



Oro-caecal transit time analysis of fructooligosaccharides in different food matrices using a revised predictive model for Southeast Asians

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Prebiotics have been suggested to provide health benefits after colonic fermentation⁽¹⁾. Although prebiotics are increasingly consumed in food, limited studies have been conducted to evaluate its appearance in the large bowel when present in different food matrices. Efficacy of prebiotics could be determined with oro-caecal transit time (OCTT). However, previous studies have used intakes of 10 g of fermentable, non-digestible carbohydrates (e.g. lactulose), which is an unrealistic dosage even within dietary supplementation. Thus, a revised predictive model (PM) would be necessary to evaluate effects of food matrix on OCTT. In this study, OCTT of fructo-oligosaccharides in yogurt and cold bottled water were evaluated in participants by use of the hydrogen breath test (HBT).

Ethical approval was provided by the Newcastle University SAgE Faculty Ethics Committee for this study. Sixteen (9 male) participants consumed 2 g of FOS in 140 g of yogurt (YGF) and 140 ml of cold bottled water (CBWF) on separate occasions. HBT was carried out using the Gastro+ handheld monitor (Bedfont Scientific, Maidstone, UK) prior to test meal consumption and over the subsequent 2 hour period⁽²⁾. Apart from the original standard to evaluate OCTT (PM1 - >20 ppm of H₂ production), other PMs (PM2 - >10 ppm and <20 ppm of H₂ production) and (PM3 - >5 ppm of H₂ production) were considered. All statistical analyses were performed using paired t-tests.

Due to the dose-dependent relationship between H₂ production and quantity of FOS, PM3 is more relevant to determine OCTT. However, only 6 of 16 participants tested had a significant increase in measured H₂ production of >5 ppm to both test meals. YGF was observed to have a longer OCTT compared to CBWF in this group of 6 participants (with peaks observed most frequently after 90 min versus 75 min respectively).

In conclusion, this pilot study suggests that vehicle of delivery could affect how prebiotics impact on human physiology. Further work is necessary to develop appropriate tests of OCTT based on breath hydrogen in Southeast Asian populations. Current HBT methodologies do not appear to accurately predict OCTT under fructo-oligosaccharide loading relating to realistic dietary intake.

1. Roberfroid M, Gibson GR, Hoyles L *et al.*, (2012) *Brit J Nutr* **104**, S1–S63.
2. Ghoshal UC (2011) *J Gastroenterol Motil* **17**, 312–317.