THE GENETIC LINK BETWEEN PARKINSON`S DISEASE AND THE KYNURENINE PATHWAY

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BACKGROUND: There are substantial evidences that the kynurenine pathway (KP) plays a role in the normal physiology of the brain and is involved in the pathology of neurodegenerative disorders for example Huntington's disease and Parkinson's disease (PD). The kynurenine pathway is a metabolic route leading to the production of nicotinamide adenine dinucleotide from the degradation of the essential amino acid tryptophan.
OBJECTIVE: Therefore, we decided to investigate the potential roles in PD of single nucleotide polymorphisms (SNPs) from one of the key enzymes of the KP, kynurenine 3-monooxygenase (KMO). Inhibition of this enzyme promotes a rise in the level of the neuroprotective kynurenic acid.
METHODS: We involved 105 unrelated, clinically definitive PD patients and 131 healthy controls to investigate the possible effects of the different alleles of KMO. For the allele discrimination, Fluorescently labelled Taqman probes were used.
RESULTS: The investigated four SNPs were not associated with PD or influenced the age at onset of Parkinson's disease.
CONCLUSIONS: This is the first investigation to examine the genetic background behind the biochemical alterations of the kynurenine pathway in PD, directing the attention to this previously unexamed field. However, the investigated SNPs do not appear to influence the function of the KMO gene and probably do not contain binding sites for regulatory proteins of relevance in PD. The genetic link between the KP and PD is still missing.
The study was supported by the Hungarian Brain Research Program (Grant: KTIA-13-NAP-A-II/17; KTIA-13-NAP-A-III/9) and the TÁMOP Program (TÁMOP-4.2.2.A-11/1/KONV-2012-0052).