

The role of *CYP2C19* gene polymorphisms on antiplatelet activity of clopidogrel among Arabs: systematic review and meta-analysis

	Abdullah N. Alkattan, Nashwa M. Radwan, Nagla E. Mahmoud, Amjad F. Alfaleh, Amal Alfaifi, Khaled
Publication Year	2022
Grant Number	
DOI link	https://doi.org/10.1101/2022.02.01.22270244

Abstract: To evaluate whether favipiravir reduces the time to viral clearance as documented by negative RT-PCR results for severe acute respiratory syndrome coronavirus 2 in mild cases of coronavirus disease 2019 (COVID-19) compared to placebo.

This study aimed to predict the preventive effect of clopidogrel against recurrent cardiovascular events (CVEs) among the Arab population carrying different *CYP2C19* mutations and to determine the frequency of polymorphic alleles and genotypes of *CYP2C19* among them. The review included all the studies that reported data related to the *CYP2C19* polymorphisms among Arab populations. The review included Arab CVDs patients who are categorized into carriers (cases) and non-carriers (controls) of *CYP2C19* alleles and used clopidogrel as secondary prophylaxis. The patients who had recurrent CVEs or had high on-treatment platelet reactivity (HTPR) while using clopidogrel treatment were described as (events). The results showed a significantly increased risk of recurrent CVDs events by about three folds was associated with carriers of *CYP2C19**2 and *CYP2C19**3 mutations compared to non-carriers (OR= 3.32, CI=1.94-5.67, and OR=3.53, CI=1.17-10.63 respectively). However, no significant difference was recorded between both studied groups regarding the presence of *CYP2C19**17 mutation (OR=0.80, CI=0.44-1.44). The results also revealed that 59 (4.16%) of Arabs carrying two *CYP2C19**2 alleles (homozygous), and 356 (25.12%) have one *CYP2C19**2 allele and one *CYP2C19**1 allele (heterozygous). Moreover, 42 (2.96%) were carrying two *CYP2C19**17 alleles (homozygous), and 262 (18.49%) were carrying one *CYP2C19**17 allele and one wild-type allele of *CYP2C19* (heterozygous). The most common *CYP2C19* genotypes reported among Arabs was the wild-type *1/*1, of which 49.26% of them had the homozygous form of the *CYP2C19**1 allele. The frequency of the *CYP2C19**1 allele was 71.07%, followed by the *CYP2C19**2 allele (16.73%) and *CYP2C19**17 (12.21%), respectively. The *CYP2C19**3 allele was detected rarely among Arabs (<1%) compared to *CYP2C19**1, *2, and *17 alleles. The present study revealed that Arabs carrying *CYP2C19**2 and *CYP2C19**3 alleles may not respond to clopidogrel and may put those patients at risk of recurrent CVEs. Carriers of the *CYP2C19**17 allele, on the other hand, did not show a significant role either in increasing or decreasing the antiplatelet efficacy of clopidogrel. The *CYP2C19* genotypes including *1/*1, *1/*2, *1/*17, *2/*2, and *17/*17 are commonly distributed among the Arabs.