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## Baicalin induces apoptosis of human B-acute lymphoblastic leukemia cell lines with MLL gene rearrangements and translocation t (1; 19) (q23; p13.3)


B-Acute Lymphoblastic Leukemia (B-ALL) is a neoplasm of immature B-cell precursors. B-ALL is the most prevalent hematological malignancy in children. Characteristic translocations in B-ALL include: t (9;22) [BCR-ABL1], t (12;21) [ETV6-RUNX1], t (1;19) [TCF3-PBX1] and rearrangement of the mixed-lineage leukemia 1 (MLL1) gene. MLL1 on chromosome 11q23 has been shown to generate in-frame fusions to more than 80 different partner genes, although the majority of leukemias result from MLL1 fusions with one of about six common partner genes. MLL rearrangements occur in over 70% of infant B-ALLs and are less frequent in older patients. The t (1; 19) (q23; p13) is also one of the most frequent translocations in B-ALLs and is observed in both adult and pediatric populations at an overall frequency of 6%. This translocation can result in the fusion of TCF3 (Transcription Factor 3) found at 19p13 and PBX1 (Pre-B Cell Leukemia Homebox1) found at 1q23 to form a chimeric gene whose protein product alters cell differentiation arrest, among other cellular processes. B-ALLs with MLL gene rearrangements and translocation t (1; 19) (q23; p13.3) are usually associated with a very poor prognosis. Here we showed that baicalin which is the main component of the extract from the root of skullcap (Scutellaria baicalensis Extract-SBE) possess antitumor activity against three human B-ALL cell lines with MLL rearrangement: KOPN-8-with t (11; 19) (q23; p13)/MLL-ENL fusion gene, RS4;11 and SEM cell lines with t(4; 11)(p21; q23)/MLL/AF4 fusion gene, and one cell line with (1; 19) translocation involving TCF3-PBX1 fusion-RCH-ACV-t(1; 19)(q23; p13.3). SBE inhibited proliferation of cell lines and increased activities of caspase-3 and -7 without affecting normal human B cell line or Peripheral Blood Leukocytes (PBLs) obtained from healthy control individuals or normal human leukocytes. Furthermore, flow cytometric analysis of SBE-treated cells showed G0/G1 phase cell cycle arrest in tumor cell lines.


### Biography

Beata Orzechowska has her research on understanding the innate immune system activation and regulation. Currently, she is working as a scientist at the Ludwick Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Science in Wroclaw, Poland. In her research she studies antiviral activity of natural products with a special focus on their impact on viral attachment, entry processes and inhibition of viral replication.

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