Association of single nucleotide polymorphisms in the \textit{CYP1B1} gene with the risk of primary open-angle glaucoma: a meta-analysis

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\textbf{ABSTRACT.} Mutations in the \textit{CYP1B1} gene were detected in primary open-angle glaucoma (POAG) patients. However, the association between these mutations and the incidence of POAG remains to be elucidated. Here, we have conducted a meta-analysis to analyze this correlation, using relevant studies obtained from an extensive search of various electronic databases, including EMBase, Web of Science, and PubMed. The extracted studies were selected for the meta-analysis based on the inclusion and exclusion criteria. The quality of each included study was assessed by the Newcastle-
Ottawa scale (NOS), and the $I^2$ value was calculated to evaluate the heterogeneity between studies. The combined effect size was presented as the odds ratio (OR), and confidence intervals (CI) were used to assess the association between POAG and CYP1B1 mutations. Eight studies, each with a high NOS score, were included in the analysis. Compared to the mutant allele, the wild-type allele of the rs180040 polymorphism in POAG patients showed a 12% decrease in OR ($OR = 0.88, 95\%CI = 0.76-1.00$); also, the wild-type allele of rs1056827 showed a 23% decrease in OR of the incidence of POAG ($OR = 0.77, 95\%CI = 0.60-0.99$). However, the latter result was controversial. Polymorphisms at rs1056836, rs10012, and rs1056837 were not correlated with the incidence of POAG (using any evaluation model). In conclusion, three of the tested SNPs in the CYP1B1 gene were correlated with POAG; however, the SNPs rs180040 and rs1056827 showed an association with risk of POAG. These results must be further validated with larger-scale evaluations.

**Key words:** Primary Open-angle glaucoma; CYP1B1; SNP; Meta-analysis