

516 MEMBRANE PROPERTIES OF THE HYPOTHALAMIC PARAVENTRICULAR NUCLEUS NEURONS PROJECTING TO THE SPINAL CORD IN THE RAT.

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Electrophysiological membrane properties of paraventricular nucleus (PVN) neurons classified based on immunohistochemical studies with antibodies directed against to neurophysin or related peptides have been studied extensively, however, the properties of PVN neurons classified functionally based on the projecting sites have not been reported. Thus, we conducted to examine in vitro characteristic electrophysiological properties of preautonomic parvocellular PVN neurons projecting to the spinal cord. A suspension of fluorescent carbocyanine dye DiI was injected into the cervical spinal cord in Wistar rat pups (3 days old). Seven to 16 days later, hypothalamic slices were made from pups. The neurons labeled DiI showed low threshold potential in the whole cell patch clamp method with current clamp mode. Because PVN parvocellular neurons have been reported to show low threshold potential (Dudek, 1991), it is suggested that PVN neuron projecting to spinal cord has electrophysiological membrane property similar to that of the parvocellular neuron.

517 EFFECTS OF ARGININE VASOTOCIN ON REPRODUCTIVE BEHAVIOR IN THE NEWT, *CYNOPS PYRRHOASTER*

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In the breeding season, male red-bellied newts, *Cynops pyrrhogaster*, attract their female partner by sending a pheromone through the water toward the female's snout by vigorously vibrating their tails. Following this behavior, the male parades in front of the female and deposits spermatophores. In the sexually mature male newts, injection of arginine vasotocin (AVT) induced the deposition of spermatophores. The neurohypophyseal peptide seems to induce the discharge of a female-attracting pheromone (sodefrin) from abdominal gland, judging from the decrease of the pheromone content in the abdominal gland after the injection. AVT enhanced both the incidence and frequency of courtship behavior in androgen-primed castrated newts. AVT induced spermatophore deposition in sexually developed intact males exhibiting no courtship behavior. These results suggest that AVT is involved in a series of reproductive events in the male newts.

518 ER β MRNA EXPRESSION IN THE DEVELOPING RAT FOREBRAIN

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Estrogen is known to play crucial physiological roles in the development and differentiation of the nervous system, which include the sexual differentiation of the brain and a variety of the reproductive functions. The estrogen receptor is a member of the steroid receptor superfamily, i.e. ligand-activated transcription factors. Recently, estrogen receptor β (ER β) has been cloned and sequenced as a novel steroid receptor that is expressed in the rat prostate and ovary. ER α and ER β are expressed in a large degree of overlaps in the rat tissue. We here report distribution pattern of the ER β molecules in the developing rat forebrain using non-isotopic *in situ* hybridization histochemistry. Male and female rats were perfused on the postnatal days 7, 14, 21 or 35. ER β mRNA were detected by using a cocktail of two digoxigenin-labeled cRNA probes, i.e. complementary to 56-610 and to 1809-2094 nt. We detected the ER β mRNA in the regions such as the lateral septum, the anteroventral periventricular nucleus, the supraoptic nucleus, the paraventricular nucleus, the anterior part of the ventromedial hypothalamic nucleus, and the tuberomammillary nucleus. Sex differences in ER β mRNA expression was also analyzed in the developing rat brain.