

**Neuropeptide Y is increased in appetite-regulating hypothalamic areas of lactating rats.**

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Neuropeptide Y (NPY), a thirty-six amino acid peptide, is a potent centrally-acting appetite-stimulating agent which is believed to regulate eating behaviour and body weight (Williams *et al.* 1991). Lactation in rodents is associated with increased nutrient requirements which are met by extraordinary increases in food intake (Vernon, 1989). The aim of the present study was to investigate whether hyperphagia in lactating rats is associated with increased hypothalamic NPY levels, as in the case of other hyperphagic states such as starvation and diabetes.

Twenty female Wistar rats, initially matched for age and weight, were studied. The experiment began when the lactating group ( $n$  10) was on average at day 16 of lactation (range, 13–17). The lactating rats' food intake was over 330% that of the controls ( $P < 0.001$ ). Body weight in the lactating group was 22% more than in non-lactating rats ( $P < 0.001$ ); most of this weight gain is known to be due to hypertrophy of the mammary gland. Final plasma insulin was significantly lower in the lactating rats (6.6 (SD 0.6) v. 11.7 (SD 2.1) pmol/l;  $P < 0.05$ ). In lactating and non-lactating rats the plasma glucose (7.1 (SD 0.5) v. 6.6 (SD 0.3) mmol/l) and corticosterone (187 (SD 61) v. 232 (SD 42) pmol/l) levels were comparable (both  $P > 0.05$ ). Four of the eight hypothalamic areas showed significantly increased NPY levels in the lactating rats compared with controls, namely: the arcuate nucleus-median eminence (+41%;  $P < 0.001$ ); the paraventricular nucleus (+35%;  $P < 0.001$ ); the ventromedial nucleus (+66%;  $P = 0.003$ ); the dorsomedial nucleus (+78%;  $P < 0.001$ ). Other hypothalamic regions showed no differences between the two groups.

Increased NPY levels in the arcuate nucleus (its principal hypothalamic site of synthesis) and in the paraventricular and dorsomedial nuclei (NPY-sensitive sites to which the arcuate nucleus projects) suggest increased activity of the NPY-ergic system in lactation. NPY may therefore mediate the markedly increased food intake in lactation.

Vernon, R. G. (1989). *Proceedings of the Nutrition Society* **48**, 23–32.

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