Allele Frequency of HLA-DRB1* in Thai Population to Predict Factor for Severity of COVID-19 Infection

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Abstract : Introduction:SARsCOVID-19 is rapidly spreading, and some people may exhibit severe symptoms. Mortality rate of 2.0–3.0% with COVID-19 infection atworldwide. Human leukocyte antigen (HLA), located on chromosome 6, consist of HLA class I and class II. HLA are used by the immune system to attach self-antigens. Previous studies, HLA-DRB1*01:01,HLA-DRB1*12:01and HLA-DRB1*14:04 were, showed significant difference with severe COVID-19 in the Chinese population by p-value < 0.05. Objective: We investigated the prevalence of HLA-DRB1 alleles associated with severe COVID-19 in Thai population. Materials and Methods:200 DNA samples were isolated from EDTA blood using the MagNAprue Compact Nucleic Acid Isolation kits.HLA-DRB1alleles were genotyped using sequence-specific oligonucleotides (PCR-SSOs). Results:The frequency of HLA-DRB1 alleles in Thai population wereHLA-DRB1*12:02 (15.75%), HLA-DRB1*15:02 (14.50%), HLA-DRB1*09:01 (11.50%), HLA-DRB1*07:01 (9.50%), HLA-DRB1*03:01,HLA-DRB1*05:01 (5.75%), HLA-DRB1*14:01 (5.50%), HLA-DRB1*16:02 (4.50%), HLA-DRB1*04:05 (4.00%), HLA-DRB1*14:03 (3.25%), HLA-DRB1*10:01 (2.25%) and HLA-DRB1*13:02 (2.00%). Particularly, HLA-DRB1*12:02 allele was the highest allele frequency presented in the four regions groups of Thai population. Furthermore, the HLA-DRB1* alleles associated with severe COVID-19, which consists ofHLA-DRB1*14:04(2.00 %) and HLA-DRB1*12:01(0.50%) in Thai population, whereas HLA-DRB1*01:01 allele was not found in this population. HLA-DRB1*14:04 and HLA-DRB1*12:01alleles were similarly distributed in four regions populations in Thailand (p-value > 0.05). The alleles frequencies of HLA-DRB1*14:04 and HLA-DRB1*12:01, which associated with severe COVID-19, had no significant differences between Thai population, South China population, South Africa population, and South Koreapopulation (p-value > 0.05). Conclusions: Particularly, this study has focused on allele frequency of HLA-DRB1*14:04in a healthy Thai population to evaluating their impact on the severe COVID-19. Furthermore, our research needs to be done in larger numbers of Thai patients.