

**POLYMORPHISM OF GLUTATHIONE S-TRANSFERASE
OMEGA (GSTO) GENE AND RISK OF CANCER
AMONG THAI PATIENTS**

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POLYMORPHISM OF GLUTATHIONE S-TRANSFERASE OMEGA (*GSTO*)
GENE AND RISK OF CANCER AMONG THAI PATIENTS

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ABSTRACT

Polymorphic glutathione S-transferase (GST) genes causing variations in enzyme activity may influence individual susceptibility to cancer. The Omega class glutathione S-transferases (*GSTO*) has been reported to exhibit novel glutathione-dependent thiol transferase, dehydroascorbate reductase, monomethylarsonate reductase activities, modulate Ca²⁺ release by ryanodine receptors and induce IL-1 β post-translational processing of cytokine-releasing inhibitory drugs. Though polymorphisms have been reported in *GSTO1* and *GSTO2* genes, their predisposition to cancer risk has not yet been explored. In this case-control study, 28 hepatocellular carcinoma cases, 30 cases of cholangiocarcinoma, 31 cases of colorectal cancer, 30 cases of breast cancer and 68 controls were compared for frequencies of *GSTO1* and *GSTO2* genotypes determined by PCR/RFLP-based method. Statistical analysis provided support for significant differences in genotypic distribution for *GSTO1***A140D* polymorphism between hepatocellular carcinoma ($P=0.0039$), breast cancer ($P=0.02$) and control. Exploratory data analysis also identified statistically significantly increased odds ratio (OR) for the combination of *GSTO1***A140/D140* and *GSTO1***D140/D140* polymorphisms for hepatocellular carcinoma (OR= 4.64, 95% CI =1.65-13.23) and breast cancer (OR=3.71, 95% CI= 1.09-13.02) but not for cholangiocarcinoma (OR=1.29, 95% CI = 0.44-3.68) and colorectal cancer (OR = 1.43, 95% CI = 0.51-3.99). However, the odds ratio for the combination of *GSTO2***N142/D142* and *GSTO2***D142/D142* polymorphisms in neither of the cancer cases reached the level of statistical significance. Interestingly, *GSTO1***E155 del* was not found in both cancer and control groups. The study suggests that *GSTO1***A140D* polymorphism could play an important role as a risk factor for hepatocellular carcinoma and breast cancer.

KEY WORDS: GLUTATHIONE S- TRANSFERASE OMEGA / CANCER/
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