Glutamate is the major excitatory neurotransmitter in the mammalian central nervous system and its excitatory role is mediated trough activation of glutamatergic ionotropic receptors which are responsible for synaptic transmission and play an important role in learning and memory formation. However, excessive exposure to glutamate can result in excitotoxicity which may lead to cell death. The following text is focused on one group of glutamate receptors - NMDA receptors. The study of the receptors is in the centre of current neurobiology research because there is a series of experimental and clinical evidences that they directly participate in the development of serious diseases such as Alzheimer's disease, Parkinson's disease, Huntington's disease and may cause neuronal damage in trauma, hypoxia and embolia. The aim of this bachelor thesis is to give a brief overview of current knowledge about the structure and function of NMDA receptors and mechanisms of their activation which leads to excitotoxicity and related neuroprotection.