

МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

INVESTIGATION OF OREXYN-IMMUNOPOSITIVE STRUCTURES
OF OLFATORY EPITHELIUM RAT EMBRYONS

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Orexins (A and B) were discovered as peptides of the hypothalamus, formed from a precursor molecule – prepro-orexin – in the neurons of the perifornical area. Their receptors OX1R and OX2R are expressed in various brain regions, which indicates the participation of orexins in the regulation of various organism functions. It has now been shown that prepro-orexin is also expressed in peripheral tissues (testes, ovaries, guts), as well as in bipolar cells of the olfactory epithelium. The aim of this work was to evaluate the formation of orexin-immunopositive cells and the expression of their receptors level in the olfactory lining and in the hypothalamus in rat embryos (E18). Real-time PCR results demonstrate expression of prepro-orexin and OX2R in E18 rats both in the tissue of the rostral region of the head, where the olfactory sinuses are located, and in the tissue of the developing hypothalamus. Moreover, the expression of OX1R in both regions was unstable: either was absent or was detected at a very low level. An analysis of immunohistochemical reactions at the frontal sections indicates intense immunoreactivity to orexin-A

and B in well-formed bipolar cells of the olfactory lining, as well as cells localized in the submucosa. In the developing rat hypothalamus on E18, orexin-immunopositive cells of small sizes with a narrow halo of an immunopositive substance located mainly on the periphery of the pericarion and in smaller quantities in the processes were detected. The data obtained indicate that in the olfactory lining orexin-immunopositive cells develop and mature earlier than in the hypothalamus. Considering the data on the existence of direct projections from the olfactory region to the lateral hypothalamus, as well as on the morphogenetic role of orexins in embryogenesis, the problem of the influence of the receptor link of the orexinergic system of the olfactory epithelium on the development of the hypothalamic is discussed.

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