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Extended Abstract
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Asia Pharma 2016 : Phytochemical screening, proximate analysis, lethality studies and anti-tumor potential of Annona muricata L (Soursop) fruit extract in Rattus novergicus - Abbah Okpachi Cristopher - Kogi State University

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Annona muricata has been attributed numerous health benefits most of which have been linked to its antioxidant potentials. Thus, this formed the basis on which this research was designed and carried out. This is to establish the link between the antioxidant status of Annona muricata and its phytochemical constituents. Annona muricata (Annonaceae) commonly called Soursop due to the soured and acidic nature of the matured and ripe fruit pulp is a small, upright evergreen tree growing 5–10 meters in height. It is a shrubby plant located majorly in the rain forest regions of Nigeria, where it is used locally for several ethnomedicinal purposes—as a laxative and purgative, wound healing, etc. The health benefits of this plant have been attributed to their unique phytochemical composition. Many bioactive compounds and phytochemicals, majorly the annonaceous acetogenins and essential oils, have been isolated and elucidated from A. muricata (Agu, Okolie, Falodun, et al; Gleye, Laurensa, Laprevoteb, Seranib, & Hocquemiller,) and its many uses in natural medicine have been validated by scientific researches . Intensive chemical investigations of the leaves, fruit pulp, and seeds of different species of this plant have resulted in the isolation of a great number of acetogenins. The phytochemicals present in Annona muricata are alkaloids, flavonoids, carbohydrates, cardiac glycosides, saponins, tannins, phytosterols, terpenoids, and proteins. Agu, Okolie, Eze reported the presence of alkaloids, flavonoids, and phenols in high quantities especially in the fruit pulp and leaf. They also reported the possible hemomodulatory properties of the plant. Some of the isolated compounds from this plant have also displayed some interesting biological and pharmacological activities, such as antitumoral, cytotoxicity, antiparasitic, pesticidal properties etc. These activities have been linked to the antioxidant properties of the plant. Consequently, this research was designed to ascertain the antioxidant properties of Annona muricata.

Materials and methods includes Preparation of plant material for proximate and phytochemical analyses ie A large quantity of fresh parts of the plant, i.e., such as the fruit pulp, leaf, stem-bark, and root-bark were collected from trees from household gardens in Benin City and around the University of Benin, Edo state, Nigeria. The plant was identified by Dr Bamidele of the Department of Plant Biology and Biotechnology, University of Benin, and authenticated by Professor Idu of the same department. A voucher specimen number, UBHa 0205, was deposited at the Herbarium of Department of Plant Biology and Biotechnology, University of Benin. The properly washed plant samples were pulverized after drying at room temperature (about 25°C) for 4 weeks, oven-dried to constant weight and then defatted using Soxhlet extractor. Defatted samples were then used for further proximate analysis. It is instructive to note that this plant under investigation for its health benefits was collected from Ugbowo community in Benin City, Edo state, Nigeria and Preparation of plant material for phytochemical analyses and in vitro antioxidant assays ie The pulverized plant materials were extracted by macerating about 300 g of each parts in 3.8 L of methanol (Jinhuada, JHD, Shantou, Guangdong, China), stirred and left to soak for 72 hr. The mixture was filtered with muslin cloth. To obtain the crude extracts, the filtrates were transferred to a rotary evaporator to separate the solvent from the extract (in vacuo). The evaporated extracts were then transferred into airtight containers and stored in a refrigerator at about 4°C until it was required for subsequent phytochemical and in vitro antioxidant analyses. However, before in vitro antioxidant analyses were carried out, the crude methanolic extracts of the different parts of the plant were subjected to solvent-solvent partition extraction using graded solvent polarity—petroleum ether, chloroform, ethyl acetate, methanol, and methanol-water—to obtain fractions of the different parts of the plant. Proximate composition ie Proximate contents of the various parts of Annona muricata were determined using the methods of A.O.A.C., gross energy values (GEV) were calculated using the method of Livesey , and caloric values (CV) were estimated using the methods of Ooi, Iqbal, and Ismail and Codex Alimentrius . Phytochemical screening ie The following phytochemicals were tested for their presence in the plant—tannins , flavonoids , saponins , phlobatannins, terpenoids , carbohydrates and monosaccharides (Molischs test, Barfoed's test, Benedict's test) , cardiac glycosides (Keller–Killain test), Bial's test (Pentoses), ketoses (Seliwanoff's test) , starch (Iodine tests), protein/peptide bonds (Biuret Test), arginine (Sakaguchi's Test), cysteine (Lead sulfide test), aromatic amino acids (Xanthoproteic test), phenolic amino acids (Million's test), anthraquinones, and alkaloids .

The fruit fractions displayed better abilities to detoxify DPPH radical, compared to other parts of the plant. The leaf chloroform fraction performed better, followed by root-bark

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methanol-water, fruit methanol-water, and leaf ethyl acetate fraction, in a decreasing order. the reducing power of Annona muricata fractions—the root-bark methanol-water, leaf methanol, fruit chloroform, and leaf petroleum ether fractions demonstrated better reducing powers compared to other fractions. The hydroxyl radical (OH●) scavenging abilities of the various fractions showed that the leaf petroleum ether fraction was able to detoxify OH● better than the other fractions. Stem-bark petroleum ether, root-bark ethyl acetate, and leaf methanol-water, also exhibited potent hydroxyl radical quenching abilities. All the phytochemicals tested for were present except phlobatannins and anthraquinones. This finding confirms the report of George et al. The proximate composition of the various parts of Annona muricata (fruit pulp, leaf, stem-bark, and root-bark) showed that the fruit has the highest moisture content followed by leaf. The stem-bark has the lowest moisture content. The root-bark has the highest ash content followed by the stem-bark and fruit in decreasing order. The moisture and ash contents of the fruit and root-bark, respectively, were expected. This is due to the high fluid content of the fruit pulp and the proximity of the root to the soil as source of mineral elements.

Biography:

Abbah Okpachi Cristopher has completed his degree in Biochemistry at the Kogi State University, Nigeria in 2003 and a Master's degree in Biochemistry (Parasite Biochemistry and Ethnopharmacology) from the University of Ilorin, Nigeria in 2008. For his PhD, he is working on efficacy and safety of Annona muricata fruit pulp in animal models with experimental prostate hyperplasia at the Kogi State University, Anyigba, Nigeria, where he also works as Lecturer. He has over 15 papers in reputable journals to his credit. His research interests are medicinal plants, toxicology, environmental management and toxicology.

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