
МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

**MELANOCORTINE SYSTEM OF VERBINAL BRAIN: PHYSIOLOGICAL
MECHANISMS AND PROTECTIVE PROPERTIES**

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In the brain of vertebrates, the structure of proopiomelanocortin (POMC), the precursor of melanocortins (alpha-, beta-, gamma-MSH and ACTH), is rather conservative. In mammalian brains, POMC expression occurs in neurons of the arcuate nucleus of the hypothalamus (ARC) and in nucleus tractus solitarius (NTS). Projections of POMC-neurons were detected in various parts of the brain, which indicates the participation of melanocortins in the regulation of various functions. The functional role of melanocortins in the brain is considered in connection with their interaction with melanocortin receptors 3 and 4 (MC3R and MC4R), which are best studied in connection with their participation in the regulation of food intake and energy balance of the body. A change in the MC3R and MC4R expression is noted in various metabolic disorders. Recently, there has been evidence of expression in the brain of other types of receptors, in particular MC1R, the role of which may be associated with the protective

properties of melanocortins in inflammatory processes. We conducted a study on C57Bl/6J mice. Real-time PCR results indicate the expression of the *Mc1r* gene in the hypothalamus. The results of double fluorescence immunolabeling and confocal microscopy demonstrate MC1R in neurons of the hypothalamus of various er-gism, in particular in the ARC POMC-neurons themselves, which indicates its role as an autoreceptor. An increase in the *Mc1r* gene expression in the hypothalamus is observed together with an increase in the *Pomc* gene expression, in obesity induced by high-calorie diet. The results demonstrate the protective properties of melanocortins, in particular, realized through MC1R-mediated mechanisms are discussed.

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