

Abstract

Allopregnanolone is a typical representative of neurosteroids. It can be formed by de novo synthesis directly in the CNS or as a metabolite of progesterone. It is an allosteric modulator of GABA_A receptors, due to which it has anxiolytic, sedative and anticonvulsant effects. This work investigates the effect of allopregnanolone (ALLO) on the locomotor skills of laboratory rat pups. The results will serve as a reference study for the work of Tereza Košťálová (2020), who investigated the newly discovered neuroactive steroid pregnanolone pyroglutamate (PPG). This exogenous steroid, synthesized at the Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic (IOCB PRAGUE), offers potential use in the treatment of epilepsy. Our goal was to perform the same battery of motor tests after the application of allopregnanolone as a comparison, to what extent and in what way these two substances acutely affect the motor performance of the rat pup. The theoretical part of the thesis describes the physiological mechanisms of neurosteroids in the human body and their potential in the treatment of serious diseases, especially epilepsy. Next, the ontogenetic development of the rat's motor skills is described and compared to humans. The methodology describes the selection and method of performing motor tests. In a special section, the results of testing are presented, which demonstrated more pronounced side effects of ALLO on the motor skills of young rats compared to PPG, which thus appears to be a more suitable active substance in the treatment of childhood epilepsy.