Association between dopamine D2 receptor gene polymorphisms and the risk of heroin dependence

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ABSTRACT. Heroin dependence is a chronic relapsing brain disease. Researchers have reported that the dopamine D2 receptor (DRD2) is involved in the development of opiate dependence. To identify markers that contribute to the genetic susceptibility to heroin addiction, we examined the potential association between heroin dependence and six polymorphisms of the DRD2 gene using the MassARRAY system. Three hundred and thirty-four patients with heroin dependence and 299 healthy controls participated in the research. Compared with the healthy controls, heroin-dependent patients had a significantly lower frequency of the AA genotype of rs6275 (P = 0.038), and a significantly higher frequency of the C allele of rs1125394 (P = 0.030). Statistically significant differences were observed in the genotypic and allelic frequencies of rs17115583 (P = 0.005 and P = 0.001, respectively) and...
rs1079597 (P = 0.03 and P = 0.02, respectively). Haplotype analysis revealed that the T-G-A (block 1) haplotype of the DRD2 gene conferred a protective effect (P = 0.020). These findings point to a role for DRD2 polymorphism in heroin dependence in the Chinese Han population, and may be informative for future genetic or neurobiological studies on heroin dependence.

**Key words:** Heroin dependence; Dopamine D2 receptor; Single nucleotide polymorphism; Chinese Han population