DNMT3B7 expression related to MENT expression and its promoter methylation in human lymphomas

Catalytically inactive DNA methyltransferase (DNMT) 3B7 is the most highly expressed splice variant of DNMT3B in cancer cells. It was recently reported that the loss of DNMT3B function led to overexpression of the MEthylated in Normal Thymocytes (MENT) proto-oncogene and accelerated mouse lymphomagenesis. We investigated the relative mRNA expression levels of DNMT3B aberrant splice variant DNMT3B7 and its relationship to proto-oncogene MENT overexpression and promoter methylation in human lymphoma. The mRNA expression levels of DNMTs, DNMT3B7 and MENT were assessed by quantitative real-time PCR. A combined bisulfite restriction analysis (COBRA) was used to evaluate the MENT promoter methylation. The expression levels of DNMT3B7 and MENT were significantly (p <0.0001 and p < 0.01) higher in lymphomas than in non-malignant tissues/peripheral blood mononuclear cells by 7.3-fold and 2.4-fold, respectively. The expression of DNMT3B7 and MENT were associated with MENT promoter hypomethylation. Morever, MENT was more highly expressed and hypomethylated in mantle cell lymphoma (MCL) than that in diffuse large B cell lymphoma (DLBCL) cases. The overexpression of the DNMT3B7 splice variant might interfere with the normal DNA methylation mechanism required for silencing the MENT proto-oncogene, and may accelerate human lymphomagenesis.