

# Fast foods, energy density and obesity: a possible mechanistic link

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## Summary

Fast foods are frequently linked to the epidemic of obesity, but there has been very little scientific appraisal of a possible causal role. Here we review a series of studies demonstrating that the *energy density* of foods is a key determinant of energy intake. These studies show that humans have a weak innate ability to recognise foods with a high energy density and to appropriately down-regulate the bulk of food eaten in order to maintain energy balance. This induces so called ‘passive over-consumption’. Composition data from leading fast food company websites are then used to illustrate that most fast foods have an extremely high energy density. At some typical outlets the average energy density of the entire menus is ~1100 kJ/100 g<sup>-1</sup>. This is 65% higher than the average British diet (~670 kJ 100 g<sup>-1</sup>) and more than twice the energy density of recommended healthy diets (~525 kJ 100 g<sup>-1</sup>). It is 145% higher than traditional African diets (~450 kJ 100 g<sup>-1</sup>) that probably represent the levels against which human weight regulatory mechanisms have evolved. We conclude that the high energy densities of many fast foods challenge human appetite control systems with conditions for which they were never designed. Among regular consumers they are likely to result in the accidental consumption of excess energy and hence to promote weight gain and obesity.

**Keywords:** Appetite regulation, energy density, fast food, obesity.