

Genistein Suppresses Doxorubicin Associated Genotoxicity in Human Lymphocytes

Authors : Tanveer Beg, Yasir H. Siddique, Gulshan Ara, Asfar S. Azmi, Mohammad Afzal

Abstract : Doxorubicin is a well-known DNA intercalating chemotherapy drug that is widely used for treatment of different cancers. Its clinical utility is limited due to the observed genotoxic side effects on healthy cells suggesting that newer combination and genoprotective regimens are urgently needed for the management of doxorubicin chemotherapy. Some dietary phytochemicals are well known for their protective mechanism of action and genistein from soy is recognized as an anti-oxidant with similar properties. Therefore, the present study investigates the effect of genistein against the genotoxic doses of doxorubicin by assessing chromosomal aberrations, sister chromatid exchanges, cell cycle kinetics, cell viability, apoptosis, and DNA damage markers in cultured human lymphocytes. Our results reveal that genistein treatment significantly suppresses genotoxic damage induced by doxorubicin. It is concluded that genistein has the potential to reduce the genotoxicity induced by anti-cancer drugs, thereby reducing the chances of developing secondary tumors during the therapy.

Keywords : apoptosis, DNA damage markers, doxorubicin, genistein, genotoxicity, human lymphocyte culture

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