



Analysis methylation of *BMP3* gene in genomic DNA from peripheral blood mononuclear cell in colorectal cancer

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Abstract

Introduction: Colorectal cancer is one of the three cancers with highest incidence rates in the world. Due to the growing prevalence of this deadly cancer, screening and early detection methods are needed. DNA methylation is linked to colorectal cancer and can be identified by checking the appropriate methylation biomarkers in peripheral blood as an early non-invasive diagnosis.

Materials and methods: In this study, the amount of DNA methylation in the promoter region of *BMP3* gene were studied. DNA was extracted from peripheral blood mononuclear cells (PBMC) in 50 patient and 50 control groups. The experiment was carried out using MethyQESD technique that combines enzymatic digestion and Real-Time PCR.

Results: The amounts of methylation for *BMP3* gene in 50 case and 50 control groups were 59.95% and 10.16% respectively. The rate of methylation of these genes were significantly different between the control and patient groups ($p < 0.001$).

Conclusion: These results suggested that the promoter regions tumor suppressor genes were hyper methylated during tumorigenic process and thus their expression were suppressed and lead to cancer progression. Thus, the quantitative analysis of methylation in these genes may be used for early detection of colorectal cancer in non-invasive manner.

Key words: Colorectal cancer, Methylation, PBMC, *BMP3*.