BRAF T1799A, MTRR A66G and CBS 844ins68bp Polymorphisms and their Possible Association with Colorectal Cancer in Jordan

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ABSTRACT

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Abstract

Colorectal cancer (CRC) is one of the most common types of cancers in males and females in Jordan, which represents 12.7% and 10.5% respectively. Some of the studies reported that lack of folic acid increases the likelihood of greater incidence of cancer, because of the importance of folic acid in the construction, repair and methylation of DNA. 5-methyltetrahydrofolate-homocysteine methyltransferase reductase (*MTRR*) and cystathione β-synthase (*CBS*) are important enzymes in the folate metabolism. Their genetic variants *CBS* 844ins68 and *MTRR* A66G decrease the activity of these enzymes, which affects the construction of DNA, its repair and gene expression. Some studies showed a relationship between the genetic mutation *BRAF* T1799A, which increases the enzyme
activity up to ten folds and cancers, especially CRC due to the disruption of cell cycle.

In the present study, the associations of these genetic variants with CRC were studied in a total of 398 samples including 142 cases of CRC and 255 controls in Jordan by using PCR-RFLP.

Using $X^2$ and regression analysis, results showed that there is a difference in the distribution of variable gene (MTRR A66G) and (MTRR G66G) between the patient group and the control group, indicating an association between the presence of the mutation MTRR G and CRC in Jordan, no such association was present between CRC and any of the BRAF T1799A and CBS 844ins68 mutations in the Jordanian population.

Key Words: Folic acid, Colorectal cancer, BRAF T1799A, MTRR A66G, CBS 844ins68