# Database of pharmacogenetics *HLA-A*31:01* allele in Thai population and Carbamazepine-induced SCARs:

Watchawin Ekphinitphithaya[1], Patompong Satapornpong, Ph.D.[2,3]

1. Mahidol University International Demonstration School, Nakhonphatom, 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)

## Abstract

**Introduction:**

Carbamazepine (CBZ) is one of the most prescribed antiepileptic drugs (AEDs) by neurologists and non-neurologist worldwide. CBZ is usually prescribed along with other drugs, leading to the possibility of severe cutaneous adverse drug reactions (SCARs). The *HLA-B*15:02* is strongly associated with CBZ-induced Stevens–Johnson syndrome and toxic epidermal necrolysis (SJS–TEN) in the Han Chinese and other Asian populations but not in European populations, while *HLA-A*31:01* allele has been reported to be associated with CBZ-induced SCARs in European population and Japanese.

**Objective:**

The aim of this study is to investigate the distribution of pharmacogenetics *HLA-A*31:01* marker in healthy Thai population which associated with Carbamazepine-induced SCARs.

**Materials and Methods:**

Prospective study, 350 unrelated healthy Thais were recruited in this study. *Human leukocyte antigen-A* alleles were genotyped using PCR-sequence specific oligonucleotides (PCR-SSOs).

**Results:**

The frequency of *HLA-A* alleles were *HLA-A*11:01* (190 alleles, 27.14%), *HLA-A*24:02* (82 alleles, 11.71%), *HLA-A*02:03* (80 alleles, 11.43%), *HLA-A*33:03* (76 alleles, 10.86%), *HLA-A*02:07* (58 alleles, 8.29%), *HLA-A*02:01* (35 alleles, 5.00%), *HLA-A*24:07* (29 alleles, 4.14%), *HLA-A*02:06 – HLA-A*30:01* (15 alleles, 2.14%), and *HLA-A*01:01* (14 alleles, 2.00%). Particularly, the number of *HLA-A*31:01* alleles were 6 of 700 (0.86%) in healthy Thai population. Many research presented varying distributions of *HLA-A*31:01* in Asians including 2% of Han Chinese, 9% of Japanese and 5% of Koreans. In addition, this allele was found approximately 2-5% in Caucasians population.

**Conclusions:**

Thus, pharmacogenetics database is vital to support in many populations, especially in Thais, for screening *HLA-A*31:01* allele to avoid CBZ-induced SCARs before initiating treatments in each population.