IN-VITRO CYTOTOXIC AND GENOTOXIC EFFECTS OF VERNONIA AMYGDALINA EXTRACTS ON HUMAN BREAST (MCF-7) CELLS

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Abstract: Breast Cancer is the most commonly diagnosed cancer in women, representing about 30% of types of cancer in women in the United States. Despite the conventional and chemotherapeutic methods of treatment, about 7% of women with cancer die every year. Novel therapies need to be developed to improve treatment outcome and survival rate. Hence, the aim of the present study was to evaluate the cytotoxicity and genotoxicity induced by Vernonia amygdalina (VA) in human breast (MCF-7) cells using the MTT [3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] and alkaline single cell gel electrophoresis (Comet) assays, respectively. In these experiments, MCF-7 cells were treated with different doses of VA for 48 hours. Data obtained from the MTT assay indicated that VA significantly (P < 0.05) reduced the viability of MCF-7 cells in a dose-dependent manner upon 48 hours of exposure. Data generated from the comet assay also indicated a significant dose-dependent increase in DNA damage in MCF-7 cells associated with VA exposure. We observed a significant increase (P < 0.05) in comet tail-length, tail arm and tail moment, as well as in percentages of DNA cleavage at all doses tested, showing an evidence VA-induced genotoxic damage in MCF-7 cells. Taken together, our findings suggest that VA exposure significantly (P < 0.05) reduced cellular viability and induces DNA damage in MCF-7.

Keywords: Vernonia amygdalina, MCF-7 cells, cytotoxicity, genotoxicity.

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