

High fat diet temporarily accelerates gastrointestinal transit in men

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Rapid gastric emptying (GE) and hence a shortened satiety period may contribute to the development of obesity. Cunningham *et al.*⁽¹⁾ were the first to establish in human subjects that feeding a high-fat (HF) diet for two weeks accelerates gastrointestinal (GI) transit. Since then, diets of only 3 d have been shown to reduce GE time⁽²⁾. A 2-week HF-diet has also resulted in an increase in hunger during an oral fat tolerance test following the HF diet⁽³⁾. Over longer periods than 2 weeks the effects of HF diets on GE and satiety is unknown. The aim of this study is to assess GI transit and satiety during and following a 4-week HF diet.

The study was a repeated measures design with ten male volunteers completing a 1-week HF diet intervention and seven completing a 1-week HF diet intervention with testing once a week on the same day throughout the 4 weeks. GE was measured using the ¹³C octanoic acid breath test and mouth to caecum transit time (MCTT) using the inulin H₂ breath test. Satiety was analysed using visual analogue scales and an *ad libitum* buffet meal. Analysis was completed using repeated measures ANOVA. Statistical significance was set at $P < 0.05$, data are expressed as mean (SD).

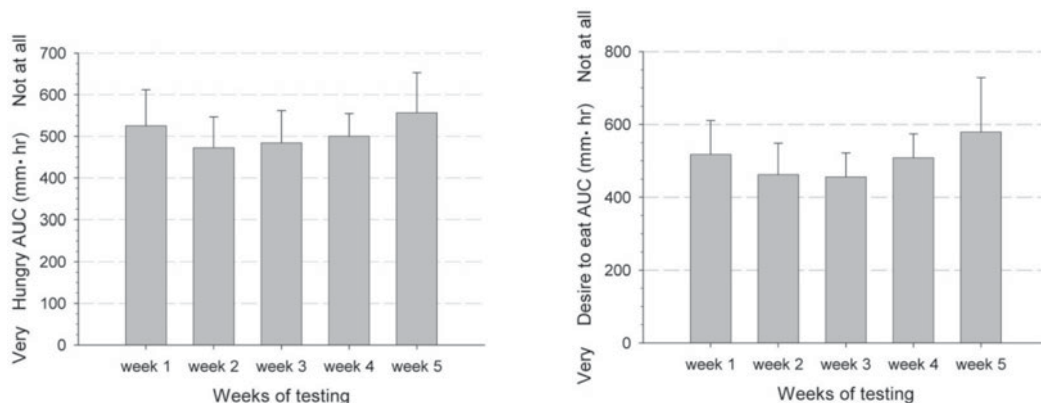


Fig. 1. a and b: Area under the visual analogue scale curve for hunger and desire to eat.

Body mass increased by 1.3 kg over the 4 weeks ($P = 0.036$). GE latency time decreased over 1 week (45 (SD 8) v. 41 (SD 10) min; $P = 0.047$) but there were no changes in any GE parameters over the 4 weeks. MCTT was accelerated after a 1 week HF diet (308 (SD 43) v. 248 (SD 83) min; $P = 0.036$) but not after a 2–4 week HF diet. Satiety decreased over 1 week ($P = 0.01$). Changes in satiety were also evident over the 4 weeks (Fig. 1a and b).

In conclusion, an HF diet affects GI transit and satiety over 1 week and satiety throughout 4 weeks on a HF diet. HF diet causes accelerations in GI transit that are temporary, which indicates a lesser role for dietary fat in the development of obesity.

1. Cunningham KM, Daly J, Horowitz M *et al.* (1991) *Gut* **30**, 483–486.
2. Clegg ME, McKenna P, McClean C *et al.* (2010) *Eur J Clin Nutr* **65**, 240–246.
3. Boyd KA, O'Donovan DG, Doran S *et al.* (2003) *Am J Physiol Gastrointest Liver Physiol* **284**, G188–G196.