Predictive potential role of glutathione S-transferases polymorphisms in response to chemotherapy and breast cancer prognosis

P. Yuan[1], L. Yuan[2], B.L. Xu[3], C.Z. Wang[1], H.Z. Yang[1] and Y. Li[4]

[1]Breast Cancer Center,
The Affiliated Cancer Hospital of Zhengzhou University, Zhengzhou, China
[2]Department of Surgery,
The Affiliated Cancer Hospital of Zhengzhou University, Zhengzhou, China
[3]Central Laboratory,
The Affiliated Cancer Hospital of Zhengzhou University, Zhengzhou, China
[4]Department of Thoracic Surgery,
The Affiliated Cancer Hospital of Zhengzhou University, Zhengzhou, China

Corresponding author: Y. Li
E-mail: liyin_yin5@163.com

Genet. Mol. Res. 14 (4): 16675-16681 (2015)
Received August 27, 2015
Accepted October 2, 2015
Published December 11, 2015
DOI http://dx.doi.org/10.4238/2015.December.11.15

ABSTRACT. The aim of this study was to evaluate the role of *GSTM1* null/present, *GSTT1* null/present, and *GSTP1* polymorphisms in the clinical response to chemotherapy and treatment outcome of breast cancer. The *GSTM1*, *GSTT1*, and *GSTP1* Ile105Val polymorphism genotypes were analyzed using polymerase chain reaction coupled with restriction fragment length polymorphism. Conditional logistic regression analysis revealed that breast cancer patients carrying the GG genotype of *GSTP1* Ile105Val showed a significantly better response to chemotherapy compared to those expressing the AA genotype [odds ratio = 2.66, 95% confidence interval (CI) = 1.24-5.91, P = 0.007]. The Cox proportional hazards model indicated

that the GG genotype of *GSTP1* Ile105Val in breast cancer patients was correlated with a lower risk of death from all causes than those with AA genotype. The adjusted hazard ratio (95%CI) for the GG genotype of *GSTP1* Ile105Val was 0.44 (0.18-0.99; P = 0.03). In conclusion, the results of our study indicated that the GG genotype of *GSTP1* Ile105Val was significantly associated with better response to chemotherapy and longer overall survival, compared to the wide-type genotype.

Key words: Glutathione S-transferases; Polymorphism; Chemotherapy; Breast cancer

