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Abstract

Effects of Fulvic Acid on Different Cancer Cell Lines †

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Abstract: Humic substances are commonly found in decaying organic matter including plants, animal residues, sewage and soil. Although fulvic-acid accounts for ~90% of all substances and its biological significance recognized for many years, there is still minimal scientific understanding the claims of its biological properties. However, these formulations contain numerous toxic elements that make their use clinically impossible. Recently, there has been development of a pure form of fulvic-acid, carbohydrate derived fulvic-acid (CHD-FA) that has been shown to be safe to use clinically and absent from environmental contaminants known to be harmful to the host. The aim of this study is to evaluate the effects of fulvic-acid on different cancer cells. Hep3B, HT29 and PC3 cells were treated different concentrations fulvic-acid for 48 and 72 h and cell proliferation was performed MTT test. Changes in the mRNA levels of apoptotic genes were also analyzed in PC3 cells. Fulvic-acid inhibited the proliferation of all the cell lines used in this study determined by MTT analysis. Specifically, Hep3B cells were found to be most sensitive for 48-hour application with 1.58–2.43 μg/μL IC_{50} value. Additionally, fulvic-acid significantly upregulated the apoptotic genes at mRNA levels compared to non-treated control group.

Keywords: fulvic-acid; cancer; apoptosis