



AECL Research Update August 2012

TREATING EGG ALLERGY IN CHILDREN

Source: Burks AW, Jones SM, Wood RA, Fleischer DM, Sicherer SH et al. Oral immunotherapy for treatment of egg allergy in children. *N Engl J Med.* 2012 Jul 19;367(3):233-43.

This study evaluated oral immunotherapy using egg-white powder for the treatment of children with egg allergy. Fifty-five children (5 to 11 years of age) with egg allergy received oral immunotherapy (subjects given small doses of egg powder) or placebo (powder containing no egg protein). After 10 months of therapy, none of the children who received placebo and 55% of those who received the egg powder passed the oral food challenge and were considered to be desensitized to egg protein; after 22 months, 75% of children in the oral-immunotherapy group were desensitized. In the oral-immunotherapy group, 28% (11 of 40 children) passed the oral food challenge at 24 months and were considered to have sustained their tolerance and therefore able to consume egg ad libitum. At 30 months and 36 months, all children who had passed the oral food challenge at 24 months were consuming egg. These results show that oral immunotherapy can desensitize a high proportion of children with egg allergy and induce sustained unresponsiveness in a clinically significant subset.

KEY FINDING: Oral immunotherapy can desensitise a high proportion of children with egg allergy.

APPLICATION: While current guidelines for those with egg allergy recommend complete avoidance, this study shows there may be promise for desensitisation with oral immunotherapy.

Suitable for eDMJ
Levels of Evidence: II

BAKED EGG HELPS RESOLVE EGG ALLERGY

Source: Leonard SA, Sampson HA, Sicherer SH, Noone S, Moshier EL et al. Dietary baked egg accelerates resolution of egg allergy in children. *J Allergy Clin Immunol.* 2012 Aug;130(2):473-480.e1.

This study investigated the role that diets that include baked egg can play in the development of tolerance to regular egg. In this study, a group of egg-allergic subjects who tolerated a baked egg challenge incorporated baked egg into their diet. At the end of the study (after 37.8 months of follow up), 89% of the 79 subjects who took the original baked egg challenge tolerated baked egg and 53% could tolerate regular egg. Of 23 initially baked egg-reactive subjects, 14 (61%) subsequently tolerated baked egg and 6 (26%) ended up tolerating regular egg. Subjects who incorporated baked egg into their diet were compared to a group of subjects who did not include baked egg and were found to be 14.6 times more likely to develop regular egg tolerance during the follow up period. This study found that the initiation of a baked egg diet accelerates the development of regular egg tolerance compared with strict avoidance. Further studies are required to more clearly define which egg-allergic patients can safely tolerate and benefit from the inclusion of baked eggs in their diets.



KEY FINDING: Inclusion of baked egg in the diets of egg-allergic individuals accelerates the development of regular egg tolerance.

APPLICATION: While these findings show promise, further research is required before recommendations to include baked egg in the diets of egg-allergic consumers can be made. People with egg allergy need to continue to strictly avoid all eggs/egg products.

[Suitable for eDM]

Levels of Evidence: III-2

EGG CONSUMPTION AND LIPID LEVELS

Source: Klangjareonchai T, Putadechakum S, Sritara P, Roongpisuthipong C. The Effect of Egg Consumption in Hyperlipidemic Subjects during Treatment with Lipid-Lowering Drugs. *J Lipids* 2012;2012:672720. Epub 2012 Jun 24.

This study assessed the effect of egg consumption on cholesterol levels in adults with high cholesterol who were treated with lipid-lowering drugs. Sixty subjects with high cholesterol, average age of 61 years, who were being treated with lipid-lowering drugs consumed 3 eggs per day with their regular diet for 12 weeks. This dietary pattern resulted in an increased HDL-cholesterol and decreased LDL-cholesterol to HDL-cholesterol ratio. No significant changes were found in other lipid profiles. Body weight and body mass index were significantly increased at week 12. This study suggests that in adults with high cholesterol who were treated with lipid-lowering drugs, the consumption of an additional 3 eggs per day to their regular diet will increase the level of HDL-cholesterol and decrease the ratio of LDL-cholesterol to HDL-cholesterol. Note: there was no control group in this study which makes findings difficult to interpret.

KEY FINDING: Consuming 3 eggs per day in a population of adults being treated for high cholesterol increased HDL-cholesterol and lowered the LDL:HDL ratio.

APPLICATION: Eggs may be consumed by adults who are being treated for high cholesterol

[Suitable for eDM]

Levels of Evidence: III-3

EGG YOLK CONSUMPTION MAY INCREASE CAROTID PLAQUE

Source: Spence JD, et al. Egg yolk consumption and carotid plaque, *Atherosclerosis* (2012), <http://dx.doi.org/10.1016/j.atherosclerosis.2012.07.032>

This study investigated whether egg yolk consumption relates to vascular damage by assessing the association of egg consumption with carotid plaque area. In the study 1231 patients, who were attending vascular clinics, recorded data on egg consumption and pack-years of smoking. Carotid total plaque area was measured. The study found that the total plaque area among people who consumed 2 or fewer eggs per week was approximately 7mm smaller than those consuming 3 or more eggs per week. Those consuming 3 eggs or more were older than those who consumed 2 eggs or fewer, but when this was accounted for a relationship between egg yolks and carotid plaque area was still significant. This study suggests that the consumption of egg yolk should be limited in patients with carotid plaques. Further research, however is needed to confirm this finding, particularly since a number of risk factors for coronary heart disease (eg, saturated fat intake) were not factored into the analysis.

KEY FINDING: Consuming 3 or more eggs per week was associated with increased carotid plaque area compared to consumption of 2 eggs or less per week.

APPLICATION: This research suggests there may be some evidence to limit egg consumption in certain populations groups but further research is needed to confirm the relationship, particularly given the absence of data on possible confounders including saturated fat intake and exercise.

Levels of Evidence: III-2

PROTEIN, PHYSICAL ACTIVITY AND MUSCLE MASS

Source: Morris MS, Jacques PF. Total protein, animal protein and physical activity in relation to muscle mass in middle-aged and older Americans. *Br J Nutr.* 2012 Aug 2:1-10. [Epub ahead of print]

Resistance training and protein intakes above present recommendations may assist older adults in maintaining muscle mass. This study used data from 2425 US subjects aged over 50 years. The association between resistance training and muscle mass varied with protein intake. Furthermore, among obese subjects with protein intakes less than 70 g per day, those who performed such activities had less muscle mass than those who were physically inactive. Protein intakes above the present recommendations were associated with benefits to obese subjects only. The muscle mass of non-obese subjects who performed vigorous aerobic activities was consistently high despite protein intake but in obese subjects, it varied with protein intake. High-protein intake was associated with a modest increase in a measure of muscle mass in non-obese, physically inactive subjects. These findings reinforce the idea that muscle-strengthening exercise preserves muscle when combined with adequate dietary protein, particularly in the obese population.

KEY FINDING: The combination of resistance training and adequate dietary protein can help support muscle mass in older adults. The combination appears to be particularly important in the obese population.

APPLICATION: Eggs can be an important source of protein in the diet and thereby contribute to the maintenance of muscle mass.

[Suitable for eDM]
Levels of Evidence: III-2

DIETARY PROTEIN INTAKE DECREASES STROKE RISK

Source: Larsson SC, Virtamo J, Wolk A. Dietary protein intake and risk of stroke in women. *Atherosclerosis.* 2012 Jul 24. [Epub ahead of print]

This study investigated the relationship between dietary protein intake and the risk of stroke. The researchers used food-frequency data from 34,670 women who were free of heart disease at the beginning of the study and followed the women for 10.4 years during which a number of strokes and other issues developed. Researchers found that the intake of total and animal protein, but not vegetable protein, was statistically significantly inversely associated with risk of total stroke and cerebral infarction after adjustment for other risk factors for stroke. The associations were stronger in women with a history of high blood pressure. These findings suggest that dietary protein intake is inversely associated with risk of stroke in women with high blood pressure

KEY FINDING: Dietary protein intake may reduce the risk of stroke in women with high blood pressure.

APPLICATION: Eggs can contribute significant amounts of protein to the diet.

[Suitable for eDM]
Levels of Evidence: III-2

LUTEIN AND ZEAXANTHIN SUPPLEMENTATION FOR EYE HEALTH

Source: Xu XR, Zou ZY, Huang YM, Xiao X, Ma L et al. Serum carotenoids in relation to risk factors for development of atherosclerosis. Clin Biochem. 2012 Jul 28. [Epub ahead of print]

In this study, 108 subjects, aged 50 to 79 years of age, with early age-related macular degeneration (AMD) were assigned to receive either 10mg per day of lutein, 20mg per day of lutein, 10mg per day of lutein plus 10mg per day of zeaxanthin or a placebo for 48 weeks. During the study, measurements of eye health, including macular pigment optical density (MPOD) and visual function variables, were assessed. Macular pigment optical density increased significantly in the 20-mg lutein group and in the lutein and zeaxanthin group during 48 weeks. There was a significant dose-response effect for lutein supplementation. At 48 weeks, a trend toward improvement was seen in other markers of eye health. Among patients with early AMD, supplementation with lutein and zeaxanthin improved macular pigment, which played a causative role in boosting visual function and might prevent the progression of AMD.

KEY FINDING: Supplementation with lutein and zeaxanthin improves markers of eye health.

APPLICATION: Eggs are a bioavailable source of lutein and zeaxanthin.

[Suitable for eDM]
Levels of Evidence: II

LEVELS OF LUTEIN AND ZEAXANTHIN ASSOCIATED WITH HEART DISEASE RISK

Source: Xu XR, Zou ZY, Huang YM, Xiao X, Ma L et al. Serum carotenoids in relation to risk factors for development of atherosclerosis. Clin Biochem. 2012 Jul 28. [Epub ahead of print]

This study investigated the relationship between blood levels of carotenoids (including lutein, zeaxanthin and lycopene) and risk factors associated with heart disease. Subjects included 40 adults with some indication of heart disease (early atherosclerosis but no clinical events) and 40 healthy controls aged 45-68years. In those with heart disease blood levels of lutein and zeaxanthin were significantly lower than those of healthy subjects. Furthermore blood levels of carotenoids were found to be associated with a decreased risk of heart disease. There were also associations between levels of carotenoids and inflammatory markers which suggests a possible protective mechanism.

KEY FINDING: Blood levels of lutein and zeaxanthin are associated with a decreased risk of heart disease (early atherosclerosis).

APPLICATION: Eggs contribute 0.51mg lutein and zeaxanthin per 100g and has been shown to be highly bioavailable.

[Suitable for eDM]
Levels of Evidence: III-2

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