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Thermogenesis in humans during overfeeding with medium-chain triglycerides.

[Hill JO](#), [Peters JC](#), [Yang D](#), [Sharp T](#), [Kaler M](#), [Abumrad NN](#), [Greene HL](#).

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To test whether excess dietary energy as medium-chain triglycerides (MCT) affects thermogenesis differently from excess dietary energy as long chain triglycerides (LCT), ten male volunteers (ages 22 to 44) were overfed (150% of estimated energy requirement) liquid formula diets containing 40% of fat as either MCT or LCT. Each patient was studied for one week on each diet in a double-blind, crossover design. Resting metabolic rate (RMR) did not change during either week of overfeeding. The thermic response to food (TEF) was greater on day 1 following a meal (1,000 kcal) containing MCT than following an isocaloric meal containing LCT (8 +/- .8% v 5.8 +/- .8% of ingested energy; P less than .05). Moreover, the TEF observed after a 1,000 kcal meal containing MCT increased significantly to 12% (+/- 1.3%) overfeeding. The TEF of the 1,000 kcal meal containing LCT was unchanged by five days of LCT overfeeding (6.6 +/- 1.0% of ingested energy). Energy expenditure during a 20-hour continuous enteral infusion of the diet on day 7 was also significantly higher with the MCT diet than with the LCT diet (15.7 +/- 1.7% v 7.3 +/- .9% of ingested energy; P less than .05). Our results demonstrate that excess dietary energy as MCT stimulates thermogenesis to a greater degree than does excess energy as LCT. This increased energy expenditure, most likely due to lipogenesis in the liver, provides evidence that excess energy derived from MCT is stored with a lesser efficiency than is excess energy derived from dietary LCT.

Publication Types:

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