

Evaluation of the cytotoxic and genotoxic effects of goniotalamin in leukemic cell lines

ABSTRACT

The cytotoxic and genotoxic effects of goniotalamin, a plant styryllactone, were evaluated using the 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide (MTT) assay and the Alkaline Comet assay respectively in human leukemic cell lines. Following 72 h of treatment, the IC₅₀ values of goniotalamin in human HL-60 promyelocytic leukemia cells and CEM-SS T-lymphoblastic cells were 4.5 μ g/mL and 2.4 μ g/mL respectively. The genotoxicity of goniotalamin in both HL-60 and CEM-SS cells was detected as early as 2 h following treatment at IC₁₀ and IC₂₅ concentrations. However, pretreatment with the antioxidant N-acetyl-cysteine (NAC) at 1 mM for 30 minutes did not abrogate genotoxicity of this compound. This result suggests that primary induction of DNA damage by goniotalamin may not involve oxidative damage. In conclusion, our results demonstrate genotoxic damage induced by goniotalamin in leukemic cells. Further studies are needed to ascertain the mode of action of goniotalamin in inducing DNA damage.

Keyword: Cytotoxicity; Genotoxicity; Alkaline Comet Assay; Leukemic cell lines