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Defining the satiety characteristics of plant-based mince in comparison to standard beef mince

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There have been suggestions, both from anecdotal reports and limited experimental studies, that plant-based meat products may a greater satiating effect compared to traditional meat products.[1,2] However, few studies have directly investigated this, and none had determined whether any energy deficits at a single meal were compensated for at a subsequent meal. The aim of this study was to assess the effect of substituting v2food® mince for beef mince in a standard pasta meal on the amount of the meal consumed and on feelings of fullness post-prandially, as assessed by a visual analogue scale (VAS), objective (biochemical) measures and the amount consumed at a subsequent meal occasion. A total of 24 healthy, adult males attended two clinic appointments at least 1 week apart, at which they were provided with a bolognaise-style pasta meal prepared with either v2food® mince or beef mince, which they were instructed to eat until comfortably full. Blood samples were collected, and perceptions of hunger, fullness and satisfaction were recorded (on a VAS) before and at regular intervals for 3 hours following the pasta meal, at which point participants were provided with a buffet meal. The amount of food consumed at the lunch meal and subsequent buffet meal was recorded and used to calculate energy and nutrient intake. Plasma concentrations of insulin, ghrelin and glucagon-like peptide-1 (GLP-1) were assessed. Both energy intake and weight of the pasta meal consumed at the lunch meal was lower for the v2food® plant-based mince, compared to the beef mince ($p < 0.05$), with participants consuming an average of 586 kJ less of the v2food® plant-based meal compared to the beef meal. There was no difference in energy intake at the buffet meal or in measures of fullness, satiety or satisfaction, as assessed by the VAS, either before or after the lunch meal between v2food® plant-based and beef mince. Insulin and ghrelin concentrations were similar between groups, however GLP-1 concentrations remained higher 120 mins after consuming the beef mince meal, compared to the v2food® plant-based mince meal ($p < 0.04$). The results of this study support the hypothesis that individuals need to consume less (in terms of amount and energy) to achieve satiety when consuming a pasta meal prepared with v2food® plant-based mince, compared to an equivalent meal prepared with beef mince. This was not associated with lower measures of post-prandial satiety, or a greater energy intake in the subsequent buffet meal, but post-prandial patterns of GLP-1 release may be affected. Further studies to establish the longer-term effects of replacing meat with plant-based mince on energy intakes, as well as the mechanisms underlying the lower consumption of the plant-based mince meal compared to the beef mince meal would be valuable.

References

1. Rolls BJ (2009) *Physiol Behav* **97** (5), 609–615.
2. Klementova M, Thieme L, Haluzik M, *et al.* (2019) *Nutrients* **11** (1), 157.