

Update on genetic diversity for lamotrigine induced Stevens-Johnson syndrome and toxic epidermal necrolysis

Natida Thongsima¹, Patompong Satapornpong, Ph.D.^{2,3}

1. Mater Dei School, Bangkok, Thailand (first author)
 2. The division of general pharmacy practice, department of pharmaceutical care, College of Pharmacy, Rangsit University, Pathum Thani, Thailand
 3. Excellence Pharmacogenomics and Precision Medicine Centre, College of Pharmacy, Rangsit University, Pathum Thani, Thailand (corresponding author)
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Abstract

Introduction: Lamotrigine is widely used in the treatment of epilepsy and bipolar disorder. However, lamotrigine leads to adverse drug reactions (ADRs) consist of severe cutaneous adverse reactions (SCARs) include Stevens–Johnson syndrome (SJS), toxic epidermal necrolysis (TEN) and drug rash with eosinophilia and systemic symptoms (DRESS). Moreover, lamotrigine-induced SCARs is usually manifested between 2 and 8 weeks after treatment initiation. Previous study, there was found the association between *HLA-B*15:02* and lamotrigine -induced cutaneous adverse drug reactions in Thai population (odds ratio 4.89; 95% CI 1.28–18.66; p-value = 0.014). Therefore, the distribution of pharmacogenetics markers that a major role in predicting the culprit drugs for SCARs in many populations.

Objective: In this study, we want to investigate the prevalence of *HLA-B* allele which correlations in lamotrigine -induced SCARs in healthy Thai population.

Materials and Methods: We enrolled 350 healthy Thai individuals and approved by the ethics committee of Rangsit University. *HLA-B* alleles were genotyped by the Lifecodes HLA SSO typing kits (Immucor, West Avenue, Stamford, USA).

Results: The results presented *HLA-B* allele frequency in healthy Thai population were 14.71% (*HLA-B*46:01*), 8.57% (*HLA-B*15:02*), 6.71% (*HLA-B*40:01*), 5.86% (*HLA-B*13:01*), 5.71% (*HLA-B*58:01*), 5.14% (*HLA-B*38:02*), 4.86% (*HLA-B*18:01*), 4.59% (*HLA-B*51:01*), 3.86% (*HLA-B*44:03*) and 2.71% (*HLA-B*07:05*). Especially, *HLA-B*15:02* allele was the high frequency in the Thais (8.57%), Han Chinese (7.30%), Vietnamese (13.50%), Malaysian (6.06%) and Indonesian (11.60%). Notwithstanding, this allele was much lower in other populations, namely, Africans, Caucasians and Japanese.

Conclusions: Although the samples size of healthy Thai population in this research were limited, there were found the frequency of *HLA-B*15:02* allele could predisposition toward to lamotrigine-induced SCARs in Thailand.

Keywords: Lamotrigine, Cutaneous adverse drug reactions, *HLA-B*, Thai population