THE EFFECT OF *VERNONIA AMYGDALINA* EXTRACTS ON PC-3 PROSTATE CANCER CELLS

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Abstract: Prostate cancer (PC) is the most (besides skin cancer) frequently diagnosed cancer and the second leading cause of cancer-related deaths in men in the U.S. It is estimated that there will be more than 234,400 new cases of PC representing 33% of all new cancer cases, and 27,350 deaths representing 9% of all cancer-related deaths among men in 2007 in the U.S. Although exact causes of PC are unknown, evidence suggests that many genetic and environmental factors are involved in the etiology and/or progression of PC. PC may be androgen-dependent or independent for proliferation. The androgen-dependent which relies on androgen and its androgen receptors (AR) to grow is more responsive to medical intervention because antagonists or blockers (such as Flutamide and others) of the AR are routinely used to inhibit or kill the PC cells. The use of chemicals to obliterate androgen levels in the body has sometimes been referred to as “chemical castration”. In addition to chemotherapies, other types of treatment for PC include surgery (prostatectomy), and radiation. In contrast, hormone-refractory PC (or androgen-independent PC) is much less responsive to treatment. Some of the etiological factors for PC are age, race, familial history, BMI > 25, and diet. Age is a very important risk factor for PC because risk for PC increases with age. The incidence of PC is 60 % higher in African Americans (AA) to European Americans (EU) men. Hence, novel therapies (agents) are needed to close or eliminate health disparities associated with prostate cancer. Plants are considered excellent sources for the discovery of novel anti-cancer agents according to reports by National Center for Complementary and Alternative Medicine (NCCAM). The objective of this study was to evaluate the cell growth-inhibitory activity of *Vernonia amygdalina* (VA) extracts on PC-3 cells. The PC-3 cells were propagated in tissue culture plates containing RPMI-1640 supplemented with 10% FBS and 1% penicillin-streptomycin at 37 °C in a 95% air/5% CO\(_2\) humidified incubator. At 60-65 % confluence, the cells were treated with increasing concentrations (50, 100, and 300 mg/ml) of ethyl acetate (EtoAc) fraction of VA. Mitosis was determined by DNA synthesis assays and confirmed cell counts using a hemacytometer. Exposure of PC-3 cells to increasing concentrations of 50, 100, and 300 mg/ml of EtoAc VA extracts retarded cell growth by 18, 40, and 86% respectively. These results suggest that the EtoAc fraction of VA extracts contains anticancer agents that may be useful as a treatment against cancer, prostate cancer in particular.

Keywords: human prostate cancer, DNA synthesis, *Vernonia amygdalina* extracts

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