



Power your day with protein.

Good nutrition is an important part of enabling people to make the most out of each day.

By Aaron Fanning.



Introduction

Many people have the desire to make the most out of each day, and a big part of achieving that is good nutrition. Eating well can help keep you satisfied, balance your energy across the day and help control the cravings for snacks to help bump up your energy later in the day. Many people try to control their food intake, eating a low-fat diet to help reduce energy intake, but this can often leave them feeling unsatisfied, and hungry.



USING PROTEIN TO CONTROL HUNGER LEVELS



Eating well means including a range of nutrient dense foods, which include plant sourced foods such as fruit, vegetables and grains, but should also include a source of high quality protein. This is because there is a growing body of evidence that shows that by consuming protein you can increase the feelings of fullness and reduce the feelings of hunger, which helps prevent mid-morning or mid-afternoon hunger pangs.

Protein achieves this positive effect on fullness and hunger by more than just providing a source of energy to the body, but also providing the greatest effect on hunger per unit of energy than both of the other major macronutrients, carbohydrate and fat (Poppitt et al, 1998). Helping moderate the appetite over the course of a day is an important component of maintaining or losing weight. Appetite can be broken down into three aspects (Mattes et al, 2005): hunger – being the sensations that promote eating; satiation – the fullness feelings that result in finishing a meal; and satiety – the fullness feelings that control the between meal period – and linked to reduced food intake at the next eating occasion. Satiety is the area where protein has the biggest influence over appetite – and the data show improved fullness after a meal with higher protein consumption (Dhillon et al, 2016).

The power of satiety on food intake can also be seen in some trials where rather than controlling food intake, they controlled the macronutrient profile of the diet, being either a high carbohydrate, or a high protein diet (Skov et al, 1999). The researchers found that the higher protein group ended up eating less than the higher carbohydrate group, which improved weight management. Others have noticed that a higher protein intake is also associated with reduced weight gain or improved weight maintenance (Larsen et al, 2010).

HOW TO BALANCE PROTEIN INTAKE THROUGHOUT THE DAY

Another important concept is balancing food intake across the day, especially protein intake. Research shows that food intake earlier in the day is associated with a lower overall energy intake across the day (de Castro & Castro, 2004). But regardless of energy intake, protein intake is often skewed towards dinner (Rains et al, 2013) and by balancing the protein intake across the day – moving more of the daily protein intake to breakfast - is also of importance. The satiety effect of protein largely occurs in the period after proteins consumption, due to the metabolic response to the food. If protein intake is skewed towards the evening meal, which is common in western populations, then there will be an effect on hunger levels across the day.

SUPPORTING LONGER LASTING ENERGY LEVELS

While helping to manage appetite, adding protein to a carbohydrate meal will also help reduce the blood glucose response after a meal in healthy (Moghaddam et al, 2006) and Type 2 diabetic patients (Gannon et al, 2003). The reduced blood glucose effect of protein can also be classified as reducing the glycemic index of the meal, a marker of longer lasting energy or sustained energy. The combination of low glycemic meals and higher dietary protein can also have an added benefit with helping to prevent weight regain to a greater extent than either of the items on their own (Larsen et al, 2010).

DAIRY AS AN IDEAL SOURCE OF PROTEIN



By increasing protein at breakfast, or balancing the protein intake across the day, there is a superior response and improved feelings of hunger and fullness, which can actually help reduce a person's food intake for the day (Mamerow et al, 2012; Leidy et al, 2016; Rains et al, 2013). This has led to recommendations that people should be consuming at least 30g of protein three times daily, to help promote better regulation of appetite, as well as promoting muscle maintenance (Layman, 2009), also noting that adequate protein at breakfast is critical for appetite regulation.



Dairy protein is a great tasting option to help improve protein intake across the day. Dairy protein is a high quality protein that easily provides all of the amino acids, essential for body maintenance that need to be provided in the diet.

This is captured in protein quality assessment techniques that continue to show that dairy is one of the highest quality protein sources (Wolfe, 2015). But dairy is not just a high quality protein, it also appears to provide superior effects on reducing appetite, with some data indicating whey has a greater effect on measures of satiety than soy protein (Veldhorst et al, 2009), or other dietary proteins (Pal & Ellis, 2010).

Conclusion

In summary, dairy protein can help support weight management by providing a satiating high quality source of protein, helping with appetite control whether you are interested in maintaining or reducing weight, as well as supporting sustained energy levels throughout the day.

Due to its ability to be applied to varying consumer food products such as yoghurts, beverages and cheese, it can easily be incorporated in to a balanced diet at breakfast, lunch, as well as the evening meal.

REFERENCES

- de Castro J M & Castro J M (2004). The time of day of food intake influences overall intake in humans. *The Journal of Nutrition*, 134, 104–111.
- Dhillon J, Craig B A, Leidy H J, Amankwaah A F, Osei-Boadi Anguah K, Jacobs A, Jones B L, Jones J B, Keeler C L, Keller C E, McCrory M A, Rivera R L, Slebodnik M, Mattes R D & Tucker R M. (2016). The Effects of Increased Protein Intake on Fullness: A Meta-Analysis and Its Limitations. *Journal of the Academy of Nutrition and Dietetics*, 116, 968–983.
- Dove E R, Hodgson J M, Puddey I B, Beilin L J, Lee Y P & Mori T A (2009). Skim milk compared with a fruit drink acutely reduces appetite and energy intake in overweight men and women. *The American Journal of Clinical Nutrition*, 90, 70–75.
- Gannon M C, Nuttall F Q, Saeed A, Jordan K & Hoover H (2003). An increase in dietary protein improves the blood glucose response in persons with type 2 diabetes. *American Journal of Clinical Nutrition*, 78, 734–741.
- Layman D K (2009). Dietary Guidelines should reflect new understandings about adult protein needs. *Nutrition & Metabolism*, 6, 12.
- Larsen T M, Dalskov S-M, van Baak M, Jebb S A, Papadaki A, Pfeiffer A F, Martinez J A, Handjieva-Darlenska T, Kunešová M, Pihlsgård M, Stender S, Holst C, Saris W H, Astrup A; Diet, Obesity, and Genes (Diogenes) Project (2010). Diets with high or low protein content and glycemic index for weight-loss maintenance. *The New England Journal of Medicine*, 363, 2102–2113.
- Leidy H J, Hoertel H A, Douglas S M, Higgins K A & Shafer R S (2015). A High-Protein Breakfast Prevents Body Fat Gain, Through Reductions in Daily Intake and Hunger, in "Breakfast Skipping" Adolescents. *Obesity*, 23, 1761–1764.
- Mamerow M M, Mettler J A, English K L, Layman D K, Volpi E & Paddon-Jones D (2012). Protein Distribution Effect on Indices of Satiety. *FASEB Journal*, 1013.5.
- Moghaddam E, Vogt J A & Wolever T M S (2006). The Effects of Fat and Protein on Glycemic Responses in Nondiabetic Humans Vary with Waist Circumference, Fasting Plasma Insulin, and Dietary Fiber Intake. *Journal of Nutrition*, 136, 2506–2511.
- Pal S & Ellis V (2010). The acute effects of four protein meals on insulin, glucose, appetite and energy intake in lean men. *The British Journal of Nutrition*, 104, 1241–1248.
- Poppitt S D, McCormack D & Buffenstein R (1998). Short-term effects of macronutrient preloads on appetite and energy intake in lean women. *Physiology & Behavior*, 64, 279–285.
- Rains T M, Maki K C, Fulgoni V L & Auestad N (2013). Protein Intake at Breakfast is Associated with Reduced Energy Intake at Lunch : An analysis of NHANES 2003 – 2006. *FASEB Journal*, 27, 349.7.14.
- Skov A R, Toubro S, Rønn B, Holm L & Astrup A (1999) Randomized trial on protein vs carbohydrate in ad libitum fat reduced diet for the treatment of obesity. *International journal of obesity and related metabolic disorders*, 23, 528–536.
- Veldhorst M A B, Nieuwenhuizen A G, Hochstenbach-Waelen A, van Vught A J A H, Westerterp K R, Engelen M P K J, Brummer R J M, Deutz N E P & Westerterp-Plantenga M S (2009) Dose-dependent satiating effect of whey relative to casein or soy. *Physiology & Behavior*, 96, 675–682.
- Wolfe R R (2015). Update on protein intake: importance of milk proteins for health status of the elderly. *Nutrition Reviews*, 73, 41–47.

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