IN VITRO MECHANISMS OF WATER SOLUBLE GARLIC EXTRACT
INDUCED CYTOTOXIC EFFECT AND MODULATION OF CASPASE-3
ACTIVITY IN HUMAN LEUKEMIC CELLS

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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 flow cytometry assessment, respectively. HL-60 cells were treated with different doses of water soluble garlic extract for 12 h prior to MTT assay and flow cytometry assessment. 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. We observed a significant increase (P < 0.05) in the percentages of caspase-3 positive cells at all doses tested, showing an evidence that water soluble garlic extract-induced apoptosis of HL-60 cells in a dose dependent fashion. Taken together, our findings suggest that water soluble garlic extract exposure significantly (p < 0.05) reduces cellular viability and induces apoptosis of human leukemic cells. We conclude that the pharmacological property of garlic as leukemia chemopreventive agent may be associated with its moderate toxic effect.

Keywords: Water soluble garlic extract, MTT, caspase-3, acute promyelocytic leukemia

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