

Natural Honey and Effect on the Activity of the Cells

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Abstract : Natural honey was assessed in cell culture system for its anticancer activity. Human leukemic cell line HL 60 was treated with honey and cultured for 5 days and cytotoxicity was calculated by MTT assay. Honey showed cytotoxicity with CC50 value of 174.20 µg/ml. Radical modulation activities was assessed by lipid peroxidation assay using egg lecithin. Honey showed antioxidant activity with EC50 value of 159.73 µg/ml. In addition, treatment with HL60 cells also resulted in nuclear DNA fragmentation, as seen in agarose gel electrophoresis. This is a hallmark of cells undergoing apoptosis. Confirmation of apoptosis was performed by staining the cells with Annexin V and FACS analysis. Apoptosis is an active, genetically regulated disassembly of the cell form within. Disassembly creates changes in the phospholipid content of the cytoplasmic membrane outer leaflet. Phosphatidylserine (PS) is translocated from the inner to the outer surface of the cell for phagocytic cell recognition. The human anticoagulant, annexin V, is a Ca²⁺-dependent phospholipid protein with a high affinity for PS. Annexin V labeled with fluorescein can identify apoptotic cells in the population It is a confirmatory test for apoptosis. Annexin V-positive cells were defined as apoptotic cells. Since honey shows both antioxidant activity and cytotoxicity at almost the same concentration, it can prevent the free radical induced cancer as prophylactic agent and kill the cancer cells by apoptotic process as a chemotherapeutic agent. Everyday intake of honey can prevent the cancer induction.

Keywords : anticancer, cells, DNA, honey

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