SLC1A2 Gene Polymorphism Influences Methamphetamine-Induced Psychosis

ABSTRACT

SLC1A2 is a gene encoded for the excitatory amino acid transporter 2 which is responsible for glutamate reuptake from the synaptic cleft in the central nervous system. Recent studies have suggested that polymorphisms on glutamate transporters can affect drug dependence, leading to the development of neurological diseases and psychiatric disorders. Our study investigated the association of rs4755404 single nucleotide polymorphism (SNP) of the SLC1A2 gene with methamphetamine (METH) dependence and METH-induced psychosis and mania in a Malaysian population. The rs4755404 gene polymorphism was genotyped in METH-dependent male subjects (n = 285) and male control subjects (n = 251). The subjects consisted of the four ethnic groups in Malaysia (Malay, Chinese, Kadazan-Dusun, and Bajau). Interestingly, there was a significant association between rs4755404 polymorphism and METH-induced psychosis in the pooled METH-dependent subjects in terms of genotype frequency ($p = 0.041$). However, there was no significant association between rs4755404 polymorphism and METH dependence. Also, the rs455404 polymorphism was not significantly associated with METH-induced mania for both genotype frequencies and allele frequencies in the METH-dependent subjects, regardless of stratification into the different ethnicities. Our study suggests that the SLC1A2 rs4755404 gene polymorphism confers some susceptibility to METH-induced psychosis, especially for those who carry the GG homozygous genotype.