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The effect of combined medium chain triglyceride and chilli feeding on energy expenditure

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Capsaicin, the active ingredient of chilli has been shown to increase metabolic rate⁽¹⁾. Furthermore, it has been shown that capsaicin also improves satiety and decreases energy and fat intake⁽²⁾. Medium chain triglycerides (MCT) are a specific type of dietary triglycerides that are 6 to 12 carbon atoms in length⁽³⁾ mainly found in coconut oil and palm kernel oil. MCT increase energy expenditure and fat oxidation as well as promote satiety. Combinations of thermogenic ingredients have previously been investigated such as mustard and chilli⁽¹⁾ and capsaicin and green tea⁽⁴⁾ with positive effects. The effect of combined intake of capsaicin and MCT on energy expenditure and satiety warrants further investigation. The aim of this study was to investigate the effects of chilli and MCT on energy expenditure and satiety in healthy volunteers.

Seven healthy volunteers (6f 1 m; 25.7 (SD 3.6) yr; 1.69 (SD 0.09) m; 62.5 (SD 7.5) kg) were tested on four occasions following an overnight fast. Volunteers were fed a breakfast consisting of an omelette, bacon, sausages, toast and orange juice. The omelette contained either chilli & MCT oil, chilli and sunflower oil, bell pepper and sunflower oil or bell pepper and MCT oil. Thirty grams of hot chilli spice blend (Gourmet garden, Northampton, UK) and 20 g of MCT oil (Trek Nutrition, London, UK) or the equivalent energy amounts of bell pepper and sunflower oil were used in the omelette. Satiety and gastrointestinal comfort were measured using questionnaires and VAS. Baseline and postprandial energy expenditure was measured using indirect calorimetry and satiety was measured using visual analogue scales (VAS) for 5.5 h following consumption of the breakfast. Analysis was completed using repeated measures ANOVA. Statistical significance was set at $P < 0.05$, data is expressed as mean (SD).

There were significant differences in energy expenditure between the different breakfast meals ($P < 0.001$). The predominant differences existed between the chilli-MCT and chilli-sunflower oil ($P = 0.011$), between chilli-MCT and pepper-sunflower oil ($P = 0.006$) and between pepper-sunflower oil and pepper-MCT ($P = 0.005$). Chilli-MCT had the highest energy expenditure and pepper-sunflower oil had the lowest. There were no differences in any of the VAS satiety parameters or gastrointestinal comfort ratings.

	Energy expenditure (kcal)	
	mean	SD
Chilli – MCT oil	47.7	10.9
Chilli – sunflower oil	32.5	11.7
Pepper – sunflower oil	31.3	11.1
Pepper – MCT oil	42.0	12.2

Energy expenditure following each of the breakfast meals

This data indicates that combined MCT and chilli feeding increases energy expenditure significantly more than chilli alone but not significantly more than MCT alone. This is in keeping with previous data indicating that MCT can be used as a weight management tool⁽⁵⁾.

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