

Distribution and pituitary neurohormone nature of urocortin in *Xenopus laevis*

Calle M, Wang L, Kozicz T, Veening J*, Barendregt H**, Roubos E

Dept Cellular Animal Physiology, *Dept Anatomy, Nijmegen Institute for Neurosciences,

**Dept Computational Sciences; University of Nijmegen, Nijmegen

We have tested the hypothesis that urocortin (Ucn), a member of the corticotropin-releasing hormone (CRH) peptide family, has both neurotransmitter/neuromodulator and neurohormone actions, by studying with immunocytochemistry at both the light and electron microscope level, the presence of Ucn in the brain and in the pituitary gland of the amphibian *Xenopus laevis*, and comparing this presence with that of CRH and of the classical amphibian neurohormones released from the pituitary gland, mesotocin and vasotocin.

We show that in the brain, the main site of Ucn is the Edinger-Westphal nucleus. Ucn furthermore occurs in the ventromedial thalamic nucleus, magnocellular nucleus, anterior preoptic area, suprachiasmatic nucleus, paraventricular nucleus and posterior tubercle. CRH was found in the medial olfactory tract, postolfactory eminence, striatum, nucleus accumbens, ventromedial and anterior thalamic nucleus, magnocellular nucleus, anterior preoptic area, paraventricular nucleus, posterior tubercle and tectum mesencephali. These data indicate that both CRH and Ucn have main actions in the *Xenopus* brain, acting as a neurotransmitter and/or neuromodulator.

CRH, Ucn, mesotocin and vasotocin were all found in the internal and external part of the median eminence and in the neural lobe of the pituitary gland. In the neural lobe, CRH was extremely scarce, being present only in a few, scattered axons. In contrast, fibers immunoreactive against Ucn, mesotocin and vasotocin occurred throughout the lobe, and were studied at the ultrastructural level. These observations strongly indicate that Ucn is released from neurohaemal axon terminals into the blood.

We conclude that in *Xenopus laevis*, Ucn, does not only act as a neurotransmitter/neuromodulator, but also, like CRH, vasotocin and mesotocin, as a neurohormone. Moreover, we suggest that these peptides may be involved in the neurohormonal control of the melanotrope cells in the pituitary intermediate lobe, as they all stimulate the release of α MSH.

Marinella Calle, Dept. of Cellular Animal Physiology, University of Nijmegen, Toernooiveld 1, 6525 ED, Nijmegen, e-mail mcalle@sci.kun.nl

Poster session: Neuroscience 1