SHOULD AUSTRALIA & NEW ZEALAND ALLOW MORE VITAMIN D INTO THE FOOD SUPPLY?

Report on a seminar on 12 June 2012 in Melbourne

ILSI SEAR Australasia and the Australian Academy of Science held a one day seminar in Melbourne on 12 June 2012 to raise the awareness of vitamin D deficiency in Australia and New Zealand and highlight the need for the government to urgently consider allowing more vitamin D into the food supply.

Prof Andrew Sinclair, National Committee of Nutrition, Australian Academy of Science, spoke of the role of this organisation and that of ILSI resulting in a collaborative effort to stage today’s seminar.

Prof Caryl Nowson, Chair of Nutrition and Ageing, Deakin University outlined the progression of knowledge regarding vitamin D, beginning around 1920 when cod liver oil was used for rickets, to the present day where there is Level 1 evidence for vitamin D deficiency relating to falls, fracture and all cause mortality, and weaker evidence for a relationship with numerous other diseases. We evolved as hunter-gatherers in Africa but now spend much time indoors and wear clothing in cooler climates, contributing to low sunlight exposure and hence low vitamin D status. Vitamin D can also be obtained from food, however this contributes minor amounts. Prof Nowson concluded that only a small amount of dietary vitamin D is required to avert frank deficiency (rickets in infants and young children and osteomalacia in adults), and this could be achieved using a wide variety of fortified foods.

Prof Rob Daly, Chair of Exercise and Ageing, Deakin University, spoke about vitamin D status and optimal levels. Previously, optimal vitamin D was identified by a serum level for 25(OH)D above 50 nmol/L but some experts, including Prof Daly, now recommend this be above 75 nmol/L. Results from the AusDiab study showed that 73% of Australian adults had levels less than 75 nmol/L. The rates of vitamin D deficiency are similarly high in Australia, New Zealand and northern hemisphere countries such as USA and Korea. There is increased risk for older people, women, dark skinned people, obese people and those with low physical activity levels. The risk of deficiency is also greater during winter or spring, and at more southerly latitudes. Prof Daly concluded there is an urgent need to improve the vitamin D status of all Australians and New Zealanders.

Assoc Prof Andre Renzaho, Monash University, spoke about the vitamin D status of migrants and Indigenous Australians. Melanin in the skin is protective for solar radiation, however the darker the skin the more sunlight that is needed to produce vitamin D. People from Africa, the Middle East and South Asia have a significant decrease in their vitamin D after migration to Australia or Europe. There is higher risk for women, Muslims and for people whose clothing covers the whole body. Migrant populations are likely to eat different foods to other Australians and this is an important issue regarding vitamin D fortification. Whilst Indigenous Australians have better vitamin D levels than migrants, there are still many that have less than optimal levels. Assoc Prof Renzaho concluded that vitamin D status is an urgent issue for migrant populations and Indigenous Australians.
Prof Rebecca Mason, University of Sydney spoke about the effectiveness of sunlight exposure to maintain adequate vitamin D. For people with light skin, 5-10 minutes per day of sunlight is needed in summer and 30-40 minutes in winter in southern parts of Australia and New Zealand. However, people with darker skin need 3-6 times these amounts. Additionally, older people make less vitamin D for a given amount of sunlight exposure. Small amounts of skin damage are repaired better than large amounts and some pigmentation (or a tan) is protective of further damage. Prof Mason concluded that there needs to be a balance between skin damage and vitamin D production. Whilst high risk people need to avoid the sun, others need to have a balance by practising short but frequent exposure to sunlight.

Dr Susan Whiting, Professor of Nutrition and Dietetics, University of Saskatchewan presented the Canadian experience with vitamin D food fortification. Canada has had mandatory vitamin D fortification of fluid milk and margarine since 1975. Like Australia, the dietary intake of vitamin D in Canada is low. Young Canadian children obtained almost all of their dietary vitamin D from dairy products whereas for older children and adults, dairy products, meat and seafood provided the largest quantities. Dr Whiting concluded that Canadians have benefited from vitamin D fortified milk and this has helped prevent childhood rickets, however Canadians still need more vitamin D. Additionally non-dairy fortified food sources are needed for the growing non-white population.

Dr Georgia Paxton, Royal Children’s Hospital in Melbourne spoke about refugee health. Annually there are around 250 children from Victoria with vitamin D deficiency rickets. Dr Paxton presented photographs showing recovery from rickets in her clinic using high dose vitamin D, including one person with severe rickets who had a full recovery and became a skilled soccer player. Vitamin D treatment also helps with severe bone and joint pain. Cost is a significant factor for migrant populations and there is a 3-fold difference in the price of different brands of vitamin D supplements. There are many gaps in paediatric vitamin D data and until better evidence is obtained she recommends 25(OH)D serum levels for children be above 50 nmol/L. Additionally, 25-50% of pregnant women have serum vitamin D levels less than 50 nmol/L in southern Australian states, and this increased to 60-98% in veiled and/or dark skinned women. Dr Paxton concluded that vitamin D is a high priority issue for both children and pregnant women.

A more cautious approach to vitamin D food fortification was signalled by Prof John McGrath who presented data on the dangers of excess vitamin D. Low pre- and perinatal vitamin D adversely affects brain development and increases risk of schizophrenia. However, those with the highest vitamin D also have increased risk of developing schizophrenia. This U-shaped relationship between vitamin D status and health outcome is also evident with all cause mortality, mother-to-child transmission of HIV, neonatal small-for-gestational age, and type 1 diabetes in newborns. The cause for the U-shape is unknown however it may relate to vitamin D being bound by proteins and therefore not active. Prof McGrath concluded by saying that until we know what causes the U-shape curve, we could be doing harm with adding vitamin D.
Prof Peter Ebeling presented recent research on vitamin D and bone health. Data from the Victorian Health Monitor showed that 4.5% of Victorian adults had severe deficiency with a serum 25(OH)D level < 12.5 nmol/L, equating to 160,000 people across Victoria. The same survey showed dietary vitamin D intake for Victorians was far below recommended levels. Another recent study showed that vitamin D plus calcium supplementation reduced the risk of death by 9%. Vitamin D may also be associated with multiple sclerosis, cancer, cardiovascular disease and type 2 diabetes. Prof Ebeling postulated that the U-shape issue raised by Prof McGrath may be because sicker patients are more likely to be prescribed high dosage vitamin D supplements and he concluded that it is important to screen and treat vitamin D deficiency in at risk groups such as patients with type 2 diabetes and pregnant women.

Ms Janine Lewis from Food Standards Australia New Zealand explained how the food regulatory system works and summarised the approval process. She estimated that voluntary vitamin D food fortification could take 9-12 months for approval and a best case scenario for mandatory fortification could take 2-3 years.

Mr Greg Seymour, General Manager of Australian Mushroom Growers spoke about the vitamin D content of mushrooms. Mushrooms grown indoors can be flash-illuminated prior to sale, to provide a substantial dietary source of vitamin D2. This source of vitamin D is bioavailable, shelf stable and cooking stable.

Mr Wouter Claerhout spoke about vitamin D supplementation from his perspective as a Marketing Director for DSM Nutritional Products Pty Ltd. Vitamin D deficiency is a worldwide problem with 40-75% of the population affected in both developing and developed countries. European policy makers are starting to take action, however the Asia-Pacific region will be hardest hit by ageing. Mr Claerhout concluded with some examples of the growing awareness of vitamin D, including a 14 year old Scottish boy who campaigned for every child in Scotland to receive vitamin D after his mother was diagnosed with multiple sclerosis, and skyrocketing sales of vitamin D supplements in the United States after promotion by Oprah Winfrey.

The closing panel discussion focussed on adding vitamin D to the food supply. Prof Nowson, Prof Daly, Prof Mason, Prof Ebeling, Dr Paxton and Mr Claerhout all agreed to this. Prof Nowson and Dr Paxton said yoghurt should also be fortified. Assoc Prof Renzaho expressed some reservation due to the limited data on ethnic groups and he also noted that health label promotion would be insufficient as many migrants can’t read.

Report prepared by Paul Jeffery, PhD candidate in nutrition at Deakin University.