compared to saline injected controls and also completely suppressed the HCG stimulated increase in activity. However, steroidogenesis as measured by testicular and serum androgen concentrations was not suppressed in the presence of α-DFMO. The observed decrease in serum androgen after α-DFMO is not necessarily due to the inhibitor.

In view of the long half-life[19] of polyamines it is not possible to conclude that the depletion of polyamines can allow the expression of more differentiated cell function. Although we did not demonstrate an actual reduction in testicular polyamine concentrations following α-DFMO treatment the data suggest that the stimulation of ODC activity by HCG is not a requirement for androgen production.

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Somatostatin inhibits in vitro release of luteinizing hormone releasing hormone from rat mediobasal hypothalamic slices

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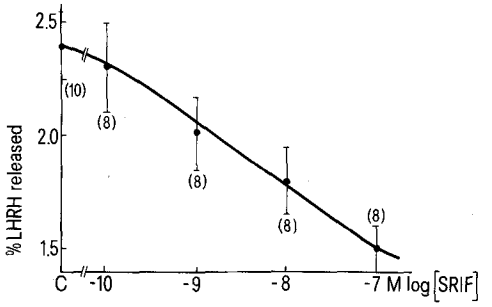
Summary. Somatostatin, in concentrations ranging from 10^{-10} M to 10^{-7} M, induces a dose-dependent inhibition of LHRH release from mediobasal hypothalamic slices incubated in vitro. In contrast, VIP, secretin, glucagon, substance P, neurotensin and arginine-vasotocin do not affect spontaneous release of LHRH.

It has been shown recently that a great number of peptides can be involved in the regulation of pituitary hormone release[2]. It is the case for instance for the known hypothalamic hypophysiotropic hormones such as thyrotropin-releasing hormone (TRH), luteinizing hormone releasing hormone (LHRH) and somatostatin (SRIF) as well as for a variety of peptides isolated both from the brain and the periphery, among them, neurotensin, substance P, secretin and the vasoactive intestinal peptide (VIP)[3]. The aim of the present study was to test whether various neuropeptides can affect luteinizing hormone (LH) secretion by modulating the release of LHRH from mediobasal hypothalamus (MBH).

Materials and methods. Adult male Wistar rats (280–300 g b.wt) were killed by decapitation and the MBH was rapidly dissected on ice. 250 µm thick slices of MBH were cross-cut with a Mc Ilwain tissue chopper and incubated under constant gassing with 95% O_2–5% CO_2 in a modified Locke medium (NaCl 154 (mM); KCl 5.6; $CaCl_2$ 2.2; $MgCl_2$ 1; $NaHCO_3$ 6; glucose 10) buffered to pH 7.2 with 2 mM Hepes (Calbiochem). Bacitracin (2.10^{-5} M, Sigma) was added to prevent degradation of neuropeptides. The experimental procedure included a washing of the slices in cold medium until a clear supernatant was obtained, and a 40-min preincubation step at 37 °C. After the incubation for 10 min, slices were separated from the medium by 2-min centrifugation in an Eppendorf microcentrifuge. The slices and the medium were immediately extracted with 0.1 N HCl; the slices were sonicated for 15 sec and samples were frozen until LHRH was determined. LHRH was measured by radioimmunoassay as previously described[4]. LHRH release was expressed as the percentage of LHRH secreted in the medium over LHRH content in the tissue. Statistical significance was assessed by analysis of variance.

Results and discussion. As shown on the figure, addition of SRIF to the incubation medium induced a dose-dependent inhibition of LHRH release from MBH slices. A significant decrease of LHRH secretion was observed with a concentration of SRIF as low as 10^{-9} M, and a significant inhibition, which represents 60% of the control value, was obtained with 10^{-7} M; half-maximum inhibition was around 4×10^{-9} M. In contrast, under similar experimental conditions, VIP, secretin, glucagon, substance P, neurotensin and arginine-vasotocine (AVT) did not affect spontaneous release of LHRH (table).



Effect of increasing concentrations of SRIF on spontaneous LHRH release from MBH slices. Number of experimental points in each group is given in parentheses. Values are mean ± SEM. LHRH release expressed as percentage of LHRH tissue content against the logarithm of the concentration of SRIF.

SRIF has been shown recently to be involved in a great number of inhibitory effects totally distinct from its action on growth hormone secretion. For instance, SRIF modulated neuronal firing activity in various brain structures[5,6], counteracted the stimulatory effect of VIP on prolactin release from the pituitary[7] and the action of histamine on cyclic AMP accumulation in gastric glands[8]. Moreover, it has been recently reported[9] that intraventricular administration of SRIF in adult ovariectomized female rats was able to reduce plasma concentrations of LH and FSH and that SRIF could also in some instances reduce LH levels in humans[10]. Our results suggest that the possible direct effect of SRIF on gonadotropin secretion takes place at the hypothalamic level to inhibit LHRH release. This hypothalamic site of action for a direct effect of SRIF is substantiated by the fact that SRIF does not seem to act on the pituitary to affect LH and FSH release[11].

The observation that VIP does not affect LHRH release under our experimental conditions is consistent with other data showing that VIP does not interfere with basal or induced-LHRH release by either dopamine or potassium in various in vitro systems[12,13]. This conclusion is further substantiated by the finding that neither secretin nor glucagon, 2 peptides structurally related to VIP, has any effect on the spontaneous LHRH release.

High doses of neurotensin have been shown to inhibit LH release with no effect on FSH[14]. Our results suggest that, in physiological concentrations, neurotensin does not act directly on the release of LHRH from the MBH.

Lack of effect of various neuropeptides on spontaneous LHRH release from MBH

	Control	10^{-10} M	10^{-9} M	10^{-8} M
VIP	2.4±0.2 (6)	2.6±0.3 (7)	2.3±0.3 (8)	2.4±0.4 (9)
Secretin	2.7±0.2 (7)	2.7±0.3 (7)	2.3±0.2 (7)	2.9±0.5 (6)
Glucagon	2.7±0.2 (7)	2.7±0.2 (7)	2.4±0.3 (7)	2.6±0.3 (7)
Substance P	2.7±0.4 (7)	3.1±0.4 (7)	3.4±0.4 (7)	3.3±0.4 (7)
Neurotensin	2.7±0.4 (7)	3.0±0.3 (7)	3.1±0.3 (7)	2.9±0.3 (7)
AVT	3.0±0.4 (8)	3.3±0.6 (8)	3.8±0.5 (8)	2.7±0.4 (8)

Results are expressed as percent of LHRH released in the medium (pg/MBH equivalent) over LHRH content in the tissue (pg/MBH equivalent). The data are mean±SEM. Number of experimental points in parentheses. The results are a representative example of 1 of 4 different experiments. Data from the other experiments are similar and give no significant differences between groups by analysis of variance.

The lack of action of substance P at the hypothalamic level can be correlated with the observation that the inhibitory effect of substance P on gonadotropin secretion reported in vivo[15] can take place directly at the pituitary level[16]. The ineffectiveness of AVT in affecting LHRH secretion is in agreement with the hypothesis of Pavel et al.[17] suggesting that AVT acts on LHRH through a serotoninergic system. Since we previously reported that serotonin can inhibit LHRH release from the MBH[18], further studies are necessary to confirm this possibility.

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Luteinizing hormone content of the pars tuberalis of the hypophysis of neonatally androgenized female rats[1]

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Summary. The immunoreactive LH content of the pars tuberalis of neonatally androgenized female rats was studied and found to be significantly lower than that of control females at oestrus or of control males. It is concluded that the rat pars tuberalis does secrete LH and that this secretory activity is diminished by neonatal androgenization in a manner that differs from that reported for the LH secretion in the pars distalis.

Several types of secretory cells have been described in the pars tuberalis of the hypophysis[3,4]. The fine structure of one of these cell types is similar to that of gonadotropes from the pars distalis of the hypophysis[4]. Immunocytochemical studies have shown that in the rat there is only cell-type common to both the pars distalis and the pars tuberalis; that the cells secreting luteinizing hormone (LH)[5]. It has also been reported that the immunoreactive LH cells of the pars tuberalis and those of the pars distalis undergo the same modifications after castration or estrogen treatment[6]. The latter results could be taken as an indication that the LH cells of the pars tuberalis could be altered by the hormonal milieu of the animal. In order to investigate this possibility, the LH content of the pars tuberalis of adult female rats that had been neonatally masculinized during the critical period of sexual differentiation of the brain, and that of intact female at oestrus and intact males, were determined.

Female Wistar Holzman rats were injected at day 5 of age with 1.25 mg of testosterone propionate (TP) (androgenized rats) or oil (controls). TP was dissolved in vegetable oil and