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The selected microRNA role in human leukemia and lymphoma cells differentiation by calcitriol and its analogue PRI-2191

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Characteristic abnormality in leukemic cells is the blockade at an early stage of their development and failure of differentiation into functional mature cells. Many studies, including those performed in our laboratory confirm that 1,25(OH)2D3 (calcitriol) and its analogue PRI-2191 induce differentiation and inhibits proliferation of leukemia cells. There is considerable body of evidence that leukemia and lymphoma cells can be suitable candidates for chemoprevention or differentiation therapy with vitamin D. Growing evidence suggest that microRNAs have an important role in the development of chemosensitivity or chemoresistance in different types of cancers. This phenomenon take place through miRNAs interaction with messenger RNAs (mRNA) and the transcriptional and post-transcriptional regulation of their expression. The biological actions of calcitriol are mediated by vitamin D receptor (VDR) and its intracellular concentrations is determined by CYP24 enzyme. It is known that VDR is regulated by miR-27b. What more, calcitriol itself influences on miRNA from miR-32 and miR-181 family, which regulates expression of proteins like p21, p27 and Bim responsible for important cell processes. The aim of our work was to study the role of miRNA in anticancer activity of calcitriol and PRI-2191 towards human leukemia and lymphoma cells. In our experiments we identified the expression of miRNA in cell after calcitriol and its analogue treatment. We measured the expression of factors which are responsible for differentiation of cells on mRNA and protein level. We conclude that microRNA (miR-27b, miR-32, miR-181a and miR-181b) may regulates crucial molecules engaged in differentiation process of human leukemia and lymphoma cells after exposure to calcitriol and PRI-2191.

Biography:

Justyna Trynda is PhD student at Institute of Immunology and Experimental Therapy, Polish Academy of Science. She has completed her M.Sc. of Biology at University of Agriculture in Wroclaw and also Molecular Biology at Jagiellonian University in Krakow. She has published 3 papers as co-author in reputed journals and presented results of her research on a national and international conferences.