

Anticancer activity of Humic Acid in vitro

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Cancer is among the leading causes of morbidity and mortality worldwide. Chemotherapy is one of the major cancer treatment strategies. Remarkably, natural products have garnered increased attention in the chemotherapy drug discovery field because they are biologically friendly and have high therapeutic effects. Humic acid (HA) is a natural product which is forming during decomposition of organic matter in humus. In recent years, there are some resarches on the medical use of humic acid. The present study investigated anticancer effects of HA in several human cancer cell lines.

HA was purchased from Sigma-Aldrich. In this study, we used several human cancer cell lines: The human breast cancer cell line, MCF-7, colon cancer cell line, HT-29, lung adenocarcinoma cell line, A549, and servical cancer cell line, HeLa. The cells were maintained in DMEM medium supplemented with 10% heat-inactivated FBS and 1% penicillin/streptomycin. Cells were grown in petri dishes in a humidified atmosphere containing at 37°C. Five different concentrations (100ug/mL, 50ug/mL, 25ug/mL, 10ug/mL, 5ug/mL) were prepared using a stock solution of HA. The cell proliferation and migration was measured. On the other hand, the apoptotic mechanisms induced by HA in cancer cells were investigated using "Apoptosis antibody array kit" .

The effects of HA on cancer cell lines were evaluated over 72 hours. According to our results, HA induced a decrease in HT-29, A549 and HeLa cell numbers in a dose-dependent and time-dependent manner. Contrary to this, HA induced proliferation of MCF-7 cells in dose dependent manner. HA inhibited cell migration in a dose dependent manner except MCF-7 cell line. It was also determined apoptotic pathways in cancer cells induced by HA.

It was concluded that HA has an inhibitory effect on certain some cancers. Since the effect of HA on tumor progression is unknown, further studies are needed to clarify the rol of HA on cancer activity.