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JOURNAL ARTICLE

Pituitary adenylate cyclase activating polypeptide (PACAP) can cross the vascular component of the blood-testis barrier in the mouse

W. A. Banks, A. J. Kastin, G. Komaki and A. Arimura
Veterans Affairs Medical Center, New Orleans, Louisiana 70146.

Pituitary adenylate cyclase activating polypeptide (PACAP), present in highest concentrations in the hypothalamus and testes, affects the release of LH, FSH, and prolactin, as well as Sertoli cell function. We examined the ability of the 38-amino acid form of PACAP labeled with 125I (I-P38) to cross the vascular component of the blood-testis barrier. The unidirectional influx constant (Ki) was 4.23 x 10(-3) ml/g-minute, which is about 5 times faster than the entry of LH and about 17 times faster than that of serum albumin. Entry occurred in part by a saturable transport system, with 20 micrograms/mouse of unlabeled P38 inhibiting transport by 40%. An analog of peptide T, which like PACAP is related to vasoactive intestinal polypeptide and has been found to have its own saturable transport system into the brain, did not alter the uptake of I-P38 by the testes. A dose of 10 micrograms/mouse, but not of 20 micrograms/mouse, was associated with a contraction of the vascular space of the testes. HPLC confirmed that a small but persistent percentage of the radioactivity recovered from the testes represented intact I-P38. These results suggest that circulating P38 may contribute to the testicular pool of PACAP, which may play an active role in the function of the testes.