Abstract:

ABSTRACT Adult T-cell leukemia (ATL) is an oncogenic disease derived from the HTLV-1-infected T cells and there is no effective therapy known yet. We previously reported that down-regulation of N-myc downstream-regulated gene-2 (NDRG2) expression by DNA Methylation and genetic deletion presents one of the most common alterations in adult T-cell leukemia (ATL) and other various kinds of cancers. A stress-induced NDRG2 suppresses important signaling pathways (PI3K and NF-κB) through the de-phosphorylation of PTEN and NIK as a PP2A recruiter. In this manuscript, we identified protein arginine methyltransferase 5 (PRMT5) as a NDRG2/PP2A binding partner. A NDRG2/PP2A complex down-regulated arginine methyltransferase activity of PRMT5 through de-phosphorylation of the serine and threonine residues and changing its co-localization to the nucleus of ATL cell lines increasing the histone arginine methylation; however, PRMT5 was highly phosphorylated and localized in cytoplasm in NDRG2-deficient ATL.

Keywords:

NDRG2, PRMT5, PP2A, ATL, Leukemia.

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