

# Abstract

This thesis focuses on the extracellular recording of neuronal activity, especially in hippocampus. The Introduction chapter is divided into two sections. The first section focuses on the physical nature of the extracellular signal generated by neuronal activity and on its recording. Special attention is given to the offline processing techniques including spike detection and cluster analysis. Commonly used methods of cluster analysis are presented and their principles are briefly explained to show the limitations of these methods.

The second section of the Introduction chapter contains description of hippocampus, which is the structure of interest in conducted experiments. The section includes a description of anatomy and physiology of the hippocampus and special aspects of recording in this structure. The role of the NMDA receptor blockers in hippocampal neuronal activity is presented as well.

The experimental part of the thesis describes all the steps of extracellular recordings of the neuronal activity in hippocampus. Experiments were made with primary intention of achieving adequate practice through the recording process to form a solid base for further research in the department. The activity of hippocampal neurones was recorded in urethane-anesthetized rats before and after the application of a low dose of the NMDA receptor blocker MK-801 (dizocilpine). This drug is used for modeling schizophrenic-like behavior in animals.

Results of the experiments show a possible influence of MK-801 on the overall hippocampal activity as well as on the activity of individual units. Effect on the correlation of activity of individual neurones was also evaluated and showed a decrease of correlation in one session. Recordings were made on a small number of subjects and the results have to be confirmed in following experiments.