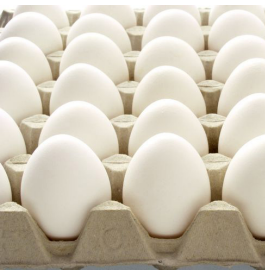

AUSTRALIAN EGG CORPORATION LIMITED

AECL Research Update July/August 2013

RESEARCH UPDATE

HEATING ALLERGENS IS BETTER TOLERATED IN CHILDREN WITH FOOD ALLERGY

Source: Netting M, Makrides M, Gold M, Quinn P, Penttila I. Heated allergens and induction of tolerance in food allergic children. Nutrients 2013;5:2028-2046

This review reported on the use of heated allergens for investigating food allergies in children. Heated allergens may be better tolerated as the protein structure of the allergen can be changed during the heating process. The structural change will affect the ability of immune system compounds to bind to the allergens limiting the allergic response to the protein. Animal studies have shown that when egg-sensitised mice were challenged with raw egg proteins they all had an anaphylactic reaction (severe reaction involving the immune system), however none reacted to heated proteins. Similarly, in human studies, heated eggs have been shown to result in a reduced allergic response. Cooked eggs may therefore not need to be avoided in children with egg allergy. Enabling the inclusion of eggs in a child's diet can liberalise their diet and quality of life.

KEY FINDING: Children with egg allergy may be able to tolerate cooked eggs such as those used in baking.

APPLICATION: Review papers that confirms the growing body of evidence that cooked eggs may be suitable for children with egg allergies.

Levels of Evidence: IV
Suitable for eDM

EATING BREAKFAST LOWERS THE RISK OF CORONARY HEART DISEASE IN MEN

Source: Cahill LE, Chiuve SE, Mekary RA, Jensen MK, Flint AJ, Hu FB, Rimm EB. Prospective study of breakfast eating and incident coronary heart disease in a cohort of male US health professionals clinical perspective. Circulation 2013;128:337-343

This cohort study investigated the effect of dietary patterns and the risk of heart disease in 26,902 men aged between 45 and 82 years old who were followed up for 16 years commencing in 1992. Eating pattern and diet were assessed using a standardised questionnaire and food frequency questionnaires. Questionnaires were administered every 2 years to assess the occurrence of heart disease. Results showed skipping breakfast and late night eating were associated with increased risk of heart disease by 27% and 55% respectively. These associations were maintained after adjusting for demographics and lifestyle factors, but not when health conditions such as BMI, hypertension, hypercholesterolaemia and diabetes were taken into account. There was no association between the number of meals eaten in a day and risk of heart disease.

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KEY FINDING: Skipping breakfast and late night eating increase the risk of heart disease, however there was no association between the number of meals eaten in a day and heart disease risk.

APPLICATION: Adds to the evidence of the importance of eating breakfast regularly. **Levels of Evidence: III-2**
Suitable for eDM

EATING BREAKFAST, EATING FREQUENCY AND TYPE 2 DIABETES IN OLDER WOMEN

Source: Mekary RA, Giovannucci E, Cahill L, Willett WC, van Dam RM, Hu FB Eating patterns and type 2 diabetes risk in older women: breakfast consumption and eating frequency. First published online June 12, 2013 Am J Clin Nutr doi: 10.3945/ajcn.112.057521

This cohort study examined the association between eating breakfast, eating frequency and the risk of type 2 diabetes in women. The study included 46,289 healthy, non-diabetic American women in 2002 with an average age of 67 years old. During 6 years of follow up, 3.3% of the cohort developed type 2 diabetes. Diets were assessed using food frequency questionnaires while type 2 diabetes was determined by self report followed by a supplementary questionnaire and medical history to confirm the diagnosis. After adjusting for risk factors of type 2 diabetes, irregular consumption of breakfast (0-6 times per week) was significantly associated with a higher risk of developing type 2 diabetes. Women who did not regularly consume breakfast and ate more than 4 times per day had a higher risk of developing type 2 diabetes.

KEY FINDING: Irregular breakfast consumption and eating more than 4 times per day was found to be associated with an increased risk of developing type 2 diabetes.

APPLICATION: Adds to the evidence regarding the importance of eating breakfast regularly.
Levels of Evidence: III-2
Suitable for eDM

BIGGER BREAKFAST BETTER THAN BIGGER DINNER

Source: Jakubowicz D, Barnea M, Wainstein J, Foy O. High Caloric intake at breakfast vs. dinner differentially influences weight loss of overweight and obese women. Obesity First published online July 2, 2013 doi: 10.1002/oby.20460

A randomised trial aimed to compare the weight loss effect of eating a bigger breakfast compared to eating a bigger dinner in women over a 12 week period. The study involved 93 overweight and obese women with the metabolic syndrome, who were assigned to either eat more at breakfast or at dinner. Both groups were provided with the same amount of total energy (kilojoules) in the day. In the breakfast group, 2900kJ, 2100kJ and 840kJ were consumed at breakfast, lunch and dinner respectively. In the dinner group 840kJ, 2100kJ and 2900kJ were consumed at breakfast, lunch and dinner respectively. The participants completed 3-day food records and their diets were reviewed fortnightly by a dietitian to ensure compliance to their assigned groups. The results showed that those who ate a bigger breakfast lost significantly more weight and had a greater decrease in their waist measurement than the group consuming a bigger dinner. Triglyceride levels, insulin sensitivity and glucose control were all improved more in the breakfast group compared to the dinner group. Both groups reduced blood pressure equally. A greater level of satiety was also reported in those who had a bigger breakfast. The authors suggest that timing of food intake plays an important role in weight loss and heart health.

KEY FINDING: Consuming more at breakfast than dinner was shown to improve weight loss, blood sugar control and improve blood cholesterol levels.

APPLICATION: Provides evidence that timing of food intake plays a role in weight management and that eating a bigger breakfast than dinner may be important. **Level of Evidence: III-3**
Suitable for eDM

PROTEIN INTAKE AND LEAN BODY MASS IN OLDER ADULTS

Source: Geirsdottir OG, Arnarson A, Ramel A, Jonsson PV, Thorsdottir I. Dietary protein intake is associated with lean body mass in community-dwelling older adults. Nutrition Research 2013;33(8):608-612

A cross-sectional study of 237 community-dwelling adults between the ages of 65 and 92 years old found that protein intake, but not physical activity was positively associated with lean body mass. Protein intake was assessed with a 3-day weighed food record, physical activity was self-reported and lean body mass was determined using dual-energy x-ray absorptiometry (DEXA scan). The average protein intake was 0.98 ± 0.28 g/kg bodyweight in males and 0.95 ± 0.29 g/kg bodyweight in females. The difference in lean body mass was 2.3kg between the highest and lowest quartiles of protein intake. These findings indicate that a high protein intake is beneficial for maintaining lean body mass in older adults which in turn is important for maintaining physical health.

KEY FINDING: Protein intake is associated with lean body mass but not the amount of physical activity in older adults.

APPLICATION: Eggs are a good source of protein which may be important to older adults in relation to building lean body mass.

Levels of Evidence: IV

Suitable for eDM

EGGS AND RISK OF HEART DISEASES IN ADOLESCENTS

Source: A. Soriano-Maldonado, M. Cuenca-García, L. A. Moreno, M. González-Gross, C. Leclercq, O. Androutsos, E. J. Guerra-Hernández, M. J. Castillo y J. R. Ruiz. "Ingesta de huevo y factores de riesgo cardiovascular en adolescentes; papel de la actividad física. Estudio HELENA". Nutrición Hospitalaria 2013; 28:868-877 DOI:10.3305/nh.2013.28.3.6392

This article was published in Spanish and only the abstract is available in English. Findings need to be interpreted with caution. The authors examined the association of egg consumption and heart health in adolescents in Europe. The study involved 380 adolescents and their diets were assessed using two 24-hour recalls. Their blood cholesterol levels, blood pressure and fitness levels were also measured. The authors found no association between egg consumption and blood cholesterol levels, blood pressure and fitness levels.

KEY FINDING: Egg consumption up to 7 eggs per week does not affect blood cholesterol levels and heart health in adolescents. This finding is independent of physical activity levels.

APPLICATION: Adds to the evidence that consuming eggs is not related to cardiovascular disease.

Levels of Evidence: IV

LOW VITAMIN D AND FATTY LIVER

Source: Jablonski KL, Jovanovich A, Holmen J, Targher G, McFann K, Kendrick J, Chonchol M. Low 25-hydroxyvitamin D level is independently associated with non-alcoholic fatty liver disease. Nutrition, Metabolism and Cardiovascular Diseases 2013;23(8):792-798

Non-alcoholic fatty liver disease (NAFLD) is a growing health problem and is related to the increase in obesity. This case-control study examined the relationship between vitamin D levels and NAFLD. The study involved 607 cases of NAFLD matched with 607 age, gender and race healthy controls. The average age of the participants was 56 years and those with NAFLD had significantly more health complications compared to the matched controls. NAFLD was assessed using ultrasound and blood vitamin D levels were measured. A low level of vitamin D was defined as 37-75nmol/L and sufficient levels were defined as greater than 75nmol/L. After adjusting for weight and health complications, those with NAFLD had lower levels of vitamin D. The authors suggest that vitamin D may play a role in liver diseases such as NALFD.

KEY FINDING: Low levels of vitamin D may be related to the development of NAFLD.

APPLICATION: Eggs are one of only a few food sources of vitamin D which may be important in NAFLD. Further research is required in this area.

Levels of Evidence: III-3

Suitable for eDM

LOW LEVELS OF OMEGA-3 FATTY ACIDS IN CHILDREN ARE ASSOCIATED WITH POOR BRAIN FUNCTION.

Source: Montgomery P, Burton JR, Sewell RP, Spreckelsen TF, Richarson AJ. Low blood long chain omega-3 fatty acids in UK children are associated with poor cognitive performance and behaviour: a cross-sectional analysis from the DOLAB study. PLoS One 2013 Jun24;8(6):e66697 doi: 10.1371/journal.pone.0066697

A cross-sectional study of 493 children in the UK aged between 7 and 9 years old found low levels of omega-3 fatty acids were associated with poor reading ability and memory. The findings showed that children with low levels of DHA (a type of long chain omega-3) had higher parental ratings of child behavioural and emotional instability. The results were adjusted for demographic and gender differences. Omega-3 fatty acid levels were assessed with blood samples and behaviour and cognitive functions were assessed using validated tests. The authors concluded that children with poor reading ability had lower omega-3 fatty acids and this was related to the child's cognition and behaviour.

KEY FINDING: Healthy children with low levels of omega-3 fatty acids were more likely to have poorer reading ability, cognition and behaviour.

APPLICATION: Eggs are a good source of omega-3 fatty acids (including DHA) which may be important for increasing omega-3 fatty acid levels in underperforming school children. Further research is required in this area.

Levels of Evidence: IV

Suitable for eDM

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

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