Impact of HLA-C*03:04 Allele Frequency Screening Test in Preventing Dapsone-induced SCARs in Thais

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Abstract : Introduction: Dapsone is an anti-inflammatory and antibiotic drug that was widely used for the treatment of leprosy, acne fulminans, and dermatitis herpetiformis (DH). However, dapsone is the main cause that triggers severe cutaneous adverse reactions (SCARs), with a possibility of 0.4 to 3.6% of patients after initiating treatment. In fact, the mortality rate of dapsone-induced SCARs is approximately 9.9%. In previous studies, HLA-B*13:01 was strongly associated with dapsone-induced SCARs in Han Chinese, Thais, and Koreans. Nevertheless, the distribution of HLA-B*13:01 marker in each population might differ. Moreover, there were found that the association between HLA-C*03:04 and dapsone hypersensitivity syndrome in Han Chinese leprosy patients by OR = 9.00 and p-value = 2.23×10^{-19}. Objective: The aim of this study was to investigate the distribution of HLA-C* 03:04 in Thailand's healthy population. Method: A total of 350 participants were HLA-C genotyping used sequence-specific oligonucleotides (PCR-SSOs). This study was approved by the Ethics Committee of Rangsit University Result : The most frequency of HLA -C alleles in Thais, consist of HLA -C* 01:02 (17.00 %), -C*08:01 (11.00%) , -C*07:02 (10.70%) , -C* 03:04 (9.10%) , -C* 03:02 (8.00%) , -C* 07:01 (6.30%), -C* 07:04 (4.60%), -C* 04:01 (4.40%) ,-C* 12:02 (4.30%) ,and -C* 04:03(3.90%). Interestingly, HLA -C* 03:04 allele was similar to the distribution among Thais and other populations such as Eastern Europe (6.09%), Vietnam (7.42%), East Croatia (2.25%), and Han Chinese (11.70%). Conclusion: Consequently, HLA-C*03:04 might serve as a pharmacogenetic marker for screening prior to initiation therapy with dapsone for prevention of dapsone-induced SCARs in Thai population.
Keywords : HLA-C*03:04, SCARs, thai population, allele frequency