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Glutathione S-transferase P1 rs1695 A>G polymorphism and breast cancer risk: evidence from a meta-analysis

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ABSTRACT. Breast cancer (BC) is the most widespread cause of cancer-related deaths in women. Many published studies have assessed the association between the glutathione S-transferase P1 (*GSTP1*) rs1695 polymorphism and BC risk. However, the effect of the *GSTP1* rs1695 polymorphism on BC risk has remained controversial. Therefore, this meta-analysis was conducted to obtain a comprehensive estimation of this association. A total of 20,615 cases and 20,481 controls from thirty-six case-control trials were extracted from an online literature survey. The meta-analysis indicated that the *GSTP1* rs1695 A>G polymorphism did not contribute to the susceptibility of

BC when the overall population was considered. However, intriguingly, this polymorphism was significantly associated with increased risk of BC in Asian women [GG *vs* AA: odds ratio (OR) = 1.4, 95% confidence interval (CI): 1.06-1.88, P = 0.02; AG *vs* AA: OR = 1.08, 95%CI = 1.00-1.16, P = 0.05; GG/AG *vs* AA: OR = 1.11, 95%CI = 1.04-1.19, P = 0.00]. Moreover, a subgroup analysis based on the source of control groups showed a marked increase in BC susceptibility in hospital-based control subjects (GG *vs* AA: OR = 1.28, 95%CI = 1.10-1.48, P= 0.00; GG *vs* AG/AA: OR = 1.22, 95%CI = 1.06-1.41, P = 0.00; GG/AG *vs* AA: OR = 1.10, 95%CI = 1.02-1.18, P = 0.00). In conclusion, our study indicated that the *GSTP1* rs1695 A>G polymorphism was correlated with elevated BC risk in Asian women. Our results must be validated with further research.

Key words: *GSTP1*; Polymorphism; Breast cancer; Meta-analysis