The effect of β-ionone on telomerase activity in the human leukemia cell line K562

**Background:** Telomerase is highly activated in most human cancer cells, therefore, its inhibition has been proposed as a novel and promising strategy for cancer therapy. Many plant-derived anticancer agents act through inhibition of telomerase activity and induction of apoptosis. β-ionone, a carotenoid compound isolated from Roseaceae, has been reported to possess anticancer properties. The present study was undertaken to examine the mechanism of β-ionone-induced apoptosis in human leukemia cell line K562 with special emphasis on its role in telomerase inhibition.

**Method:** In this study the anti-proliferation effect of β-ionone on K562 cells was evaluated by MTT assay. Apoptosis rate was detected by Hoechst staining and flow cytometry analysis. Telomerase activity was measured by (TRAP) ELISA assay.

**Results:** Exposure of K562 cells to β-ionone caused a dose-dependent decrease in proliferation. Flow cytometry analysis and Hoechst staining showed that percentage of apoptotic cells markedly increased with an increase in β-ionone concentration. Compared to control cells, treatment of K562 cells with β-ionone resulted in a significant decrease of telomerase activity. Moreover, a positive correlation was detected between telomerase inhibition and apoptosis induction in the treated K562 cells.

**Conclusion:** Based on these results, β-ionone is an appropriate candidate for inhibiting telomerase activity in K562 cells. Therefore, it may be utilized as a novel drug against some leukemia cell lines.

**Key Words:** human leukemia, β-ionone, telomerase inhibitors, apoptosis


**References**


