

Differences in the thermic effect of a meal due to degree of food processing

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#### Abstract

A shift towards a diet containing large quantities of highly processed foods is believed to be a major contributor to the rise in obesity in the United States. Food processing reduces macronutrient complexity of the food components to increase rate of digestion, thus requiring less energy to be metabolized and inducing a lower thermogenic response. Purpose: The primary purpose of this study was to assess the thermic effect of a meal based on differences in the degree of food processing. Methods: The thermic effect of a meal was assessed on 12 college females with BMI within the range of 18.5 kg/m<sup>2</sup> to 28 kg/m<sup>2</sup> using indirect calorimetry with a Parvomedics metabolic cart attached to a ventilated hood system. The participants consumed three different grilled cheese meals: whole foods, highly processed, and gluten-free meals. Meals were isoenergetic and isomacronutrient. Results: There was a significantly greater postprandial thermogenic response after consumption of a whole foods meal compared to a gluten-free meal. The whole foods meal itself significantly burned 11.84 more calories than the gluten-free meal. Conclusion: The degree of food processing of a meal's components significantly affects the way that the human body metabolizes a meal.