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Genotypes and haplotypes of *ABCB1* contribute to TAC chemotherapy response in Malaysian triple negative breast cancer patients

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Abstract

Triple negative breast cancer (TNBC) which is characterized by absent expression of ER, PR and HER2 receptors, is typically associated with poor treatment response and high recurrence risk rate or metastasis. ABCB1 is a drug efflux enzyme, involved in the drug transport across the membrane. Evidence have shown that, activation (or inactivation) of *ABCB1* drug transporter gene may contribute to interindividual variability in treatment response. The present study aimed to investigate the association of SNPs (1236 C>T, 2677 G>T/A and 3435 C>T) and mRNA expression of *ABCB1* with chemoresistance on TNBC patients undergoing chemotherapy with Taxane, Adriamycin and Cyclophosphamide (TAC) regimen. Our results showed that, homozygous variant (TT) genotype and variant allele (T) of *ABCB1* 3435 C>T polymorphism were significantly associated with higher risk for development of chemoresistance. The haplotypes *ABCB1* 3435T–1236T–2677T and *ABCB1* 3435T–1236G–2677T also showed significantly higher risk for development of resistance to chemotherapy. The mRNA expression of *ABCB1* was significantly down regulated in cancerous as compared to normal adjacent tissues. Interestingly, up-regulation of *ABCB1* mRNA expression was observed in patients who showed resistance compared to response to