

Preferences for fat and basic tastes and in 3-, 6- and 12-month-old infants

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Fat perception received recent interest, but fat preference in human infants is a matter of debate. The objective here was to investigate fat and taste preferences in the same infants ($N=66$) at 3, 6 and 12 months. Preference for a fat solution (sunflower and rapeseed oils mixed with soy lecithin) and for taste solutions (sweet, lactose; salty, NaCl; bitter, urea; sour, citric acid; umami, sodium glutamate) was evaluated. The same method was applied at each age. Mothers and their infant participated in 2 videotaped sessions, during which the 5 taste and fat solutions were assessed in a balanced order. For each taste, 4 bottles (water, tastant, tastant and water) were presented by the experimenter. Two global indices were calculated to represent acceptance of the tastant relatively to water (W), based on ingested volumes and on facial expressions. At 3 and 6 mo, the fat solution was as consumed as W; but less than W at 12 mo; at all ages it elicited 'negative' expressions. For taste solutions, at 3 mo the sweet solution was more and the bitter one was less consumed than W; the bitter and the sour solutions elicited 'negative' expressions. At 6 and 12 mo, the sweet and salty solutions were more consumed than W and elicited 'positive' expressions; the bitter and sour solutions elicited negative expressions. Infants were indifferent to the umami solution. These findings are in accordance with the literature on taste preference but the indifference or rejection of the fat solution raise questions about an 'innate' preference for fat. The olfactory component of fat might be involved in this rejection. Supported by: ANR 2006-PNRA-OPALINE & Regional Council of Burgundy.

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Modulation of sweet taste responses by antagonists for leptin and endocannabinoid receptors in normal lean and *db/db* mice

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The taste organ is a peripheral target for both leptin (Lep), an anorexic mediator and endocannabinoids (EDs), orexigenic mediators. In mice, Lep selectively inhibits behavioral, taste nerve and taste cell responses to sweet compounds. Opposing the action of Lep, EDs enhance the sweet taste responses. Such modulation disappeared in *db/db* mice with defects in Lep receptors or mice genetically lacking ED receptors, suggesting that exogenous Lep or EDs affects sweet taste via activation of their cognate receptors in taste cells. However, potential roles of endogenous Lep and EDs in sweet taste remain unclear. Here, we examined effects of antagonists for Ob-Rb (L39A/D40A/F41A) Lep and CB1 (AM251) ED receptors on the chorda tympani (CT) nerve responses in lean control and *db/db* mice. The results demonstrated that lean mice exhibited significant increases in CT responses to sweet compounds after i.p. administration of L39A/D40A/F41A, while they showed no significant changes in the CT responses after AM251. In contrast, *db/db* mice showed clear suppression of CT responses to sweet compounds after AM251, and exhibited enhanced expression of a biosynthesizing enzyme (DAGL) of ED in taste cells. These findings suggest a possibility that circulating Lep may act as a modulator in lean mice that tonically affects basal sweet sensitivity, whereas EDs whose production may be potentiated under defects in the Lep system, may lead to increased basal sweet sensitivity in Lep receptor-deficient *db/db* mice.

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Emotional eating and night eating syndrome in college students

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The night eating syndrome (NES) is a stress-related eating disorder consisting of morning anorexia, evening hyperphagia, insomnia, and nocturnal awakening to eat. It has been associated with depressed mood which worsens in the evening but is not consistently related to elevated BMI. The present study was conducted to examine whether a relationship exists between emotional eating and NES symptoms as measured by the Night Eating Diagnostic Questionnaire (NEDQ). A sample of students ($N=246$) completed the DEBQ, NEDQ, Night Eating Syndrome History and Inventory and provided demographic information including height and weight. Participants were grouped by severity of NES symptoms using the NEDQ: normal ($n=166$), mild night eater ($n=37$), moderate night eater ($n=29$), and full syndrome ($n=14$). MANOVA was used to compare DEBQ scores for the groups; those in the full syndrome category had significantly higher emotional eating scores [$F(3, 240)=4.5, p=.004$] and higher external eating scores [$F(3, 240)=7.8, p=.000$] than those in the normal and mild categories. The trend for both was higher mean scores as symptoms increased. The pattern in dietary restraint was less clear: those in the moderate night eater category had significantly lower scores than those identified as normal or full syndrome [$F(3, 240)=4.8, p=.003$]. No significant relationship was found between BMI and NEDQ [$F(3, 241)=1.04, p=.374$]. The results suggest that NES is associated with higher emotional eating in college students. Supported by: Wagner College.

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Jejunal infusion of glucose decrease food intake in non-human primates through changes in meal frequency

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Roux-en-Y gastric bypass (RYGB) involving gastric restriction, bypass of the upper intestine and direct delivery of nutrients from the stomach to the duodenum is the most effective obesity treatment. Experiments in rats aimed at understanding the mechanisms underlying the efficacy of RYGB have shown that jejuna nutrient delivery is itself a potent inhibitor of food intake. The aim of this study was to generalize these effects from rats to non-human primates. We examined the effects of jejuna infusions of glucose on the food intake and meal patterns of adult male rhesus monkeys. Monkeys received a jejuna infusion of glucose at a rate of 1 kcal per minute (75 kcal/75 min). Infusions were done at the start of a 6-hour daily access to food (mid-day). To further characterize the effects of the jejunal nutrient, we repeated infusions for 5 consecutive days. Similar to finding in the rat, glucose infusions suppressed food intake beyond their caloric load. Meal pattern analysis revealed that glucose infusions significantly reduced intake through changes in meal frequency. Jejunal glucose infusions maintained their efficacy across the 5 consecutive days with no compensatory increase in food intake on the following days. These results demonstrate that nutrients infused directly into the jejunum can significantly decrease food intake by means of decrease meal frequency and suggest that this aspect of the RYGB procedure contributes significantly to the overall efficacy of the surgery. Such findings could further advancements in obesity therapy. Supported by: DK19302.

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