ESTRADIOL ENHANCES CELLULAR PROLIFERATION IN HUMAN JURKAT T-CELLS AND HUMAN LEUKEMIA (HL-60) CELLS.

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Abstract: β-estradiol is the most potent estrogen of a group of endogenous estrogen steroids which includes estrone and estriol. This steroid hormone is the most potent natural estrogen, produced mainly by the ovary, placenta, and in smaller amounts by the adrenal cortex, and the male testes. Although β-estradiol protects the renal and cardiovascular systems, the mechanisms involved remain unclear. In this research, we performed both MTT assay and trypan blue exclusion test to evaluate the effect of β-estradiol in HL-60 and Jurkat T-cells; and to compare the sensitivity of these two cells types. The Bradford method was also performed for the measurement of total proteins. The results from both MTT assay and trypan blue exclusion test demonstrated that low, physiological levels of β-estradiol induce cellular proliferation in both HL-60 and Jurkat T-cells. At higher dose of exposure (0.5-2 uM), β-estradiol decreases the viability of HL-60 cells by inducing cell death and increases the viability of Jurkat T-cells compared to the control cells, indicating that HL-60 cells are more sensitive to β-estradiol than Jurkat T-cells. Similar trend was obtained with the trypan blue exclusion test using the hemacytometer to count the cells manually. Data obtained from the Bradford method resulted in the same amount of protein levels in β-estradiol-treated cells compared to the control. In summary, the results of the present study demonstrate that physiological levels of β-estradiol induce cell growth, and cellular proliferation of HL-60 and Jurkat T-cells.

Keywords: β-estradiol, HL-60, MTT assay, Jurkat, trypan blue, Bradford method.

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