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Gene Distribution of CB1 Receptor rs2023239 in Thailand Cannabis Patients

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Abstract : Introduction: Cannabis is a drug to treat patients with many diseases such as Multiple sclerosis, Alzheimer's disease, and Epilepsy, where theycontain many active compounds such as delta-9 tetrahydrocannabinol (THC) and cannabidiol (CBD). Especially, THC is the primary psychoactive ingredient in cannabis and binds to cannabinoid 1 (CB1) receptors. Moreover, CB1 is located on the neocortex, hippocampus, basal ganglia, cerebellum, and brainstem. In previous study, we found the association between the variant of CB1recptors gene (rs2023239) and decreased effect of nicotine reinforcement in patients. However, there are no data describing whether the distribution of CB1 receptor gene is a genetic marker for Thai patients who are treated with cannabis. Objective: Thus, the aim of this study we want to investigate the frequency of the CB1 receptor gene in Thai patients. Materials and Methods: All of sixty Thai patients received the medical cannabis for treatment who were recruited in this study. DNA will be extracted from EDTA whole blood by Genomic DNA Mini Kit. The genotyping of CNR1 gene (rs 2023239) was genotyped by the TaqMan real time PCR assay (ABI, Foster City, CA, USA).and using the real-time PCR ViiA7 (ABI, Foster City, CA, USA). Results: We found thirty-eight (63.3%) Thai patients were female, and twenty-two (36.70%) were male in this study with median age of 45.8 (range19 – 87) years. Especially, thirty-two (53.30%) medical cannabis tolerant controls were female (55%) and median age of52.1 (range 27 – 79) years. The most adverse effects for medical cannabis treatment was tachycardia. Furthermore, the number of rs 2023239 (TT) carriers was 26 of 27 (96.29%) in medical cannabis-induced adverse effects and 32 of 33 (96.96%) in tolerant controls. Additionally, rs 2023239 (CT) variant was found just only one of twenty-seven (3.7%) in medical cannabis-induced adverse effects and 1 of 33 (3.03%) in tolerant controls. Conclusions: The distribution of genetic variant in CNR1 gene might serve as a pharmacogenetics markers for screening before initiating the therapy with medical cannabis in Thai patients.

Keywords : cannabis, pharmacogenetics, CNR1 gene, thai patient
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