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Comparative Cytotoxicity of Fludarabine in Human Peripheral Blood Mononuclear Cells and in the Promyelocytic Leukemia Cell Line (HL60)

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Abstract: Fludarabine is an inhibitor of DNA/RNA synthesis with antitumor activity on lymphoproliferative malignancies. We investigated the dose-dependent cytotoxic effects of the drug on human peripheral blood mononuclear cells, the HL60 cell line and the differentiated HL60 cells. Dimethylformamide was used for the neutrophilic differentiation of HL60 cells and the MTT assay was used to estimate drug cytotoxicity. Undifferentiated tumor cells had higher proliferation rates compared to the differentiated subline. There was 57% cell death in HL60 cells at a dose of 5 µg/ml of the drug. On the other hand, in differentiated HL60 cells and nonmalignant cells, cell death did not exceed 40% after exposure to 500 µg/ml. These results demonstrated that proliferation rate and differentiation status may have a contribution in fludarabine cytotoxicity.

Key Words: HL60, MTT assay, fludarabine, cytotoxicity, differentiation

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