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Effects of 8 weeks oligofructose supplementation on appetite and body weight in overweight and obese adults

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Supplementing the diet with fermentable carbohydrate (FC) has been suggested to reduce appetite and body weight. Recent findings have demonstrated that inulin-type fructans reduce food intake, body weight and fat mass in rodents[1,2]. However, the effects in humans are inconclusive. This study investigated the effects of FC [oligofructose (OFS)] on appetite profiles, satiety hormone concentration, colonic fermentation, energy intake and body weight following 8 weeks supplementation in overweight and obese adults.

22 healthy subjects, male (*n* 6), female (*n* 16), mean age 30 (SD 8) years with mean BMI 31.1 (SD 3.4) kg/m^2 completed a randomised, double-blind, parallel study comprised of a 2 week run-in period followed by 30 g fibre/day supplementation of either OFS (*n* 12) or placebo (cellulose + maltodextrin) (*n* 10) for 6 weeks. On day 0 (baseline) and day 56 (post-supplementation) subjects were served a standardised breakfast and lunch. Throughout a 420 min postprandial period blood samples were taken to determine peptide YY (PYY) concentrations and visual analogue scales were used to assess subjective appetite feelings. Breath hydrogen was also recorded as a marker of colonic fermentation. Following 420 min participants were served an *ad libitum* meal to measure energy intake.

Dietary supplementation with OFS significantly decreased hunger ($P = 0.016$), motivation to eat ($P = 0.027$) and significantly increased breath hydrogen ($P = 0.017$) on day 56 compared with cellulose treatment. However, subjective fullness ($P = 0.187$), energy intake ($P = 0.344$) and PYY ($P = 0.145$) were not affected by OFS treatment. Supplementing the diet with OFS had no effect on body weight compared with cellulose ($P = 0.461$)

	Oligofructose		Cellulose	
	Change from baseline		Change from baseline	
Parameters	Mean	SE	Mean	SEM
Fullness (tAUC) (cm min)	304.5	120.9	190.2	230.4
Hunger (tAUC) (cm min)	−664.4*	146.2	−12.1	258.7
Motivation to eat (tAUC) (cm min)	−647.1*	176.5	−99.0	201.4
PYY (tAUC) (pmol min/l)	578.3	320.3	86.1	308.6
Breath hydrogen (tAUC) (ppm min)	4031.0*	1357.0	561.5	292.9
Energy intake (kcal)	−113.0	33.8	−142.3	67.9
Body weight (kg)	0.4	0.5	0.5	0.5

Values are mean (SE). *significantly different from cellulose treatment (unpaired t-test) $P<0.05$.

Previous studies that have reported a positive effect of OFS on energy intake and body weight have used a digestible carbohydrate (maltodextrin) as a control[3,4,5]. To our knowledge, this is the first study to compare the effects of OFS on appetite regulation with a non-digestible carbohydrate. In conclusion, supplementing 30 g/day OFS into the diet reduces subjective appetite and increases breath hydrogen. However, there was no significant effect on PYY release, energy intake and body weight compared to cellulose.

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