WATER SOLUBLE GARLIC EXTRACT INDUCED CYTOTOXIC EFFECT ON HUMAN LEUKEMIC CELLS: INVOLVEMENT OF NUCLEOSOMAL DNA FRAGMENTATION

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Abstract: The pharmacological role of water soluble garlic extract in prevention and treatment of cancer has received increasing attention, but little is known about the molecular mechanisms of action of garlic compounds. Hence, the aim of the present study was to evaluate the toxicity and apoptosis induced by water soluble garlic extract in human leukemic cell line using the MTT and DNA laddering assays, respectively. HL-60 cells were treated with different doses of water soluble garlic extract for 24 h prior to MTT and DNA laddering assessments. Data obtained from the MTT assay indicated that water soluble garlic extract significantly (p < 0.05) reduced the viability of HL-60 cells in a dose-dependent manner. The result of DNA laddering showed a positive nucleosomal DNA fragmentation in nuclei isolated from HL-60 promyelocytic leukemia cells. A small fragment of DNA double-strand breaks was detected in cells incubated in the absence of water soluble garlic extract. Overall, the present study demonstrates that water soluble garlic extract exposure induces nucleosomal DNA fragmentation, a hallmark of apoptosis in HL-60 promyelocytic leukemia cells.

Key words: Water soluble garlic extract, MTT, comet assays, acute promyelocytic leukemia

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