

during pregnancy and lactation. Only animal products, such as liver, eggs and dairy, contain preformed vitamin A. Populations whose intake of animal products is low (most people in Asia and Africa) might meet vitamin A requirements by eating foods rich in provitamin A carotenoids (mainly beta-carotene).

Nevertheless, dietary intakes of vitamin A and beta-carotene fail to reach recommended levels in many countries. Groups especially at risk of inadequate intake are young women (especially during pregnancy and lactation), newborns, infants with frequent infections, elderly and vegans. Recent evidence has shown that suboptimal intakes of vitamin A and beta-carotene, even if not sufficiently low to cause a clinical deficiency syndrome, can increase the risk for chronic diseases.

Gene variants affect deficiency risk

Numerous factors can influence the bioavailability of beta-carotene. These include food-related factors (food matrix, fiber and fat content, food processing, amount consumed), as well as consumer-related factors (vitamin A status, gut integrity, genetic variations). Studies indicate that almost half of the population tested has a reduced ability to produce vitamin A from beta-carotene because of genetic variations in the enzyme responsible for converting beta-carotene. This means that individuals with this genetic trait who rely mainly on beta-carotene as a source of vitamin A are at a particularly high risk of vitamin A deficiency.

Higher intakes needed

When people do not consume enough preformed vitamin A to ensure an optimal vitamin A status, an adequate intake of beta-carotene becomes essential. Evidence suggests that current intake recommendations of 2–4 mg beta-carotene daily might not be enough.

The meeting participants therefore conclude that people with low intakes of preformed vitamin A should consume 7 mg beta-carotene daily. Individuals with reduced conversion of beta-carotene might need to increase their daily intakes even further. This recommendation is based on a realistic conversion efficiency of 12:1 (12 mg beta-carotene produces 1 mg vitamin A),



Foods rich in beta-carotene help to meet vitamin A requirements

which should ensure that at least 95% of the population meets the recommended intake of vitamin A.

When considering which form of beta-carotene is preferable, the experts agree that there is no difference in function between naturally occurring and chemically synthesized beta-carotene. However, the bioavailability of all-trans beta-carotene, the form used for most dietary supplements and fortified foods, is much greater than that of natural beta-carotene in fruits and vegetables.

As the general population does not obtain sufficient beta-carotene from fruit and vegetables, dietary supplements and foods fortified with beta-carotene can be important contributors to the daily supply of vitamin A.

Source

I. Grune T, Lietz G, Palou A, et al. Beta-Carotene is an important vitamin A source for humans. Hohenheim Consensus Conference. J Nutr 2010; 140: 2268–2285.

Source: media release, Hohenheim Conference

Guatemalan Science and Technology Medal 2010:

Guatemala recognizes Noel Solomons' research efforts

On December 13, 2010, Dr Rafael Espada, Vice President of the Republic of Guatemala, presented the National Science and Technology Medal for 2010 to Dr Noel W. Solomons in recognition of his scientific research in the area of nutrition, and its significant contributions to health in the country. The National Council of Science and Technology (Consejo Nacional de Ciencia

y Tecnología, CONCYT) introduced this annual award in 1997 to recognize outstanding and meritorious research with a social impact for Guatemala.

Accompanied at the ceremony by the President of the National Legislature, Congressman José Roberto Alejos Cámara, and the Director of the National Council for Science and Technology, Dr Rosa María

López Amaya, Dr Espada congratulated Dr Solomons, and confirmed that his work has helped the country to make progress in inspiring its youth and strengthening the integrity of its people through the education of science and technology.

Dr Solomons graduated as a physician at Harvard University, USA, in 1970, and has dedicated much of his professional life to nutrition research in Guatemala. He has more than 35 years' experience in teaching nutrition at various international universities, as well as the University of San Carlos de Guatemala and the Institute of Nutrition of Central America and Panama. Among the many professional societies, of which he is a member, he is currently active in the American Society for Nutrition, the Latin American Society for Nutrition (SLAN) and the International Society for Trace Element Research in Humans. He serves on ten editorial boards, including that of Nutriview.

His research has had a significant impact on child nutrition policies at national and international levels, influencing the decisions of Guatemala's Ministry of Public Health and Welfare to improve nutrition in children and the concept of standards and nutrition interventions. It has also had a significant impact on the establishment of policies and programs to promote positive early nutritional efforts to prevent obesity, diabetes and cardiovascular disease in adults, allowing to develop comprehensive strategies aimed at reducing



Congressman José Roberto Alejos Cámara (left), Dr Rosa María López Amaya, and Dr Espada congratulate Dr Solomons at the award ceremony

chronic diseases, including cancer. Findings from his institute, CeSSIAM, currently serve to promote the fortification of sugar with vitamin A (one of the most important achievements and contributions to public health in the country).

Recently his research has focused on the nutritional impact of the economic downturn, natural disasters and environmental pollution, including the potential health problem of water consumption by school children. He has also pioneered research on the effects of nutrition in the elderly, urban nutrition in the tropics, and cardiovascular risk factors in the elderly.

Translated and adapted from the Vice-President's report (<http://www.vicepresidencia.gob.gt/v2/content/medalla-de-la-ciencia-y-tecnolog%C3%AD-para-el-doctor-noel-w-solomons>)

Rainer Gross Award 2010: Latin American researchers honored

On September 25, 2010, during the II World Congress of Public Health Nutrition in Porto, Portugal, the Hildegard Grunow Foundation (<http://www.hgrunowfoundation.org/>) presented the Rainer Gross Award in recognition of recent innovations that show promise to improve nutrition in developing countries for the first time. Joint recipients of the 2010 Award were Angela Cespedes, Regional Nutrition Advisor for the UN World Food Programme in Central America, based in Panama, and Aarón Lechtig, President of the International Agency for Food Security and Nutrition, from Peru. Jury members were Irwin Rosenberg, Director and Professor of Nutrition at Tufts University, Joachim von Braun, Director of the Center for Development Research, and Professor for Economic and Technological Change at the University of Bonn (and former Director General of the International Food Policy Research Institute), Werner Schultink, Chief of Nutrition at UNICEF, Noel Solomons, Scientific Director of CeSSIAM, and Klaus Schümann, President of the Hildegard Grunow Foundation.

Both recipients of the award were honored for their work on model projects conducted independently in their relative countries to improve nutrition, living standards and the hygienic situation, and to investigate



Dr Ursula Gross, widow of the late Rainer Gross, congratulates the recipients of the first Rainer Gross Award, Aarón Lechtig and Angela Cespedes

the mutual supportive impact on physical and intellectual development and educational achievements in children. The evaluation of Peru's Good Start in Life program was published in 2009 (Lechtig A, et al. Decreasing stunting, anemia, and vitamin A deficiency in Peru: Results of the Good Start in Life Program. *Food Nutr Bull* 2009; 30: 37–48); the report on a strategy to ensure that social safety nets will decrease the prevalence of malnutrition and undernutrition (Cespedes A, et al) has been accepted for publication in the same journal.

In his remarks at the award ceremony, Dr Lechtig recounted how he first met Rainer Gross in Peru in 1968, and how he had been impressed by an idealistic German graduate student intent on providing practical solutions to the nutrition problems of the nation, and intent on someday returning to contribute to the train-

ing of Peruvian nutrition leaders. Then, reminiscing the second phase of their relationship from 2001, he remembered how a mature and seasoned Rainer Gross had returned to Peru, and had realized his three-decade aspiration by setting up the postgraduate course on public nutrition at the La Molina National Agrarian University in Lima.

Until his untimely death in 2006, Rainer Gross was in charge of the Department of Nutrition at UNICEF Headquarters in New York. He was devoted to investigating the impact of micronutrients on health, as well as the physical and mental development of children. Moreover he introduced a number of innovations to improve the micronutrient supply in Indonesia, Peru and Brazil. The Hildegard Grunow Foundation plans to present the Rainer Gross Award on a biennial basis, with the next one scheduled for 2012.

Source: media release, Hildegard Grunow Foundation

News in brief:

Vitamin A supplements save lives

The meta-analysis conducted by Imdad et al [1] provides an up-to-date assessment of the best-available evidence for vitamin A supplementation (VAS) as a low-cost, and easily administered way to reduce mortality, infections and blindness in children affected by vitamin A deficiency (currently about 190 million of those under five years of age). Convinced that large-scale supplementation can lead to substantial public health benefits, the World Health Organization (WHO) has recommended VAS for young children and pregnant or breastfeeding mothers since 1997.

The review evaluated 43 randomized controlled trials of prophylactic supplementation involving 215,633 community-dwelling, disease-free children aged between six months and five years. In seventeen trials, supplementation reduced deaths from all causes by 24%; seven trials reported a 28% reduction in deaths due to diarrhea. VAS reduced morbidity due to measles and diarrhea, but had no significant effect on mortality associated specifically with measles, respiratory disease and meningitis.

The authors conclude that VAS programs (currently in place in more than 70 countries) may be among the most cost-effective public health interventions available. Reducing mortality by 24% could save almost a million lives annually. They therefore strongly recommend continuing VAS in areas at risk of vitamin A deficiency until better, long-term solutions, such as food fortification, biofortification and improved access to a micronutrient-rich diet, are established.

1. Imdad A, Herzer K, Mayo-Wilson E, et al. Vitamin A supplementation for preventing morbidity and mortality in children from 6 months to 5 years of age. *Cochrane Database of Systematic Reviews* 2010, Issue 12.

Vitamin D deficiency a global threat

This review [1] evaluated published studies from six regions (Asia, Europe, Middle East and Africa, North America, Latin America and Oceania) to provide a global perspective of vitamin D status, and to identify common and significant determinants of hypovitaminosis D.

The authors confirm that maintaining an adequate vitamin D status is important for calcium homeostasis and bone mineralization, and that vitamin D might also play a role in other physiological and disease processes, such as muscle strength, blood pressure, psoriasis, multiple sclerosis, diabetes and certain forms of cancer. Vitamin D status is usually established by measuring blood levels of the precursor 25-hydroxyvitamin D [25(OH)D]. Although there is currently no standard definition of an optimal status, levels between 50 nmol/L and 75 nmol/L have been proposed. Severe hypovitaminosis D (below 25 nmol/L) is associated with rickets in infancy and osteomalacia in adults.

After presenting details of surveys conducted in the various regions, the authors conclude that suboptimal 25(OH)D levels are a global phenomenon with hardly any region spared. This should be considered as a major cause for concern. Prevalence and degree of hypovitaminosis D depend on a wide range of factors, such as skin pigmentation, sunlight exposure, diet and age. Prevention strategies include vitamin D supplementation, increasing exposure to UV radiation and improving dietary intake (e.g. through food fortification or eating fatty fish).

1. Mithal A, Wahl DA, Bonjour J-P, et al. (on behalf of the International Osteoporosis Foundation Committee of Scientific Advisors Nutrition Working Group). Global vitamin D status and determinants of hypovitaminosis D. *Osteoporos Int* 2009; 20: 1807–1820.