



# The potential role of peanuts in the prevention of obesity

The prevention  
of obesity

Jennette Higgs

*Consultant Nutritionist and Media Specialist for the American Peanut Council;  
Freelance Public Health Nutritionist and Sports Dietitian,  
Food To Fit, Northamptonshire, UK*

353

## Abstract

**Purpose** – To provide an overview of recent research that collectively demonstrates the potential for peanuts as an aid to weight management.

**Design/methodology/approach** – Research on nuts and their effects on health has been plentiful in recent years. This short literature review focuses principally on that research relevant to peanuts.

**Findings** – Epidemiological and intervention studies have provided useful information on the beneficial effects of nuts, including peanuts in relation to weight management and obesity. This has served to overturn the perception that peanuts, due to their fat content, should not be included in weight loss diets. Furthermore, that, for effective weight management, a moderate fat diet, that includes peanuts, may be more effective for both cardiovascular health and weight management.

**Research limitations/implications** – More definitive research to directly assess the effects of peanuts on energy balance and body weight is recommended to ascertain optimal quantities of peanuts that can be included in diets for both weight loss and weight maintenance. Plausible explanations for the absence of expected weight gain with regular nut consumption are reported and further research to explore these theories will be reassuring.

**Practical implications** – Inclusion of daily 1oz(30 g) handfuls of peanuts within a moderate fat diet can be recommended as a useful means not only to improve diet quality but also to assist with weight management, due to their satiating effects.

**Originality/value** – This paper will be useful to health professionals and educators by highlighting how a convenient snack food, peanuts can play a beneficial role within a healthy diet for both cardiovascular protection and weight management.

**Keywords** Nuts (food), Weight (mass), Obesity

**Paper type** Literature review

## Introduction

Peanuts were traditionally viewed as useful nutritionally but fell from favour as a consequence of general negative concerns about fat. Despite reductions in fat intakes (Hoare *et al.*, 2004), levels of obesity have dramatically increased by over 400 per cent in the UK over the last 25 years, more so than in most European countries, (House of Commons Health Committee, 2004). The apparent failure of low fat diets to control weight has encouraged debate regarding the ideal percentage of macronutrients in the diet that can assist weight control (Willett, 1998). The emphasis on low fat, weight loss diets (<30 per cent energy from fat) has often precluded nuts from recommendation, regardless of their nutrient density.

The beneficial effects of unsaturated fats are now well documented (Willett, 2001). Epidemiological studies have confirmed that consuming nuts, a snack food, at least five times per week may contribute to protecting against cardiovascular disease (CVD), type two diabetes and more recently gallbladder disease (Hu *et al.*, 1998; Jiang *et al.*,



The author would like to thank Mrs Kathryn Styles for her contribution to the preparation of this paper.

---

2002; Tsai *et al.*, 2004). Nuts do not appear to have a detrimental effect on glucose homeostasis and hence may offer protection against insulin resistance (García-Lorda *et al.*, 2003). Several intervention studies in normal, hyperlipidaemic and diabetic subjects have demonstrated the cholesterol-lowering effects of groundnuts (legume peanuts) and tree nuts, when consumed regularly at a level of 1oz or more, (García-Lorda *et al.*, 2003; Alper and Mattes, 2003).

---

### Fat weight loss

Given that obesity in itself is a risk factor for CVD and that the type of fat consumed is more important than the total amount of fat, as a risk for chronic diseases (Khor, 2004), it would be useful to be able to recommend peanuts within weight management diets. Prospective cohort studies have shown that nut consumption can be cardioprotective in both lean and obese individuals (Sabaté, 2003).

Pelkman *et al.* (2004) explored the effects of altering the energy profile of a diet on cardiovascular health in 52 healthy, overweight and obese men and women, assigned to a low fat diet (18.3 per cent of energy), or a moderate fat, high monounsaturated fat (MUFA) diet (32.8 per cent). Both experimental diets were low in saturated fat (7 per cent). Half of the fat from the moderate fat diet came from peanuts, peanut butter and peanut oil. Weight loss was regulated and did not differ between the groups, although significant changes to lipid profiles were observed. Both groups' total cholesterol, LDL cholesterol and triacylglycerol levels reduced significantly. However, consuming the low fat diet also significantly reduced protective HDL levels, by 12 per cent, whereas those on the moderate fat diet maintained their HDL levels even during the weight maintenance phase. Thus a moderate fat diet, containing a large proportion of fat from peanuts can achieve good weight loss (2 lb/wk), whilst also benefiting cardiovascular health. Whereas following the typical low fat diet may adversely effect CVD risk, even in response to weight loss, since reduced HDL levels, whilst following a low fat diet, have been shown in both long and short term studies.

McManus *et al.* (2001) compared success rates of the typical low fat diet with a Mediterranean-style, moderate fat diet (high in MUFAs provided by nuts, peanuts, peanut butter, avocados and olive oil). Three times as many people were able to stick to the Mediterranean-style, moderate fat diet vs the low fat diet and they were able to keep off a significant amount of their lost weight for up to two-and-a-half years, whereas the low fat group had regained some of their initial weight loss by 18 months. The authors attribute the success of the moderate fat diet to the greater palatability and variety afforded by the daily inclusion of foods such as peanuts and olive oil that would be prohibited on a typical low fat diet.

### Nuts and weight

Epidemiological data and nut – feeding studies have highlighted the fact that regular nut consumption is not associated with increased body mass index (BMI), both in free-feeding and more controlled diet situations. Hu *et al.* (1999) showed statistically significant negative associations between nut consumption and BMI in 31,200 people. Schroder *et al.* (2004) studied 3,162 Spanish adults and showed that those who were more adherent to a traditional Mediterranean diet, which includes nuts, had statistically lower BMIs. US Government food survey data from 1994-96 has been used to show that both nut eaters and, more specifically peanuts eaters had lower BMIs than non nut and peanut eaters (Sabaté, 2003; Griel *et al.*, 2004). Furthermore, BMI did not change with increasing peanut consumption, despite the fact that almost a third of the

peanut consumers were eating more than two, or more than three handfuls of peanuts per day. Interestingly energy intakes were significantly higher for peanut consumers and possible explanations for this will be explored later. Supplementation studies using separately, peanuts, walnuts, almonds, pistachios, macadamia and pecans illustrate overwhelmingly that short-term consumption of moderate to large amounts of nuts has shown no increase in body weight (Sabaté, 2003; St-Onge, 2005). Sabaté (2003) reviewed the evidence and concluded that free living people on self selected diets that included frequent consumption of nuts were unlikely to have a higher BMI as a consequence.

Griel *et al.* (2004) has demonstrated that the regular peanut consumers had better diet quality overall, having higher intakes of vitamin E and folate, magnesium, zinc, iron, monounsaturated fat and dietary fibre, and lower intakes of cholesterol. Additionally, Talcott *et al.* (2005) has shown that peanuts are as rich in antioxidants as many fruits, in particular vitamin E and the polyphenol, *p*-coumaric acid, which has been shown to block lipid peroxidation and reduce cholesterol levels. McManus *et al.* (2001) also showed that following a moderate fat, weight loss diet (that included peanuts and olive oil) significantly increased intake of vegetables and fibre by one portion per day, whereas, those people following the low fat diet decreased their intake. Thus the use of moderate fat, high MUFA diets, that allow inclusion of peanuts and a greater variety of food, can improve diet quality both directly and indirectly. Low fat weight reducing diets, particularly for women can be restrictive to the point that nutrient adequacy cannot always be guaranteed and micronutrient supplements are often recommended as insurance (Thomas, 2001).

### **Why peanuts do not cause weight gain**

Explanations for why peanuts and tree nuts are not associated with increased BMI can help us to appreciate their potential for weight management. The high satiety effects of nuts – due to their energy and protein dense, high fibre nature, coupled with their low glycaemic index (GI) is perhaps the most plausible explanation for the absence of weight gain on diets containing peanuts (Alper and Mattes, 2002; Sabaté, 2003). O'Byrne *et al.* (1997) found that where subjects were given peanuts as a substitute for other sources of fat, in a low fat diet, despite being told to maintain their normal weight, subjects gradually lost 3 kg weight over a six-month period. Research into the satiating effects of peanuts has illustrated that 90 g (500 kcal) peanut snacks not only suppress hunger for 2.5 hours, compared to half an hour for other typical snacks such as rice cakes (Kirkmeyer and Mattes, 2000); but when eaten in addition to the normal diet 500 kcal peanut snacks do not cause the predicted weight gain as subjects compensate and eat less of other foods (Alper and Mattes, 2002). Similarly 54-78 per cent of the extra energy supplied by almonds in a six month supplementation study was compensated for by reductions in other foods (Fraser *et al.*, 2002). New research has also shown that 300 kcal peanut snacks suppress hunger and reduce plasma glucose levels when consumed either as a snack or with a meal (Devitt and Mattes, 2005).

Nuts are a rich source of dietary fibre, mainly in the insoluble form and dietary fibre is inversely related to obesity and BMI, independent of fat intake (Megias-Rangil *et al.*, 2004; Slavin, 2005; Liu *et al.*, 2003). Diets based on foods with a low GI are proving effective for weight loss in addition to cardiovascular health (Brand-Miller, 2005). Nuts have a low GI and peanuts, at 14, have one of the lowest GIs of all nuts (Henry, 2005). There appears to have been a reluctance to enthusiastically recommend nuts within low GI diets for weight loss, perhaps due to the precedence given to low fat foods, even

---

within low GI diets. Ebbeling *et al.* (2005) has now shown that an *ad libitum* low-glycaemic load, moderate fat diet (which included nuts) may be more efficacious than a conventional, energy-restricted, low-fat diet in reducing cardiovascular disease risk and achieving effective weight loss. Increased satiation, due to the inclusion of low GI foods, such as nuts, with consequent dietary compensation would explain how an *ad libitum* diet could achieve effective weight loss, when traditionally one of the factors causing diets to fail is poor dietary restraint. (McManus *et al.*, 2001; Anderson *et al.*, 2001).

The high protein and high unsaturated fat nature of peanuts may also contribute to the lack of weight gain associated with peanut consumption. Diet-induced thermogenesis is up to three times higher with protein than isocaloric amounts of carbohydrate or fat. Johnston (2005) has explored the role of protein in protecting against weight gain due to its thermic effects and increased satiety and recommends this as one strategy for effective weight management. A high polyunsaturated to saturated fat ratio increases resting energy expenditure and diet induced thermogenesis since unsaturated fats are preferentially oxidised (Sabaté, 2003; Alper and Mattes, 2002). A 30 week (11 weeks baseline and washout periods), cross over intervention study of 15 normal body weight adults looked at the effects on energy balance of altering the fat content of the diet by adding peanuts to their diet ( $505 \pm 118$  kcal/day). During the 19 weeks of regular peanut consumption resting energy expenditure increased by 11 per cent compared to baseline and there was no significant change in physical activity levels during the study that could account for this (Alper and Mattes, 2002).

Faecal fat loss due to incomplete digestion and absorption of nuts may result in a loss of available energy. As long ago as 1980, it was shown that whole peanuts are incompletely absorbed with the undigested dietary fat appearing in stools. Similar findings have also been shown for studies using pecan nuts and almonds (Alper and Mattes, 2002; Sabaté, 2003).

Possible explanations for the inverse relation between nut consumption and BMI found in epidemiological data are reverse causation and higher energy expenditure. Unlike lean people, obese people may tend not to eat nuts as they perceive that they are high in fat (Sabaté, 2003). This may be partly true, although the results seen in intervention studies with nuts demonstrate that other factors must account for the lack of weight gain associated with daily nut intakes. Results from both the Nurses Health Study (Hu *et al.*, 1998) and Physicians' Health Study (Albert *et al.*, 2002) suggest that nut consumption is associated with more frequent exercise, although results from experimental studies do not support this. No increase in physical activity was shown in subjects supplementing their diet with almonds for six months, even though they lost weight (Fraser *et al.*, 2002).

### Conclusion

More definitive research to directly assess the effects of nuts on energy balance and body weight is still required, however, peanuts have already been shown to contribute to effective weight loss when consumed daily as part of moderate fat, high MUFA, Mediterranean-style diets. Such diets are also relatively low GI. The research reviewed here illustrates the potential for regular moderate portions of peanuts, along with other nuts to play an important part in moderate fat, low GI diets that can be effective for both weight loss and CVD health. Given the crisis concerning obesity and type two

---

diabetes, it is perhaps time to try new dietary approaches that may be more sustainable and practical in our fast food society.

## References

- Albert, C.M., Gaziano, J.M., Willett, W.C. and Manson, J.E. (2002), "Nut consumption and decreased risk of sudden death in the physicians' health study", *Archives Internal Medicine*, Vol. 162, 24 June, pp. 1382-7.
- Alper, C.M. and Mattes, R.D. (2002), "Effects of chronic peanut consumption on energy balance and hedonics", *International Journal of Obesity*, Vol. 26, pp. 1129-37.
- Alper, C.M. and Mattes, R.D. (2003), "Peanut consumption improves indices of cardiovascular disease risk in healthy adults", *Journal of the American College of Nutrition*, Vol. 22 No. 2, pp. 133-41.
- Anderson, J.W., Konz, E.C., Frederich, R.C. and Wood, C.L. (2001), "Long-term weight-loss maintenance: a meta-analysis of US studies", *American Journal of Clinical Nutrition*, Vol. 74, pp. 579-84.
- Brand-Miller, J. (2005), "Optimising the cardiovascular outcomes of weight loss", *American Journal of Clinical Nutrition*, Vol. 81, pp. 949-50.
- Devitt, A.A. and Mattes, R.D. (2005), "Effects of peanuts ingested with a meal or as a snack on subjective hunger ratings and plasma glucose in healthy adults", Program/Abstract # 849.11, paper presented at Experimental Biology 2005.
- Ebbeling, C.B., Leidig, M.M., Sinclair, K.B., Seger-Shippe, L.G., Feldman, H.A. and Ludwig, D.S. (2005), "Effects of an ad libitum low-glycemic load diet on cardiovascular disease risk factors in obese young adults", *American Journal of Clinical Nutrition*, Vol. 81 No. 5, pp. 976-82.
- Fraser, G.E., Bennett, H.W., Jaceldo, K.B. and Sabaté, J. (2002), "Effect on body weight of a free 76 kilojoule (320 calorie) daily supplement of almonds for six months", *Journal of the American College of Nutrition*, Vol. 21, pp. 275-83.
- Garcia-Lorda, P., Megias Rangil, I. and Salas-Salvado, J. (2003), "Nut consumption, body weight and insulin resistance", *European Journal of Clinical Nutrition*, Vol. 57 (suppl 1), 8S-11S.
- Griel, A.E., Eissenstat, B., Juturu, V., Hsieh, G. and Kris-Etherton, P.M. (2004), "Improved diet quality with peanut consumption", *Journal of the American College of Nutrition*, Vol. 23, pp. 660-8.
- Henry, J. (2005), personal communication.
- Hoare, J., Henderson, L., Bates, C.J., Prentice, A., Birch, M., Swan, G. and Farron, M. (2004), *The National Diet & Nutrition Survey: Adults Aged 19 to 64 Years Summary Report*. TSO, London.
- House of Commons Health Committee (2004). *Obesity. Third Report of Session 2003-4*, May, The Stationery Office Limited, London, available at [www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmhealth/23/23.pdf](http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmhealth/23/23.pdf)
- Hu, F.B. and Stampfer, M.J. (1999), "Nut consumption and risk of coronary heart disease: a review of epidemiologic evidence", *Curr Atheroscler Rep*, Vol. 3, pp. 204-9.
- Hu, F.B., Stampfer, M.J., Manson, J.A.E., Rimm, E.B., Colditz, G.A., Rosner, B.A., Speizer, F.E., Hennekens, C.H. and Willett, W.C. (1998), "Frequent nut consumption and risk of coronary heart disease in woman: prospective cohort study", *British Medical Journal*, Vol. 317, pp. 1341-5.
- Jiang, R., Manson, J.E., Stampfer, M.J., Liu, S., Willett, W.C. and Hu, F.B. (2002), "A prospective study of nut consumption and risk of type II diabetes in women", *Journal of the American Medical Association*, Vol. 288, pp. 2554-60.

- Johnston, C.S. (2005), "Strategies for healthy weight loss: from vitamin C to the glycemic response", *Journal of the American College of Nutrition*, Vol. 24, No. 3, pp. 158-65.
- Khor, G.L. (2004), "Dietary fat quality: a nutritional epidemiologist's view", *Asia Pac J Clin Nutr*, Vol. 13 (suppl), 22S.
- Kirkmeyer, S.V. and Mattes, R.D. (2000), "Effects of food attributes on hunger and food intake", *International Journal of Obesity*, Vol. 59, pp. 103-11.
- Liu, S., Willett, W.C., Manson, J.A.E., Hu, F.B., Rosner, B. and Colditz, G. (2003), "Relation between changes in intakes of dietary fiber and grain products and changes in weight and development of obesity among middle-aged women", *American Journal of Clinical Nutrition*, Vol. 78, pp. 920-7.
- McManus, K., Antinoro, L. and Sacks, F. (2001), "A randomised controlled trial of a moderate fat, low-energy diet with a low fat, low-energy diet for weight loss in overweight adults", *International Journal of Obesity*, Vol. 25, pp. 1503-11.
- Megias-Rangil, I., Garcia-Lorda, P., Torres-Moreno, M., Bullo, M. and Salas-Salvado, J. (2004), "Nutrient content and health effects of nuts", *Arch Latinoam Nutr*, Vol. 54, pp. 83-6.
- O'Byrne, D.J., Knauft, D.A. and Shireman, R.B. (1997), "Low fat-monounsaturated rich diets containing high-oleic peanuts improve serum lipoprotein profiles", *Lipids*, Vol. 32, pp. 687-95.
- Pelkman, C.L., Fishell, V.K., Maddox, D.H., Pearson, T.A., Mauger, D.T. and Kris-Etherton, P.M. (2004), "Effects of moderate-fat (from monounsaturated fat) and low-fat weight-loss diets on the serum lipid profile in overweight and obese men and women", *American Journal of Clinical Nutrition*, Vol. 79, pp. 204-14.
- Sabaté, J. (2003), "Nut consumption and body weight", *American Journal of Clinical Nutrition*, Vol. 78, pp. 647-50.
- Schroder, H., Marrugat, J., Vila, J., Covas, M.I. and Elosua, R. (2004), "Adherence to the traditional mediterranean diet is inversely associated with body mass index and obesity in a Spanish population", *J. Nutr.*, Vol. 134, pp. 3355-61.
- Slavin, J.L. (2005), "Dietary fiber and body weight", *Nutrition*, Vol. 21, pp. 411-8.
- St-Onge, M.P. (2005), "Dietary fats, teas, dairy, and nuts: potential functional foods for weight control?", *American Journal of Clinical Nutrition*, Vol. 81, pp. 7-15.
- Talcott, S.T., Passeretti, S., Duncan, C.E. and Gorbet, D.W. (2005), "Polyphenolic content and sensory properties of normal and high oleic acid peanuts", *Journal of Food Chemistry*, Vol. 90, pp. 379-88.
- Thomas, B. (2001), *Manual of Dietetic Practice*, 3rd ed., Blackwell Science, Oxford, p. 468.
- Tsai, C.J., Leitzmann, M.F., Hu, F.B., Willett, W.C. and Giovannucci, E.L. (2004), "Frequent nut consumption and decreased risk of cholecystectomy in women", *American Journal of Clinical Nutrition*, Vol. 80, pp. 76-81.
- Willett, W.C. (1998), "Is dietary fat a major determinant of body fat?", *American Journal of Clinical Nutrition*, Vol. 67 (Suppl.), pp. 556S-62S.
- Willett, W.C. (2001), *Eat, Drink, and Be Healthy*, Simon and Schuster, New York, NY.

### Further Reading

- Jenkins, D.J., Wolever, T.M., Taylor, R.H., Barker, H., Fielden, H., Baldwin, J.M., Bowling, A.C., Newman, H.C., Jenkins, A.L. and Goff, D.V. (1981), "Glycemic index of foods: a physiological basis for carbohydrate exchange", *American Journal of Clinical Nutrition*, Vol. 34, pp. 362-6.
- Ma, Y., Olendzki, B., Chiriboga, D., Hebert, J.R., Li, Y., Li, W., Campbell, M.J., Gendreau, K. and Ockene, I.S. (2005), "Association between dietary carbohydrates and body weight", *American Journal of Epidemiology*, Vol. 161, pp. 359-67.