ABSTRACT

Serine racemase is a pyridoxal-5´-phosphate dependent enzyme that converts L-serine to D-serine. D-serine is a recognized physiological co-agonist of *N*-methyl-D-aspartate type of glutamate receptors – key receptors that participate in the neurotransmission in the mammalian brain. Dysfunction of these receptors has been implicated in several neuropathologies, including schizophrenia, brain ischemia, neurodegenerative disorders and epilepsy. Serine racemase is thus a promising pharmaceutical target in these diseases. In this study, three anti-human serine racemase monoclonal antibodies were characterized and the best one was used for the Western blot detection of the enzyme in resected human epileptic tissues. For better interpretation of the results, accuracy of the tissue processing, the protein concentration determination and the Western blot quantification were verified. Finally, the activity of human serine racemase was determined with the L-serine-*O*-sulfate, the substrate with the highest-affinity to this enzyme. (Thesis in Czech)