Abstract

Dopamin is one of neurotransmitters of the mammal brain that plays an important role in many functions of the central nervous system. It participates in a control of motoric functions, processes of motivation and reward and cognitive functions. A disorder of the dopaminergic system plays a role in pathophysiology of many brain diseases, for example shizophrenia, extrapyramidal and dependency diseases.

Research of behavior especially space orientation is a common used access to study the nervous system and a whole organism. Some kinds of space behavior are consider as a model of higher nervous functions in humans.

In this graduation thesis I focused on testing of the influence of a system blockade of dopaminergic D1-like and D2-like receptors by specific antagonists over rats' behavior in an active allothetic place avoidance (AAPA) and in a Morris water maze (MWM).

Antagonists of dopaminergic receptors (a D1-like antagonist SCH23390 and a D2-like antagonist sulpiride) were administered before behavior testing and then it was analysed.

Results revealed that antagonists of dopaminergic receptors affect changes in behavior and locomotion. These changes differed by the type of the task and the antagonist.

SCH23390 impairs spatial orientation in both doses (0,02 and 0,05 mg/kg) in AAPA. In MWM the higher dose impaired procedural aspects and the lower dose impaired neither procedural nor cognitive functions. Sulpiride impaired locomotion and space orientation in the highest dose. This dose also impaired cognitive functions in MWM. None of studied doses impaired procedural aspects of behaviour in MWM.

Results of this gradual thesis indicate that both dopaminergic receptor subsystems take a part in regulation of locomotor and space behavior in both tasks. It exists diversity in this modulation in dependence on the type of the task and on the subtype of receptors. These results can be a base for further study of the role of dopaminergic neurotransmitter subsystems in space cognition by use of local microapplications of receptor ligands to selected brain areas and circuits.