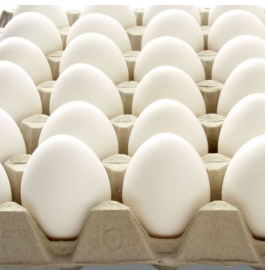

RESEARCH UPDATE

AUSTRALIAN EGG CORPORATION LIMITED

AECL Research Update December 2012

NO ASSOCIATION BETWEEN EGG INTAKE AND PROSTATE CANCER RISK

Source: Xie B, He H. No Association between Egg Intake and Prostate Cancer Risk: A Meta-analysis. Asia Pac J Cancer Prev 2012; 13 (9): 4677-81.

Since some literature has suggested that egg consumption increases the risk of prostate cancer, this study summarised and quantified the current evidence relating dietary intake of eggs and prostate cancer. Studies up to July 2012 were included. When the studies were pooled together no type of study (case-control or cohort) showed any association of prostate cancer incidence with egg consumption. No association was observed between egg consumption and prostate cancer-specific mortality either. This analysis suggests there is no evidence that egg consumption has a significant influence on prostate cancer incidence and mortality, however, researchers called for larger studies to be conducted.

KEY FINDING: Based on the current, best available evidence, there is no association between egg consumption and prostate cancer incidence and mortality.

APPLICATION: This finding refutes claims from a couple of studies published in the last 12-18months. **[Suitable for eDM]**

Levels of Evidence: III-2

BAKED EGG FOR EGG ALLERGY?

Source: Tey D, Dharmage SC, Robinson MN, Allen KJ, Gurrin LC et al. Frequent baked egg ingestion was not associated with change in rate of decline in egg skin prick test in children with challenge confirmed egg allergy. Clin Exp Allergy. 2012 Dec;42(12):1782-90. doi: 10.1111/j.1365-2222.2012.04061.

This Australian study examined the relationship between frequency of baked egg ingestion and rate of decline in egg skin prick test size in egg-allergic children. In the study, 125 children, who had at least two egg skin prick tests performed between 1996 and 2005, completed a telephone questionnaire regarding their frequency of baked egg ingestion (frequent (>once per week); regular (>once every 3 months and up to once per week); strict avoidance (<once every 3 months)). The researchers found no evidence that the rate of decline in egg skin prick test size differed between children who ingested baked egg frequently, regular ingestion or those who strictly avoided egg. This study suggests that frequent consumption of baked egg is not associated with a different decline in egg skin prick test size. The researchers suggest that given dietary restrictions can adversely impact on the family, it is reasonable to consider including baked egg in the diet of egg allergic children.

KEY FINDING: No difference in the rate of decline in egg skin prick test size between egg allergic children who ingested baked egg frequently, regularly or those who strictly avoided egg.

APPLICATION: Inclusion of baked egg in the diet of egg-allergic children may help to liberalise their diet **[Suitable for eDM]**

Levels of Evidence: III-2

FOOD& nutrition AUSTRALIA

ORGANIC FOODS, HEALTH AND ENVIRONMENT

Source: Forman J, Silverstein J, Committee on Nutrition, Council on Environmental Health. Organic foods: health and environmental advantages and disadvantages. Pediatrics 130 (5): e1406-e1415.

This paper discussed the health and environmental issues related to organic food production and consumption. While current evidence does not support any meaningful nutritional benefits or deficits from eating organic compared with conventionally grown food, it has been convincingly demonstrated that organic diets expose consumers to fewer pesticides associated with human disease. Organic farming has also been demonstrated to have less environmental impact than conventional approaches. Further, well designed research is required to better understand the potential health benefits of organic foods and organic food labeling needs to be better standardized and regulated.

KEY FINDING: Organic diets expose consumers to fewer pesticides and have less environmental impact than conventional diets, however, current evidence does not suggest any health advantage.

APPLICATION: Provides a summary of current knowledge regarding organic food production and its potential advantages.

VEGETARIANS LIVE LONGER

Source: http://www.foodnavigator.com/Science-Nutrition/Vegetarians-have-longer-life-expectancy-than-meat-eaters-finds-study

According to data presented at the Academy of Nutrition and Dietetics' 2012 Food & Nutrition Conference Expo from the Adventist Health Study 2 cohort, following a vegetarian diet could result in a longer lifespan, with vegetarian men living an average of 9.5 and women an average of 6.1 years longer than non-vegetarians. The lead researcher also presented other findings from the study which included:

- Vegans and vegetarians are less insulin-resistant than meat-eaters.
- Pesco-vegetarians and semi-vegetarians who limit animal products, but still eat meat, once a week or so, have "intermediate protection" against lifestyle diseases

KEY FINDING: Vegetarian men live 9.5 years and women 6.1 years longer than non-vegetarians.

APPLICATION: Evidence to support the benefits of a vegetarian lifestyle. Eggs can play an important role in the diet of lacto-ovo vegetarians. [Suitable for eDM]
Level of evidence:III-2

DEBATE REGARDING THE FINDINGS OF SPENCE ET AL ARTICLE – EGG YOLK CONSUMPTION AND CAROTID PLAQUE

Sources: Zampelas A. Still questioning the association between egg consumption and the risk of cardiovascular diseases. Atherosclerosis (2012); 224: 318-319.

Lucan SC. Egg on their faces (probably not in their necks); The yolk of the tenuous cholesterol-to-plaque conclusion, Atherosclerosis (2012), http://dx.doi.org/10.1016/j.atherosclerosis.2012.10.076

Spence JD, et al., Egg yolk consumption, smoking and carotid plaque: Reply to letters to the Editor by Sean Lucan and T Dylan Olver et al., Atherosclerosis (2012), http://dx.doi.org/10.1016/j.atherosclerosis.2012.10.075

There has been a commentary and a couple of letters to the editor of the journal Atherosclerosis regarding the recent article which suggested that people at risk of vascular disease should limit their intake of egg yolks because egg yolk consumption had a similar impact on the arteries as smoking. The letters of debate have mainly challenged the original study on the following grounds:

- Poor dietary assessment – issues associated with dietary recall used in the study
- Could egg consumption be a marker for refined starch and sugar consumption? (evidence is emerging which suggests high intakes may play a role in heart disease)

Importantly, it has also been pointed out that that there is evidence that egg consumption may increase the size of LDL particles (which makes them less likely to cause heart disease) and they contain lutein and zeaxanthin which protect cholesterol from oxidation (which is also important for heart disease risk).

Spence et al, have responded to the letters with the following main points:

- Their advice for people at risk of vascular disease to limit their intake was not based on findings from their study alone
- While dietary cholesterol does not have an impact on fasting cholesterol levels, they believe there is evidence which suggests it has an impact post-prandially (several hours after a high cholesterol meal)
- They don't believe eating eggs makes people healthy but that eggs often displace other "unhealthy" protein foods high in saturated fat and cholesterol.
- Eggs contain phosphtidylcholine which when converted is toxic to the arteries.
- Do agree that there are issues with their method of dietary recall

KEY FINDING: The recent article suggesting egg yolks harm arteries has sparked debate amongst academics.

APPLICATION: Awareness of latest arguments regarding the findings and conclusions of this paper.

LOW VITAMIN B12 AND COGNITIVE DECLINE

Source: Morris MS, Selhub J, Jacques PF. Vitamin B-12 and Folate Status in Relation to Decline in Scores on the Mini-Mental State Examination in the Framingham Heart Study. Journal of the American Geriatrics Society 60 (8): 1457-1464.

This study investigated the significance of low to low-normal blood levels of vitamin B12 on cognitive decline and assessed the role folate may play in this association. The study included 549 community-dwelling older adults (average age 74.8 years) who were part of the Framingham Heart study. Vitamin B12 and folate status and 8 year cognitive decline were evaluated. Scores on the cognitive testing declined each year over the 8 year period. The decline was significantly faster in subjects with vitamin B12 levels in the bottom two quintiles. In those with vitamin B12 levels less than 258pmol/L, having a higher blood level of folate or using supplemental folate was associated with an approximate 1 point per year decline (especially rapid cognitive decline – faster than average).

KEY FINDING: Low vitamin 12 levels are associated with cognitive decline. Further acceleration of the decline is found if the low levels are accompanied by high folate levels.

APPLICATION: Eggs can provide a significant source (40% RDI) of vitamin B12 in the diet. Especially important source for vegetarians and older adults who are the population groups most at risk of deficiency.

[Suitable for eDM]

Levels of Evidence: III-2

RESULTS FROM VICTORIAN POPULATION HEALTH SURVEY 2010 RELEASED

Source: http://www.health.vic.gov.au/healthstatus/survey/vhm.htm

The Victorian Population Health Survey program was established in 1998 and collects quality information at the State, regional and local government area levels about the health, lifestyle and wellbeing of adult Victorians aged 18 years and over. Information is collected via computer assisted telephone interview on overall self-rated health status, level of psychological distress, body mass index (to determine weight status), the presence of chronic diseases, nutrition, physical activity, smoking and alcohol consumption.
The latest survey (conducted in 2010) found the following:

- Less than one in 10 adults met the recommended minimum daily serves of vegetables (five for adults19 and over)
- Almost half of all adults met the recommendations for fruit consumption
- 59.1% of persons participate in adequate physical activity to meet national guidelines
- The proportion of people rating their health as excellent, very good or good was 83%
- Approximately half of all adults are overweight (33.2%) or obese (16.9%)
- Asthma, mental health and diabetes were the 3 major health areas where prevalence appears to be high or increasing.
- 80.4% of adults had had their blood pressure checked in the last 2 years
- 58.5% of adults had had their cholesterol levels checked in the last 2 years

NUTRITION SOCIETY OF AUSTRALIA ANNUAL CONFERENCE, WOLLONGONG 28-30 NOVEMBER 2012.

New Vitamin D data

Heather Greenfield presented new analytical data for vitamin D content of Australian animal foodstuffs. The data included results for 16 samples of hen egg yolk. Vitamin D3 levels ranged from 0.5 – 2.9ug/100g and for 25OHD3 was 0-4.2ug/100g, suggesting quite a range exists in Australian eggs at the moment. The egg results have been written up into a paper and submitted for publication. The results will also be included into FSANZ's NUTTAB database shortly.

Iodine deficiency in pregnant women – Professor Cres Eastman, Westmead Hospital

50–100 million babies are born each year without adequate iodine. The main issue relating to iodine deficiency is extreme hypothyroidism which can lead to a substantial lowering of IQ, hearing deficits, and may also be related to ADHD. Mild iodine deficiency is common in Australia. During pregnancy, the dual requirement to provide iodine for the mother's needs and for the growing foetus leads to a significant increase in the RDI (for example, WHO recommends 150 µg for adults, 250 µg for pregnant women).
To ensure an intake of 250 µg, Prof Eastman recommends all pregnant Australian women take a daily supplement of 150 µg of iodine and suggests that currently most women in Australia are only getting approximately half the RDI.

Diet quality—what does it mean and how can we measure it? – Professor Adam Drewnowski, University of Washington, USA

Prof Drewnowski has spent many years developing models for estimating nutrient density. He stated that energy-dense foods are cheaper than nutrient-dense foods. Paradoxically, therefore, spending less money on food may result in consuming more energy. Because taste and affordability are the main drivers of food purchasing, Professor Drewnowski believes that the obesity epidemic may be related to the concurrent abundance of high-energy-dense foods and poverty. He also highlighted that healthy diets are those that best correspond to the needs, wants and resources of the consumer. He has developed the Nutrient Rich Foods

Index which uses 9 positive nutrients and 3 negative nutrients to evaluate foods and has plotted nutrient rich foods against cost per calorie. This shows eggs, grains, beans and some dairy come out as inexpensive while some fruit and vegetables are more expensive per calorie. Vegetables and eggs are cheapest on a per 100g basis. He is now looking at which foods are nutrient rich, affordable, tasty and sustainable.

Ethics and the translation of nutrition science: lessons from the pharmaceutical industry. Prof Michael James, Royal Adelaide Hospital.

Michael James highlighted the need to be critical of research and analyse it carefully as medical journals can be an extension of pharmaceutical companies. For example, the New England Journal of Medicine made a great deal of money out of re-prints from a particular study related to a new pharmaceutical drug. Need to give consumers the whole story and not selectively leave out facts e.g. NHF position statement on dietary fats recommends increasing omega-3 intake from 5% to 10% however this sits alongside the recommendation to increase omega-3s. But, there should also be a statement that says people should be aware that dietary omega-6's reduce tissue levels of omega-3s.

Research into action – identifying what works in practice. A/Prof Tim Gill, University of Sydney.

Tim spoke about half of the research that is done doesn't get published and so is lost. Most papers written are also never cited by others. It takes 17 years to get 14% of original research into practise i.e. a long time to change practise. He recommends that researchers need to clearly define the problem and put it in context – not do research in isolation. NHMRC levels of evidence don't always apply, especially with multi-factorial type research. There is Boden criteria for grading evidence which is more suitable for public health research. Evaluates the level of confidence in the research. Systematic reviews are over-rated.

Changing dietary behaviour: a pipedream or reality – Glenn Cardwell, Nutrition Impact

Glenn Cardwell made the point that even for those Australians who have English as their first language, about 40% do not have adequate numeracy and literacy levels to function properly in society. This includes having great difficulty interpreting nutrition information panels.

Nutrition promotion needs to be simple and clear, even to people whose literacy skills are poor. Glenn also spoke about the need for stories—'facts don't influence people, stories do'. And on the grounds that every picture tells a story (and doesn't rely on a high level of literacy to be correctly interpreted) it is appropriate to use more pictures than words. Finally, people need to be informed about how they can change their dietary and activity habits, not simply that they should change them.

For further advice regarding the content of this research update, contact Bronwyn Eisenhauer - Research Dietitian at Food & Nutrition Australia directly on beisenhauer@foodnut.com.au

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