

Diet-induced thermogenesis studies

In a study by Clegg et al., 2013¹ consumption of chilli combined with medium-chain triglycerides led to a greater thermogenic effect than the combination of pepper and sunflower oil. Therefore, LIPO was to be consumed before or with meals. After feeding, energy consumption was measured over a six-hour period using calorimetry which saw an increase in energy consumption.

To review whether chilli really does have a thermogenic effect making it a suitable candidate for weight loss, scientists had examined medical databases looking for reputable studies². From the 90 studies found, only 20 were selected with a total number of 500 participants.

These studies show that increased energy expenditure of 50 kcal per day was observed after consuming pungent capsaicin. Likewise, regular intake of capsaicin led to a decrease in abdominal fat and appetite with a simultaneous reduction in food intake.

The mechanisms of action of capsaicin are not yet entirely clear; however capsaicin could be a useful supplement in improving weight management. Meta-analysis by Whiting et al. 2014³ also confirms these findings. Here, it was observed that intake of capsaicin prior to a meal led to a reduction in calories. This means, that participants ate 75 kcal less per meal. Food should, therefore, be liberally seasoned with chilli in order to benefit from these effects.

Synephrine in bitter orange extracts (Citrus Aurantium) is also reputed to have a thermogenic effect. In a scientific review⁴ by Preuss and his colleagues, synephrine was titled as an ephedrine replacement, since it displays almost similar properties such as an increase in thermogenic effects and a decrease in appetite. The review concluded that a thermogenic effect and weight loss could be observed in the studies conducted. At the same time, exercise and diet were also encouraged. Significant weight loss was discovered in a study in combination with caffeine, whereby caffeine now belongs to the group of performance-enhancing substances. It can increase mental performance (concentration) and muscle endurance. So, those who increase endurance training in order to lose weight, can also workout more intensively, which in turn boosts fat metabolism.

Caffeine, in combination with other nutrients, also has a thermogenic effect on the body. In a study of 80 obese subjects⁵, the intake of a combination of tyrosine, capsaicin, catechines (in green tea extract) and caffeine led to a greater weight loss than in the placebo group. Although this effect was attributed to both the 4-week diet phase and the thermogenic effect, this was still elevated in the group taking the combination product four weeks later. Belza (et al. 2005)⁶ also studied the effect of a combination product containing capsaicin, green tea extract (catechine and caffeine), tyrosine and calcium after a 7-day administration. In this instance, an increase in energy expenditure by 46 kcal could be measured in 19 overweight men. Energy expenditure, therefore, can be set in motion not only through physical exercise but also by certain nutrients. In a meta-analysis by Phung (et al. 2010)⁷, a correlation between a caffeine and green tea mixture and weight loss as well as a decrease in waist circumference could be observed.

Source:

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4. Preuss HG, DiFerdinando D, Bagchi M, Bagchi D. Citrus aurantium as a thermogenic, weight-reduction replacement for ephedra: an overview. *J Med*. 2002;33(1-4):247-64.
5. Belza A, Frandsen E, Kondrup J. Body fat loss achieved by stimulation of thermogenesis by a combination of bioactive food ingredients: a placebo-controlled, double-blind 8-week intervention in obese subjects. *Int J Obes (Lond)*. 2007 Jan;31(1):121-30.
6. Belza A, Jessen AB. Bioactive food stimulants of sympathetic activity: effect on 24-h energy expenditure and fat oxidation. *Eur J Clin Nutr*. 2005 Jun;59(6):733-41.
7. Phung OJ, Baker WL, Matthews LJ, Lanosa M, Thorne A, Coleman CI. Effect of green tea catechins with or without caffeine on anthropometric measures: a systematic review and meta-analysis. *Am J Clin Nutr*. 2010 Jan;91(1):73-81.
8. Lexicon on the subject of doping and doping clarification of the Institute of Biochemistry of the German Sport University Cologne www.dopinginfo.de