ABSTRACT
TaqIA Polymorphism of DRD2 gene and Personality 
as Determinant of Opioid Addiction and High Performance Behavior in Minangkabau Tribe 
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Association of A1 allele of DRD2 gene with alcoholism was detected by Blum et al in 1990, from which a term of Reward Deficiency Syndrome (RDS) was proposed as the genetic base of drug abuse. US National Institute on Drug Abuse in 1999 hypothesized that RDS may have a role as determinant of a spectrum of adventurism trait which included drug abuse. Goleman (2000) proposed a high Novelty seeking (NS) temperamental trait as the hallmark of this behavioral spectrum with manifestations ranges from maladaptive deviant behavior such as drug abuse and highly adaptive behavior such as high performance. Cloninger and Svrakic (2000) proposed that this opposite behavior in individuals with similar high NS trait were caused by opposite personality. US National Household Survey have discovered in 1992 that the majority of population (63%) in environment with similar substance availability never abuse drugs.

Based on these findings, a research was conducted on 15 opioid addicts, 15 high performance individuals, 17 low performance habitual smokers and 13 low performance non smokers, from the same Minangkabau ethnic, neighbourhood and substance availability. NS trait level was determined using Temperament Character Inventory. Genotype of DRD2 gene was determined using restriction enzyme digest on gel electrophoreses of PCR product. Personality of opioid addicts and high performance individuals was determined using Minnesota Multiphasic Personality Inventory.

Using t-test on the results, it was determined that NS trait level of opioid addicts (18.07, SD 1.16) is not significantly different from high performance individuals (17.67, SD 1.06), but significantly higher than low performance habitual smokers (15.47, SD 2.10) and low performance non smokers (12.62, SD 1.45). NS trait level of low performance habitual smokers is significantly higher than low performance non smokers. Maladaptive deviant behavior responses was detected in opioid addicts personality profile, and highly adaptive behavior responses in high performance individuals.

Using Fisher statistic, no significant differences in the frequency of A1A1 genotype was detected between opioid addicts (53.33%), high performance individuals (53.33%), and low performance habitual smokers (76.41%). Non smoking low performance individuals do not have A1A1 genotype. Although significant differences in genotype exposure profile was detected between all subjects (F1(x)=22.90, p=0.001), the exposure of A1 allele of DRD2 gene, both as A1A1 and A1A2 genotype, are very high in research subject (73.33%).

It can be concluded that A1A1 genotype of DRD2 gene is the determinant of adventurism spectrum with manifestation ranges from opioid addiction and high performance with smoking habit in between. It also can be deducted that inherent factors of genetic, temperament, and personality are more dominant than external environmental factors in the genesis of opioid addiction and high performance behavior.

Key words: DRD2 gene, adventurism, temperament, personality, behavior