENDA

#### Track 2: Nutrition and Management of Diseases

##### Satellite symposium: “Scientific Update on Sugars and Health”

Sponsor: Instituto de Estudios Documentales del Azúcar y la Remolacha- IEDAR (Spanish Sugar Institute)

**4.00pm. Welcome and Opening of the Session.** Prof. Dr Angel Gil. President of the Congress. Department of Biochemistry and Molecular Biology II, Faculty of Pharmacy, University of Granada. Institute of Nutrition and Food Technology “José Mataix”, Biomedical Research Centre, University of Granada, Spain and Javier Fernández del Moral, Chairman of IEDAR

**4.15pm. Basic Concepts on Sugars in Nutrition and Health**  
D ir. Janine Verheesen. Director, Knowledge Centre Sugar and Nutrition. The Netherlands

**4.45pm. Sugars and Diabetes**  
Prof. Dr Alejandro Sanz, Endocrinology and Nutrition Service, Nutrition and Dietetics Department, University Hospital Miguel Servet of Zaragoza, Spain

**5.15pm. Update on Sugars and Obesity**  
Prof. Dr Carmen Gómez-Candela, Nutrition Department, University Hospital La Paz, Institute for Health Research (IdiPAZ), Autonomous University of Madrid, Spain

#### 5:45pm. Round Table and Debate

**6.00pm. Presentation of the new Supplement of “Nutrición Hospitalaria” and the “White Paper” on Sugars**  
Dr Ana Sastre Gallego. Doctor in Medicine. Academic Member of the Spanish Royal Academy. IEDAR Scientific Committee:  
Prof. Dr Carmen Gómez-Candela and Dr Samara Palma Milla, Nutrition Department. University Hospital La Paz, Institute for Health Research (IdiPAZ). Autonomous University of Madrid, Spain.

**6:30pm. Closing Remarks.** Mrs. Isabel Vasserot, Director of IEDAR

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