An Investigation of the Effect of Barberry Crude Extract in Human Leukemia Cell Line

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Abstract:
The dried fruits of Berberis vulgaris are used in herbal medicine. The active ingredients are thought to be isoquinolone alkaloids, especially berberine. A new study from the Natural Medicine Journal shows that it is superior to Metformin in treating poly-cystic ovarian syndrome. In the present study, the effects of barberry crude extract on apoptosis in the acute promyelocytic human leukemia (HL-60) cells were evaluated. Then, the effect of extract on cancer signaling (P53, COX2 and BCL2) was determined. After ethanolic extraction of barberry, different concentrations (1-50mg/ml) of extract were evaluated on 3T3 normal cell line for determination of cytotoxicity by MTT assay. Then, HL60 cell line was treated with different concentrations (1-50mg/ml) of barberry extract and cell counting determined the anticancer activity of herb. Different cancer factor evaluated by Real Time quantitative PCR, which included P53, COX2 and BCL2. Concentrations of 35 mg/ml of barberry extract significantly reduced cell proliferations of 3t3 while the IC50 of HL60 was 7 mg/ml. The analysis revealed 8 mg/ml as the EC50. The analysis by RT-qPCR demonstrated the decreasing of P53, COX2 and BCL2 when HL60 was treated with barberry extract. It was shown that barberry extract had significant cytotoxic and apoptotic effects on HL-60 cells. It was suggested that barberry extract may have a potential therapeutic role in human leukemia.

Keyword: barberry, HL60, human leukemia, Berberis vulgaris