



AECL Research Update July 2012

HIGHER VERSUS LOWER PROTEIN DIETS ON HEALTH OUTCOMES

Source: Santesso N, Akl E, Bianchi M, Mente A, Mustafa R et al. Effects of higher- versus lower-protein diets on health outcomes: a systematic review and meta-analysis. *European Journal of Clinical Nutrition*, 2012, 66:780-788.

This review examined studies (up until July 2011) which looked at the health effects of higher and lower protein diets. The review included 111 articles and found small positive effects for higher protein diets on weight loss, body mass index, waist circumference, blood pressure and triglycerides. For higher protein diets there was also a trend (not statistically significant) for them to cause increases in total cholesterol, LDL cholesterol, c-reactive protein, HbA1c, blood glucose levels and markers of bone and kidney health. Adverse gastrointestinal events were more common with high protein diets. The review concluded that higher protein diets probably improve adiposity, blood pressure and triglyceride levels, but these effects are small and need to be weighed against the potential for harms.

Note: The median protein content of the higher protein diets was 27% of the total energy intake (range: 16-45%) and 18% (range 5-23%) in the lower protein diets.

KEY FINDING: Higher protein diets have small positive effects on weight, blood pressure and triglycerides but there may be potential harmful effects.

APPLICATION: Awareness of potential negative effects of high protein diets. However, this may depend on how 'high' is defined. Suitable for eDM]
Levels of Evidence: I

RESEARCH UPDATE

EFFECTS OF PROTEIN INTAKE ON BODY COMPOSITION

Source: Evans EM, Mojtahedi MC, Thorpe MP, Valentine RJ, Kris-Etherton PM, Layman DK. Effects of protein intake and gender on body composition changes: a randomized clinical weight loss trial. *Nutr Metab (Lond)*. 2012 Jun 12;9(1):55. [Epub ahead of print]

Data exists to suggest that a higher protein diet helps preserve lean mass in women more so than in men. This study therefore aimed to compare male and female body composition responses to weight loss diets differing in macronutrient content. The overweight participants consumed energy-restricted diets providing either 1.6g protein per kg of body weight or 0.8g protein per kg of body weight. Over a 12 month period, males and females lost similar amounts of weight. A similar pattern emerged for fat mass and lean mass, however percent body fat was significantly influenced by gender. Compared to women, men carried an extra 7.0 +/- 0.9 % of their total body fat in the trunk at the start of the study, and reduced trunk fat during weight loss more than women. Conversely, women carried 7.2 +/- 0.9 % more total body fat in the legs, but loss of total body fat in the legs was similar in men and women. The higher protein diet was more effective in reducing percent body fat versus the lower protein (higher carbohydrate) diet over 12 months of weight loss and maintenance. Men lost a greater percentage of total body fat and trunk fat than women.



KEY FINDING: A higher protein diet is more effective in reducing percent body fat versus a lower protein (higher carbohydrate) diet over 12 months of weight loss and maintenance. Men lost a greater percentage of total body fat and trunk fat than women.

APPLICATION: Supports the use of higher protein diets for effective body fat loss. Eggs can be an important part of a higher protein diet.

[Suitable for eDM]

Levels of Evidence: II

LOW VITAMIN D LINKED TO INCREASED STROKE

Source: Kojima G, Bell C, Abbott R, Launer L, Chen R et al. Low dietary vitamin D predicts 34-year incident stroke – The Honolulu Heart Program. *Stroke* 2012; 43: 00-00.

This study examined the relationship between dietary vitamin D intake and incidence of stroke over a 34 year timeframe. A total of 7385 men, who were 45 to 68 years old at the start of the study, were followed for 34 years. Rates of stroke were significantly higher in the lowest quartile of dietary vitamin D intake compared with the highest. The study took into account age, total kilojoules, BMI, blood pressure, diabetes, smoking, physical activity, cholesterol and alcohol intake and still found a link between low vitamin D intake and higher risk of stroke. This study suggests that low dietary vitamin D intake increases the risk of stroke in men.

KEY FINDING: Low vitamin D intake in men is linked to a higher incidence of stroke.

APPLICATION: Adequate dietary vitamin D may help prevent stroke. Eggs can provide some vitamin D in the diet.

[Suitable for eDM]

Levels of Evidence: III-2

LOW VITAMIN D LINKED TO WEIGHT

Source: Erin S. LeBlanc, Joanne H. Rizzo, Kathryn L. Pedula, Kristine E. Ensrud, Jane Cauley, Marc Hochberg, and Teresa A. Hillier, for the Study of Osteoporotic Fractures. *Journal of Women's Health*. 2012; ahead of print. doi:10.1089/jwh.2012.3506.

Since it has already been established that obese individuals have lower vitamin D levels, this study determined whether low vitamin D status can predispose to weight gain. This study followed 4659 women who were over 65 years old for 4.5 years. Women with higher vitamin D levels (>30ng/ml) had lower weight at the beginning of the study compared to those with lower levels (<30ng/ml). Overall, vitamin D status was not associated with weight change over 4.5 years. In women who did gain over 5% of their weight during the 4.5 year timeframe, those with higher levels of vitamin D gained less weight than those with lower levels of vitamin D. In women who lost more than 5% of their weight or remained stable, there was no association with vitamin D and weight change. In this study higher vitamin D levels were associated with lower weight gains, suggesting low vitamin D status may predispose to fat accumulation.

KEY FINDING: Low vitamin D levels are associated with higher weight gains suggesting low vitamin D status may predispose to fat accumulation.

APPLICATION: Adequate vitamin D levels may be important to prevent weight gain. Eggs can provide some vitamin D in the diet.

[Suitable for eDM]

Levels of Evidence: III-2

CHOLINE AND BETAINE FOR COGNITIVE PERFORMANCE

Source: Nurk E, Refsum H, Bjelland I, Drevon CA, Tell GS Plasma free choline, betaine and cognitive performance: the Hordaland Health Study. *Br J Nutr.* 2012 May 1:1-9. [Epub ahead of print]

This study investigated the associations between cognitive function and levels of choline and betaine in the blood. In this study, 2195 subjects, aged 70-74 years, underwent extensive cognitive testing. Compared with low levels, high levels of choline (>8.4 µmol/l) were associated with better test scores in a range of tasks. The risk for poor test performance roughly tripled when low choline was combined with either low blood levels of vitamin B12 or high methylmalonic acid (MMA) levels. Low betaine levels combined with high MMA was associated with elevated risk for poor performance on one of the tests. Low levels of choline are associated with poor cognitive performance. There were significant interactions between low choline or betaine and low vitamin B12 or high MMA on cognitive performance.

KEY FINDING: Low levels of choline and betaine are associated with poor cognitive performance.

APPLICATION: Eggs are a source of choline and betaine.

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

HIGHER PROTEIN DIETS LINKED TO HEART DISEASE

Source: Lagiou P, Sandin S, Lof M, Trichopoulos D, Adami HO, Weiderpass E. Low carbohydrate-high protein diet and incidence of cardiovascular diseases in Swedish women: prospective cohort study. *BMJ.* 2012 Jun 26;344:e4026. doi: 10.1136/bmj.e4026.

This study investigated the long term consequences of low carbohydrate-high protein diets on risk of heart disease (cardiovascular diseases). This study followed 43,396 Swedish women, aged 30-49 years, at the beginning of the study, for an average of 15.7 years. The study found those who consumed either less carbohydrate or more protein (or both) were more likely to suffer from heart disease. The authors also found a suggestion that the incidence tended to be more likely in women whose protein intake was mainly from animal origin rather than plant origin (although this was not statistically significant). In practical terms, a 20g decrease in daily carbohydrate intake and a 5g increase in daily protein intake corresponded to a 5% increase in the overall risk for heart disease. Low carbohydrate-high protein diets, used on a regular basis and without consideration of the nature of carbohydrates or the source of proteins, are associated with increased risk of heart disease.

KEY FINDING: Higher protein diets are associated with heart disease.

APPLICATION: Promote egg intake as part of a well balanced diet.

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

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