

ORIGINAL ARTICLE

## Inhibition of Food Intake in Obese Subjects by Peptide YY<sub>3-36</sub>

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### ABSTRACT

#### BACKGROUND

The gut hormone fragment peptide YY<sub>3-36</sub> (PYY) reduces appetite and food intake when infused into subjects of normal weight. In common with the adipocyte hormone leptin, PYY reduces food intake by modulating appetite circuits in the hypothalamus. However, in obesity there is a marked resistance to the action of leptin, which greatly limits its therapeutic effectiveness. We investigated whether obese subjects were also resistant to the anorectic effects of PYY.

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#### METHODS

We compared the effects of PYY infusion on appetite and food intake in 12 obese and 12 lean subjects in a double-blind, placebo-controlled, crossover study. The plasma levels of PYY, ghrelin, leptin, and insulin were also determined.

#### RESULTS

Caloric intake during a buffet lunch offered two hours after the infusion of PYY was decreased by 30 percent in the obese subjects ( $P < 0.001$ ) and 31 percent in the lean subjects ( $P < 0.001$ ). PYY infusion also caused a significant decrease in the cumulative 24-hour caloric intake in both obese and lean subjects. PYY infusion reduced plasma levels of the appetite-stimulatory hormone ghrelin. Endogenous fasting and postprandial levels of PYY were significantly lower in obese subjects (the mean [ $\pm$ SE] fasting PYY levels were  $10.2 \pm 0.7$  pmol per liter in the obese group and  $16.9 \pm 0.8$  pmol per liter in the lean group,  $P < 0.001$ ). Furthermore, the fasting PYY levels correlated negatively with the body-mass index ( $r = -0.84$ ,  $P < 0.001$ ).

#### CONCLUSIONS

We found that obese subjects were not resistant to the anorectic effects of PYY. Endogenous PYY levels were low in the obese subjects, suggesting that PYY deficiency may contribute to the pathogenesis of obesity.