



Association between MTHFR gene polymorphisms (C677T, A1298C) and genetic susceptibility to prostate cancer: a meta-analysis

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ABSTRACT. Genetic polymorphisms (C677T and A1298C) in methylenetetrahydrofolate reductase (MTHFR) were shown to be related to prostate cancer risk in previous studies; however, the results are controversial. We performed a meta-analysis of previous studies and quantitatively estimated these associations. Pubmed, Embase, and Cochrane Library Database were searched for published case-control studies evaluating the association between C677T (or A1298C) and prostate cancer risk. Pooled associations were presented as odds ratios (ORs) along with their 95% confidence intervals. Twenty-one case control studies were identified for meta-analysis that included 21,581 participants.

No significant associations were found between the *MTHFR* polymorphisms C677T or A1298C and prostate cancer risk in our meta-analysis. However, in subgroup analyses, the C677T CT polymorphism was associated with increased prostate cancer risk in East Asians (CT vs CC+TT: OR = 1.324, P = 0.03). The A1298C CC polymorphism in *MTHFR* was also linked to slightly reduced prostate cancer risk in European residents (CC vs AC+AA: OR = 0.751, P = 0.004; CC vs AA: OR = 0.768, P = 0.011), whereas it was associated with a significantly increased prostate cancer risk in Asian residents (CC vs AA: OR = 1.862, P = 0.006). The C677T CT polymorphism of *MTHFR* may be a risk factor for prostate cancer in East Asians. The association between the *MTHFR* A1298C CC genotype and prostate cancer risk may vary within different populations. Large-scale well-designed studies are required to confirm these associations.

Key words: A1298C; C677T; Methylenetetrahydrofolate reductase gene; Meta-analysis; Polymorphism; Prostate cancer