ABSTRACT

The Effect of Nikotine and Cigarette Smoke Extract (CSE) on CRF and POMC mRNA Expression in Mice Brain in Reward Conditions

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Drug addiction is a chronically relapsing disorder caused by chronic exposure of an addictive substance. Nicotine is an addictive stimulant found in cigarettes as well as other forms of tobacco. Nicotine can increase dopamine in the nucleus accumbens (NAcc) that produced the reward effect.This study aim to determine effect nicotine and cigarette smoke extract (CSE) on the expression of mRNA corticotropin-releasing factor (CRF) and pro-opiomelanocortin (POMC) when mice in reward conditions. In this study, mice were divided into the nicotine group (0.5mg/kg), the CSE group (0.5mg/kg), and the control group (saline 1ml/kg). The reward effect was observed using the conditioned place preference (CPP). Expression of mRNA CRF and POMC measurement on the midbrain and ventral striatum areas using the reverse transcription polymerase chain reaction (RT-PCR). The results showed that the nicotine group dose 0.5 mg/kg and the CSE group 0.5 mg/kg was seen to spend more time in the drug-paired chamber compared to the control group. Based on these results nicotine group and CSE group had reward effect. Molecular measurements on these reward conditions indicated that administration of nicotine 0.5 mg/kg and CSE 0.5 mg/kg could not increase expression of mRNA CRF and POMC in the midbrain and ventral striatum.

Keyword : nicotine, cigarette smoke extract, conditioned place preference, CRF, POMC