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Immunohistochemical Detection of GABA and α1 Subunits of the $GABA_A$ Receptor in Cells of the Subventricular Zone of the Rat's Brain in the Neonatal Period

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The aim of this work was to identify by immunocytochemical methods GABA and the α1 subunit of the $GABA_A$ receptor in the neonatal period of development (5 and 10 postnatal days) in rats. The study showed that in rats in the subventricular zone (SVZ) in the neonatal period, as well as in the SVZ of the adult brain, all types of progenitor cells are present. A significant part of them (30%) differentiate according to the neuronal type, representing migrating adolescent neuroblasts (type A), the number of which remains constant throughout the neonatal period. Young neuroblasts and some astrocyte-like stem cells are immunopositive for GABA; the number of such cells is about 40% and remains constant throughout the neonatal period. It was revealed that the overwhelming majority of the SVZ cells, which are represented by young neuroblasts (type A), astrocyte-like stem cells (type B) and part of transient cells (type C) express $GABA_A$, a receptor containing the α1 subunit, the amount of which is maintained during the neonatal period. The presence of GABAα1 receptors in the overwhelming number of SVZ cells may indicate that GABAergic signaling is possible and that GABA can affect the behavior of different type SVZ cells.

Keywords: subventricular zone, neuronal stem cells, GABA, $GABA_A$α1, neonatal period