nzmp™ sureprotein™

NUTRITION

# Burn fat, boost stamina, feel fuller for longer.

Dairy proteins ability to help support weight management.

**By Aaron Fanning.**

# Introduction

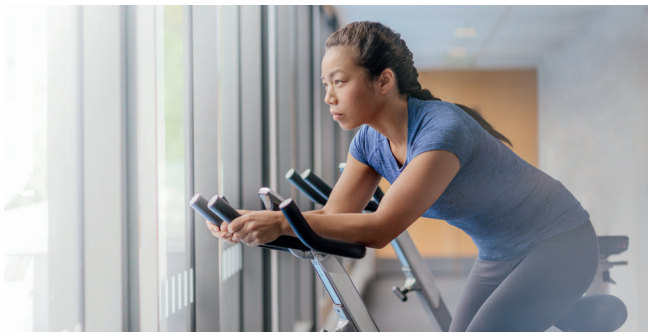
Obesity and overweight is a major health concern worldwide, to the point of being described as a global pandemic. Over two billion people worldwide are classified as overweight or obese, the rates having more than doubled since the 1980s.

The developed world is often thought to be leading the prevalence of overweight and obesity; however, the developing world is also gaining weight. Around 62% of the obese globally live in a developing country. Prevalence increases with age, and as the world population ages, the proportion of weight and obesity is expected to increase in alignment with this (table 1).

Many recommendations have been made to help prevent or treat overweight and obesity, such as low-fat or low-carbohydrate diets, both working to reduce energy intake below the amount of energy the person burns each day. In these diets, little attention is often paid to the third macronutrient: protein.

Growing evidence provides insight into the beneficial effects of consuming a higher protein diet when attempting to lose excess weight, or maintaining this weight loss (Dong et al, 2013;. Clifton, 2012; Westerterp-Plantenga et al, 2012).

Protein does more to the body than just providing a source of energy. Our bodies need a range of amino acids, called indispensable or essential amino acids, to provide the substrate to restore body tissues. These essential amino acids can only be supplied through protein in our diet. For weight loss, protein has three major beneficial effects to the body; appetite control, thermogenesis and muscle maintenance.



## APPETITE CONTROL

Helping moderate the appetite over the course of a day is an important component of maintaining or losing weight. Appetite is often split into three dominant areas (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 most studied of these areas, and where protein offers a beneficial effect. Protein stimulates greater satiety than an equal energy dose of either carbohydrate or fat (Poppitt et al, 1998). Dairy protein, especially whey protein offers additional benefits, with some data indicating a greater effect of whey over soy protein (Veldhorst et al, 2009).

The power of satiety on food intake can be seen in some trials where rather than controlling food intake, they controlled the macronutrient profile of the diet – either higher protein or higher carbohydrate (Skov et al, 1999). Both groups could eat as much food as they wanted; however, the higher protein diet group ate less food due to the reduced appetite, which resulted in greater weight loss. Eating a higher protein breakfast improves overall daily energy intake than eating the same amount of protein with consumption skewed later in the day (Mamerow et al, 2012).

## INCREASED THERMIC EFFECT

When we eat food, the processing, breaking down, digestion and absorption of these foods takes energy – the body expends some of its energy to do this. This is sometimes called dietary induced thermogenesis or the thermic effect of food. It can account for approximately 15% of the energy expended by the body over the day.

Simple macronutrients such as fat and carbohydrate increase thermogenesis only moderately, around 3-10% of the energy consumed, while protein stimulates the response much more, up to 30% of energy (Tappy, 1996). By consuming a higher protein diet, it is thought to increase daily energy expenditure, and help increase fat loss. There are also links between the increased thermogenic response to a meal and the feelings of satiety noticed with that food (Westerterp-Plantenga et al, 1999). Few experiments have been performed comparing different protein types and their effect on the thermic effect, however, what exists indicates that whey protein tends to produce a greater thermic effect than soy (Acheson et al, 2011).

## MUSCLE MAINTENANCE

Maintaining muscle mass is an important consideration for people trying to lose weight. In some cases general dieting results in as much lean mass lost as fat mass. Protection of muscle mass is important as it is an essential tissue to enable everyday activity, and helps maintain health throughout life (Deer and Volpi, 2015). If weight is regained after the weight loss period, it is more likely to be from fat than lean tissue (Beavers et al, 2011). Maintaining the muscle mass during weight loss, and promoting the weight loss from the fat mass also helps improve body shape, referred by the general public as body tone.

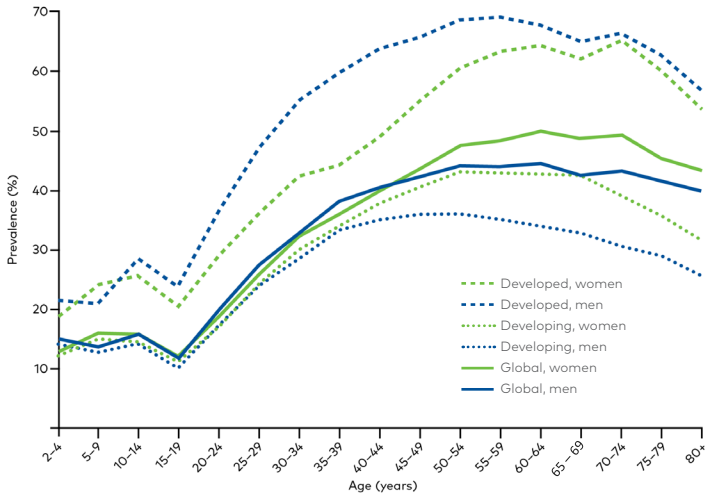
Consumption of a high protein diet, especially dairy protein, in conjunction with a suitable exercise program can help protect muscle mass, or even help increase muscle mass, in dieting men (Longland et al, 2016) and women (Josse et al, 2011). Following 12 weeks of exercise, the consumption of milk showed superior increases in lean mass, and decreases in fat mass compared to isoenergetic soy consumption. This beneficial effect is thought to be promoted by the superior muscle protein synthesis stimulation by dairy proteins (Wilkinson et al, 2007; Yang et al, 2012; Tang et al, 2009).

# Conclusion

**A diet rich in dairy protein, in combination with an exercise training programme, helps to optimise fat loss and lean muscle gain providing the desired body composition benefits.**

In summary, dairy protein is a high quality complete protein available in varying formats that help support weight management, supporting muscle mass, and help with appetite control whether you are interested in maintaining or reducing weight.

**Table 1: Overweight and obesity (BMI>25kg/m2**



## REFERENCES


Acheson K J, Blondel-Lubrano A, Oguey-Araymon S, Beaumont M, Emady-Azar S, Ammon-Zufferey C, Monnard I, Pinaud S, Nielsen-Moennoz C & Bovetto L (2011)

Protein choices targeting thermogenesis and metabolism. The American Journal of Clinical Nutrition, 93, 525–534.

Beavers K M, Lyles M F, Davis C C, Wang X, Beavers D P & Nicklas B J (2011) Is lost lean mass from intentional weight Loss recovered during weight regain in postmenopausal women? American Journal of Clinical Nutrition, 94, 767–774.

Clifton P (2012) Effects of a high protein diet on body weight and comorbidities associated with obesity. The British Journal of Nutrition, 108, S122-S129.

Deer R R & Volpi E (2015) Protein intake and muscle function in older adults. Current Opinion in Clinical Nutrition and Metabolic Care, 18, 248–253.

Dong J Y, Zhang Z L, Wang P Y & Qin L Q (2013) Effects of high-protein diets on body weight, glycaemic control, blood lipids and blood pressure in type 2 diabetes: meta-analysis of randomised controlled trials. The British Journal of Nutrition, 110, 781–789.

Josse A R, Atkinson S A, Tarnopolsky M A & Phillips S M (2011) Increased Consumption of Dairy Foods and Protein during Diet- and Exercise-Induced Weight Loss Promotes Fat Mass Loss and Lean Mass Gain in Overweight and Obese Premenopausal Women. The Journal of Nutrition, 141, 1626-1634.

Leidy H J, Clifton P M, Astrup A, Wycherley T P, Westerterp-Plantenga M S, Luscombe-Marsh N, Woods S C, Mattes R D (2015) The role of protein in weight loss and maintenance. The American Journal of Clinical Nutrition, 101, 1320S–1329S.

Longland T M, Oikawa S Y, Mitchell C J, Devries M C & Phillips S M (2016) Higher compared with lower dietary protein during an energy deficit combined with intense exercise promotes greater lean mass gain and fat mass loss: a randomized trial. American Journal of Clinical Nutrition, 103, 738–746.

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.

Mattes R D, Holli J, Hayes D & Stunkard A J (2005) Appetite: Measurement and manipulation misgivings. Journal of the American Dietetic Association, 105, 87–97.

Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, Mullany E C, Biryukov S, Abbafati C, Abera S F, Abraham J P, Abu-Rmeileh N M, Achoki T, AlBuhairan F S, Alemu Z A, Alfonso R, Ali M K, Ali R, Guzman N A, Ammar W, Anwari P, Banerjee A, Barquera S, Basu S, Bennett D A, Bhutta Z, Blore J, Cabral N, Nonato I C, Chang J C, Chowdhury R, Courville K J, Criqui M H, Cundiff D K, Dabhadkar K C, Dandona L, Davis A, Dayama A, Dharmaratne S D, Ding E L, Durrani A M, Esteghamati A, Farzadfar F, Fay D F, Feigin V L, Flaxman A, Forouzanfar M H, Goto A, Green M A, Gupta R, Hafezi-Nejad N, Hankey G J, Harewood H C, Havmoeller R, Hay S, Hernandez L, Husseini A, Idrisov B T, Ikeda N, Islami F, Jahangir E, Jassal S K, Jee S H, Jeffreys M, Jonas J B, Kabagambe E K, Khalifa S E, Kengne A P, Khader Y S, Khang Y H, Kim D, Kimokoti R W, Kinge J M, Kokubo Y, Kosen S, Kwan G, Lai T, Leinsalu M, Li Y, Liang X, Liu S, Logroscino G, Lotufo P A, Lu Y, Ma J, Mainoo N K, Mensah G A, Merriman T R, Mokdad A H, Moschandreas J, Naghavi M, Naheed A, Nand D, Narayan K M, Nelson E L, Neuhouser M L, Nisar M I, Ohkubo T, Oti S O, Pedroza A, Prabhakaran D, Roy N, Sampson U, Seo H, Sepanlou S G, Shibuya K, Shiri R, Shiue I, Singh G M, Singh J A, Skirbekk V, Stapelberg N J, Sturua L, Sykes B L, Tobias M, Tran B X, Trasande L, Toyoshima H, van de Vijver S, Vasankari T J, Veerman J L, Velasquez-Melendez G, Vlassov V V, Vollset S E, Vos T, Wang C, Wang X, Weiderpass E, Werdecker A, Wright J L, Yang Y C, Yatsuya H, Yoon J, Yoon S J, Zhao Y, Zhou M, Zhu S, Lopez A D, Murray C J & Gakidou E (2014) Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet, 6736, 1–16.

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.

Skov A R, Toubro S, Rünn 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.

Tang J E, Moore D R, Kujbida G W, Tarnopolsky M A & Phillips S M (2009) Ingestion of whey hydrolysate, casein, or soy protein isolate: effects on mixed muscle protein synthesis at rest and following resistance exercise in young men. Journal of Applied Physiology (Bethesda, Md.1985), 107, 987–992.

Tappy L (1996) Thermic effect of food and sympathetic nervous system activity in humans. Reproduction Nutrition Development,36, 391–397.

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.

Westerterp-Plantenga M S, Rolland V, Wilson S A & Westerterp K R (1999) Satiety related to 24 h diet-induced thermogenesis during high protein/carbohydrate vs high fat diets measured in a respiration chamber. European Journal of Clinical Nutrition, 53, 495–502.

Westerterp-Plantenga M S, Lemmens S G & Westerterp K R (2012) Dietary protein - its role in satiety, energetics, weight loss and health. The British Journal of Nutrition, 108, S105-s112.

Wilkinson S B, Tarnopolsky M A, MacDonald M J, MacDonald J R, Armstrong D & Phillips S M (2007) Consumption of fluid skim milk promotes greater muscle protein accretion after resistance exercise than does consumption of an isonitrogenous and isoenergetic soy-protein beverage. American Journal of Clinical Nutrition, 85, 1031–1040.

Yang Y, Churchward-Venne T A, Burd N A, Breen L, Tarnopolsky M A & Phillips S M (2012) Myofibrillar protein synthesis following ingestion of soy protein isolate at rest and after resistance exercise in elderly men. Nutrition & Metabolism, 9, 57.


## CONTACTS


**Fonterra Co-operative Group**
109 Fanshawe Street
Auckland 1010, New Zealand
+64 9 374 9000

**Fonterra (USA) Inc**
9525 West Bryn Mawr Ave
Rosemont 60018, Illinois, USA
+1 847 928 1600

**Fonterra (Europe) Coöperatie U.A.**
Barbara Strozzilaan
Amsterdam 1083HN, Netherlands
+31 20 707 5300

**Fonterra (Japan) Limited**
20F 2-16-2 Konan Minato-ku
Tokyo 108-0075
+81 3 6737 1800

**Fonterra Commercial Trading (Shanghai)**
268 Middle Xizang Road
Shanghai 200001, China
+86 21 6133 5999

**Fonterra (SEA) Singapore**
1 George Street
Singapore 049145
+65 6879 2977




## Talk to the dairy ingredient experts

We're passionate about sharing our deep dairy expertise to help you grow your business. Talk to us today about your dairy ingredient needs.

**To find out more or to purchase our ingredients please visit nzmp.com**

nzmp™ sureprotein™