



# ***MTHFR* C677T and A1298C polymorphisms and risk of lung cancer: a comprehensive evaluation**

Y. Yang<sup>1\*</sup>, L.J. Yang<sup>2\*</sup>, M.Z. Deng<sup>1</sup>, Y.Y. Luo<sup>1</sup>, S. Wu<sup>1</sup>, L. Xiong<sup>1</sup>, D. Wang<sup>1</sup>,  
Y. Liu<sup>1</sup> and H. Liu<sup>1</sup>

<sup>1</sup>West China Hospital, Sichuan University, Chengdu, China

<sup>2</sup>Department of Respiration, East Branch, Sichuan Provincial People's Hospital,  
Sichuan Academy of Medical Science, Chengdu, China

\*These authors contributed equally to this study.

Corresponding author: H. Liu

E-mail: liuhao6304@hotmail.com

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**ABSTRACT.** Results from previous studies on the association between methylenetetrahydrofolate reductase (*MTHFR*) polymorphisms C677T and A1298C and lung cancer have been conflicting. The aim of this meta-analysis was to clarify the effect of *MTHFR* polymorphisms on the risk of lung cancer. An electronic search of PubMed, EMBASE, the Cochrane library, and the China Knowledge Resource Integrated Database for papers on C677T and A1298C and susceptibility to lung cancer was performed. The STATA software (Version 13.0) was used for statistical analysis. Statistical heterogeneity, tests of publication bias, and a sensitivity analysis were performed. Twenty-six studies on C677T (12,324 cases and 12,532 controls) and thirteen studies on A1298C (6773 cases and 8207 controls) were included in the meta-analysis. The *MTHFR* C677T polymorphism showed significant pooled ORs for the homozygote comparison (TT versus CC: OR = 1.518, 95%CI = 1.220-1.890), heterozygote comparison (CT versus CC: OR = 1.053, 95%CI = 0.940-1.179), dominant model (CT +

TT versus CC: OR = 1.143, 95%CI = 1.013-1.291), recessive model (TT versus CT + CC: OR = 1.435, 95%CI = 1.190-1.730), and additive model (T versus C: OR = 1.176, 95%CI = 1.066-1.298). In summary, our meta-analysis showed that the *MTHFR* C677T polymorphism is associated with a significant increase in lung cancer risk in Asian and overall populations, but not in Caucasian populations. However, no significant association between the *MTHFR* A1298C polymorphism and lung cancer risk was found in either the Caucasian or Asian group with any genetic models.

**Key words:** MTHFR; C677T; A1298C; Polymorphisms; Lung cancer; Meta-analysis