STUDY OF CHEMICAL COMPOSITIONS OF A NIGERIAN EDIBLE PLANT
VENONIA AMYGDALINA (VA)

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Abstract: In reports from the World Health Organization (WHO), cancer is a leading cause of death worldwide and the breast cancer is one of most frequent cancer types, among women: one out of every eight women will be diagnosed with cancer in her lifetime. Our interest is in finding a novel and effective breast cancer chemotherapeutics from the natural resources like a folk medicine. An aqueous extract of an African edible plant, Vernonia amygdalina (VA) leaf, has been reported to be potent to breast tumor cell line MCF-7. We used 85% EtOH to extract active organic components from VA leaves. And then, the condensate was separated with liquid—liquid method into three fractions (A1, A2, and A3). In A1, three compounds were identified. They are n-hexadecanoic acid, stigmasterol, and 5α-Sigmasta-7,22(E)-dien-3β-ol. Comparing three fractions’ bio-activity, A2 has the highest bio-activity. Column Chromatography was used to separate A2 into five parts (A2A, A2B, and so on) in methanol—chloroform solvent system. The cell proliferation assay data indicated that active compounds still kept in the same part—A2B. Component Analysis was used to analyze A2B fraction and it showed positive reaction in three kind of chromogenic reagents, lower fatty acids, saccharides, and steroids. At the same time, A2B’s Mass spectrum (an ESI source) indicated that A2B has lower fatty acid components. Column Chromatography was used again to separate A2B in methanol—chloroform solvent system. In this separation, same volume solutions, washed out from the column, were collected and condensed. The condensates were kept in the vials numbered in sequence. After that, TLC was used to analyze the condensates. Finally, A2B was separated into another five parts (A2B5, A2B15, A2B25, A2B35, and A2B45). New cell proliferation assay indicated active compounds kept in A2B15 and A2B25. In other word, active compounds should be in the high polar part of A2B15 and the low polar part in A2B25, because components overlap in these parts. Next step, we will separate some compounds and analyze by cell proliferation assay to find active compound(s).

Keywords: Venonia amygdalina (VA), breast cancer, n-hexadecanoic acid, stigmasterol, and 5α-Sigmasta-7,22(E)-dien-3β-ol

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