

NMDA (N-methyl-D-aspartate) receptors are glutamate-gated ion channels, which are located in the central nervous system. They permit excitatory neurotransmission and are crucial for synaptic plasticity and other functions, but on the other hand for excitotoxicity. By the administration of NMDA receptor antagonists it would be possible to restrict the consequences of excessive glutamate exposure. However, the use of many of these drugs is made impossible by their serious behavioral side effects. NMDA receptor antagonists can influence cognitive and motor functions in laboratory animals and also in humans, and can cause temporary psychosis. These negative behavioral effects are most pronounced in the case of non-competitive antagonists. Conversely, the behavioral side effects of uncompetitive antagonists, antagonists selective for NMDA receptors containing a NR2B subunit or NMDA receptor glycine binding site antagonists are milder.

From a clinical point of view, some other behavioral effects of NMDA receptor antagonists are beneficial. These effects include anxiolytic and antidepressant effects and also an alleviation of cognitive deficit and behavioral aberration in Alzheimer's disease through the administration of memantine.

The aim of this thesis is to summarize the main behavioral effects known to us of individual pharmacological groups of NMDA receptor antagonists under experimental conditions, including in regard to their possible utilization.