

PYY decreases food intake and activates peripheral and central neurons in rats.

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PYY decreases food intake in several species, but its physiological status and mechanism(s) of action remain uncertain. To study this problem, we determined the effects of peripherally-administered PYY₃₋₃₆ on food intake and on activation of enteric and hindbrain neurons. **Experiment 1.** Overnight food deprived adult male rats (n=17) received i.p. injections of PYY₃₋₃₆ (15, 30, 60ug/kg) or saline immediately before presentation of 10% sucrose. Consumption of sucrose was recorded at 5-min intervals throughout a 120-min test period. No dose of PYY reduced initial food intake (0-45 min). All doses of PYY tended to reduce food intake at the 45-100 min period, but only 15ug/kg was consistently significant (p<0.05). All doses of PYY inhibited food intake more than vehicle during the final 20 min of the test period (p<0.01). **Experiment 2.** Adult male rats were injected with PYY₃₋₃₆ 30ug/kg i.p. or saline and sacrificed at 30, 60, 90 and 120 min post-injection (n=3 each). Fos-like immunoreactivity, a marker for neuronal activation, was quantified in the myenteric and submucosal plexuses of the duodenum and the dorsal vagal complex (DVC) of the hindbrain. PYY activated enteric neurons of the duodenum and all of the tested areas in the DVC. Activation of the enteric nerves peaked at 30 min whereas activation of the DVC was delayed until 90 min. **Conclusions.** (1) PYY reduces intake of 10% sucrose. (2) PYY activates enteric neurons and the DVC. (3) Activation of enteric neurons by PYY prior to activation of the DVC suggests that PYY acts peripherally before acting centrally. **Supported by P20MD000195-05 from the National Center on Minority Health and Health Disparities (Luther Williams, PI), NIH S06/GM08091, the Birmingham Racing Commission, The 2007 United Negro College Fund for the Henry C. McBay Research Fellowship.**