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Hypothalamic polypeptides and analogues on corticotrophin production by rat adenohypophysial tissue *in vitro*

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Corticotrophin releasing hormone (CRH), the hypothalamic releasing factor which controls the secretion of corticotrophin (ACTH) by the adenohypophysis, appears to be a polypeptide similar to but not identical with vasopressin. We have attempted to obtain more information about its precise nature by studying the corticotrophin releasing activity of hypothalamic polypeptides and their analogues. Their ability to stimulate corticotrophin synthesis and release by pituitary tissue *in vitro* was assessed. Segments of rat adenohypophysial tissue were incubated in medium containing the putative releasing hormone and the ACTH contents of the tissue and the incubation medium were then determined using a modification (Alaghband-Zadeh, Daly, Bitensky & Chayen, 1974) of the sensitive and precise cytochemical assay method (Chayen, Loveridge & Daly, 1972). Pressinoic acid, its amide, oxytocin, 8-alanine vasopressin, and the tail fragment (proline-arginine-glycinamide) of arginine vasopressin were ineffective and the desglycinamide derivatives of lysine- and arginine vasopressin were only slightly effective in stimulating ACTH synthesis and release. Arginine- and lysine vasopressin caused dose related increases in ACTH production but both were less active than oxypressin and arginine vasotocin. Arginine vasotocin was the most active compound studied and, in small doses which alone did not influence ACTH production, also markedly potentiated the action of hypothalamic extract.

The corticotrophin releasing activity of the polypeptides was also tested in pentobarbitone/chlorpromazine treated rats (de Wied, 1967) and, although the method is considerably less sensitive than the *in vitro* technique, the results were similar. Comparison of the corticotrophin releasing potencies of such compounds with hypothalamic extract, using different assay systems, may lead to a clearer understanding of the nature of the corticotrophin releasing hormone(s).

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