

Ghrelin and measures of satiety are altered in polycystic ovary syndrome but not differentially affected by diet composition

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Background- Polycystic ovary syndrome (PCOS) is a common endocrine condition in women of reproductive age. In subjects with PCOS, there may be dysregulation of ghrelin, a hormone implicated in appetite regulation. The effect of varying dietary composition on ghrelin is unclear.

Objective- To examine the effects of PCOS status and varying diet composition on ghrelin homeostasis and subjective measures of satiety and hunger.

Design- Overweight BMI-matched women (BMI 35.4 ± 0.9 kgm⁻²) followed a standard protein (55% carbohydrate, 15% protein) (n = 10 PCOS, n = 6 non-PCOS) or high protein diet (40% carbohydrate, 30% protein) (n = 10 PCOS, n = 5 non-PCOS) for 12 weeks of weight loss (~6000 kJ/day) and 4 weeks of energy balance. Post-prandial ghrelin and measures of hunger and satiety by visual analogue scores (VAS) were assessed after a representative meal tolerance test (MTT).

Outcomes- Diet composition had no effect on ghrelin or VAS measures. Non-PCOS subjects had a 70 % higher fasting baseline ghrelin (P = 0.011) and a greater increase in fasting ghrelin (57.5 % vs 34.0 %, P = 0.033) and a greater maximal decrease in MTT ghrelin with weight loss (-42.7 ± 17.3 vs -8.5 ± 4.1 pM, P = 0.02) than subjects with PCOS. Subjects with PCOS were more hungry (P = 0.001) and less satiated (P = 0.007) at week 0 and 16 than non-PCOS subjects.

Conclusions- Ghrelin homeostasis and measures of hunger and satiety are significantly impaired in subjects with PCOS but not affected by diet composition.