



# Association between C677T and A1298C polymorphisms of the *MTHFR* gene and risk of male infertility: a meta-analysis

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**ABSTRACT.** Published studies on the association between the C677T and A1298C polymorphisms of the methylenetetrahydrofolate reductase (*MTHFR*) gene and male infertility risk are controversial. To obtain a more precise evaluation, we performed a meta-analysis based on published case-control studies. We conducted an electronic search of PubMed, EMBASE, the Cochrane Library, the Web of Science, and the China Knowledge Resource Integrated Database for papers on *MTHFR* gene C677T and A1298C polymorphisms and male infertility risk. Pooled odds ratios (ORs) with 95% confidence intervals (95% CIs) were used to assess the strength of association in homozygote, heterozygote, dominant, recessive, and additive models. Statistical heterogeneity, test of publication bias, and sensitivity analysis were carried out using the STATA software (Version 13.0). Overall, 21 studies of C677T (4505 cases and 4024 controls) and 13 studies of A1298C (2785 cases and

3094 controls) were included in this meta-analysis. For C677T, the homozygote comparison results were OR = 1.629, 95%CI (1.215-2.184), and the recessive model results were OR = 1.462 (1.155-1.850). For A1298C, the homozygote comparison results were OR = 1.289 (1.029-1.616), and the recessive model results were OR = 1.288 (1.034-1.604). In conclusion, the current meta-analysis showed that the *MTHFR* C677T polymorphism was associated with a significantly increased male infertility risk in the Asian and overall populations, but not in the Caucasian population, and there was a significant association between the A1298C polymorphism and male infertility risk in the Asian, Caucasian, and overall groups.

**Key words:** *MTHFR*; C677T; A1298C; Polymorphisms; Male infertility; Meta-analysis