



# Gender and ethnicity modify the association between the *CYP1A2* rs762551 polymorphism and habitual coffee intake: evidence from a meta-analysis

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**ABSTRACT.** The association between the single nucleotide polymorphism rs762551 in the cytochrome P450 family 1, subfamily A2 gene (*CYP1A2*) and caffeine consumption remains controversial. We conducted a meta-analysis to clarify this potential association. Twelve studies were selected from articles retrieved from the and Google Scholar databases, and the data were analyzed to determine the odds ratio (OR) of genotypes AA (conferring fast caffeine metabolism) vs AC + CC (conferring slow caffeine metabolism). Comparisons were made between 6161 high caffeine consumers and 3219 low caffeine consumers. The overall analysis showed a significant association between genotype AA and coffee intake

[OR = 1.13, 95% confidence interval (CI) = 1.03-1.24; Q = 19.23, P = 0.06;  $I^2$  = 43%]. In subgroup analyses, the association was also found within male, younger, and Caucasian subjects (OR = 1.21, 95%CI = 1.08-1.35; OR = 1.71, 95%CI = 1.18-2.48; OR = 1.29, 95%CI = 1.12-1.49, respectively) but not in female, older, and Asian subjects (OR = 0.98, 95%CI = 0.83-1.15; OR = 0.83, 95%CI = 0.56-1.22; OR = 0.91, 95%CI = 0.71-1.17, respectively). Therefore, the rs762551 AA genotype may lead to higher coffee intake, especially in males, younger age groups, and individuals of Caucasian ethnicity. Our data highlight the need to test other *CYP1A2* polymorphisms showing significance in genome-wide association studies to clarify the association with caffeine intake in the Asian population.

**Key words:** CYP1A2; rs762551 SNP; Coffee intake; Meta-analysis; Ethnicity