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## Beta-glucan intake with energy and carbohydrate restricted meals: impact on subjective appetite and gastrointestinal appetite hormones in overweight adults

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Energy restriction is commonly used as body weight-loss interventions<sup>(1)</sup>. However, it modifies secretion of gastrointestinal appetite hormones, which might be expected to upregulate appetite and thus impair the ability to comply with prescribed intervention<sup>(1)</sup>. Supplementation with soluble fibre may potentially counteract this matter<sup>(2)</sup>. This study aimed to investigate whether addition of  $\beta$ -glucan to energy and carbohydrate-restricted meals impacts postprandial responses of gastrointestinal appetite hormones and subjective appetite in overweight adults.

Twenty-three sedentary individuals living with overweight or obesity (age:  $36 \pm 8.5$  years, BMI:  $31.12 \pm 4.04$  kg/m<sup>2</sup>) participated in a double-blind randomised crossover study with two experimental arms, each lasting over two days. On day 1, participants consumed Counterweight PRO800 meal replacement shakes/soups for breakfast and dinner at home, each providing ~200 kcal and a carbohydrate-restricted lunch providing 35% of their habitual energy intake. On day 2, participants attended the metabolic investigation room where they consumed the same breakfast and lunch as on day 1. On both days, each meal was taken with either 3g  $\beta$ -glucan (Oat Well) or cellulose (Comprecel) as placebo. On Day 2, fasting and postprandial appetite scores were recorded, and fasting and postprandial blood samples were obtained for the measurements of plasma concentration of acylated ghrelin, PYY, and GLP-1. The study is registered at [www.clinicaltrials.gov](http://www.clinicaltrials.gov) as NCT05981404.

Two-way ANOVA showed that the postprandial concentrations of acylated ghrelin ( $\beta$ -glucan arm,  $383 \pm 23$  pg/ml; placebo arm,  $428 \pm 23$  pg/ml,  $P=0.02$ , treatment effect) and composite appetite scores ( $P=0.003$ , treatment effect) were significantly lower and PYY concentrations ( $\beta$ -glucan arm,  $132 \pm 5$  pg/ml; Placebo arm,  $110 \pm 4$  pg/ml,  $P=0.003$ , treatment effect) significantly higher in the  $\beta$ -glucan arm than in the Placebo arm. The concentrations of GLP-1 were not different between arms ( $\beta$ -glucan arm,  $29 \pm 1$  pM; placebo arm,  $28 \pm 0.9$  pM,  $P=0.36$ , treatment effect).

The obtained data suggests that consuming  $\beta$ -glucan with energy and carbohydrate-restricted meals can be expected to attenuate reduction in satiety and diminish increase in hunger. Therefore, supplementation with  $\beta$ -glucan during energy restriction intervention applied to body weight loss might lead to improve compliance and reduce discomfort of negative energy balance.

### References

1. Thom G, Dombrowski S, Brosnahan N *et al.* (2020) *Eur J Clin Nutr* **74**(4), 622–632.
2. Jovanovski E, Mazhar N, Komishon A *et al.* (2020) *Eur J Nutr* **60**(1), 101–112.