Only recently, the presence of D-amino acids in the mammalian central nervous system has been confirmed and their biological functions revealed. D-serine and D-aspartate, the best described D-amino acids, have been found to be the co-agonists activating NMDA receptors. In this way D-serine and D-aspartate, among other functions, affect synaptic plasticity which is the basic cellular mechanism for learning and memory. Pathological changes in the levels of these D-amino acids and their metabolical enzymes can lead to the development of epilepsy, schizophrenia, and neurodegenerative diseases such as amyotrophic lateral sclerosis, Huntington disease or Alzheimer disease. The main role in the D-serine synthesis is played by serin racemase while D-aspartate is synthetised with the help of aspartate racemase. The key enzymes for the degradation of D-amino acids are DAAO (D-amino acid oxidase) and DAspO (D-aspartate oxidase). This thesis presents an overview of available knowledge on the individual amino acids and their respective metabolical enzymes in the mammalian central nervous system, i.e. their distribution, cell localizations, metabolism and functions. Furthermore, the emphasis is put on the possibilities of inhibition and activation of the metabolical enzymes and their importance with respect to pathogenesis, and the posibility of a therapy affecting the enzymes in the case of these diseases.