



Association of the C677T polymorphism in the methylenetetrahydrofolate reductase gene with breast cancer in a Mexican population

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ABSTRACT. The methylenetetrahydrofolate reductase (*MTHFR*) gene plays an important role in the steps involved in the processing of amino acids. The analysis of polymorphisms in the *MTHFR* gene has revealed associations with cancer; in particular the C677T

polymorphism, which has been suggested to affect folate metabolism, DNA methylation, synthesis, and repair, and to contribute to tumor promotion in the mammary gland. We examined the role of the C677T polymorphism in the *MTHFR* gene by comparing the C677T genotypes of 339 healthy Mexican women with those of 497 Mexican women with breast cancer (BC). The genotype frequencies observed in the controls and patients with BC were 10 and 21% for 677TT; 41 and 36% for 677CT; and 49 and 43% for 677CC, respectively. The odds ratio (OR) for the 677TT genotype was 2.5, with a 95% confidence interval (95%CI) of 1.6-3.8; $P = 0.0001$. The positive association was also evident when the distributions of the 677TT genotype in control and patients affected within the following two categories were compared to alcohol consumption (OR = 0.41; 95%CI = 0.19-0.86; $P = 0.018$); and high level glutamate-oxaloacetate transaminase (SGOT) (OR = 0.36; 95%CI = 0.15-0.83, $P = 0.017$). These results suggest that the 677TT genotype of the C677T polymorphism in the *MTHFR* gene is associated with BC susceptibility in the Mexican population.

Key words: *MTHFR*; C677T polymorphism; Breast cancer; Mexican population