KIGELIA AFRICANA: AN EPHEMERAL GLANCE
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Abstract
Our world harbors a rich source of medicinal plants which are used in the treatment of a wide range of diseases. *Kigelia africana* popularly known as the Sausage tree, cucumber plant, *Kigelia pinnata*, is a multipurpose medicinal plant with many attributes and considerable potentials. Some of these include its use for treatment of gynecological disorders, renal ailments, skin complaint, tumors and reproductive disorders in developing countries where western orthodox medicine are expensive and are inaccessible, and there is high poverty rate.

Key words: *Kigelia Africana*, Chemical constituents, Pharmacological Properties.

Introduction
Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources, many of these isolations were based on the uses of the agents in traditional medicines [1]. This plant-based traditional medicine system continues to play an essential role in health care with about 80% of the world’s inhabitants relying mainly on traditional medicines for their primary health care [2]. *Kigelia Africana* (Lam.) Benth. syn. *K. pinnata* (Jacq.) DC. of Bignoniaceae family is widely distributed in the South, Central and West Africa. It is known as the cucumber or sausage tree because of the huge fruits (average 0.6 m in length and 4 kg in weight), which hangs from long fibrous stalks. It is also known as *Balmkhee ra* in Hindi and distributed all over India but found abundantly in West Bengal. It is found mostly in wetter areas and spread abundantly across wet Savannah and riverine area [3-6]. Human use of plants as medicine agent pre-dates recorded history. Ethno-medicinal plant-use data in many forms has been heavily utilized in the development of formularies and pharmacopoeias, providing a major focus in global healthcare, as well as contributing substantially to the drug development process [7]. Generally, natural drug substances often form vital and appreciable roles in the modern system of medicine thereby justifying their presence in the prevailing therapeutic arsenal, namely- serve as extremely useful natural drugs, provide basic compounds affording less toxic and more effective drug molecule, modification of inactive natural products by suitable biological and chemical means into potent drugs [8]. Infectious diseases are important in public health for communities in Africa and the developing world [9]. These diseases and subsequent deaths have devastating consequences for developing economies. Herbs have provided us some of the very important lifesaving drugs used in the armamentarium of modern medicine. Among the estimated 400,000 plant species, only 6% have been studied for biological activity and about 15% have been investigated phytochemically [10]. This inadvertently shows a dare need
for the in-depth dissertation of various chemical constituents, medicinal viability, pharmacological evaluation and biological activities of herbal medicine such as the K. Africana (Lam) Benth (or K. pinnata) of the family Bignoniaceae an exceptional indigenous medicinal plant in Africa.

Description of K. Africana tree, fruit, and seed:
The tree is widely grown as an ornamental plant in the tropical regions for its decorative flowers and unusual fruit. It can grow to more than 20 m tall. The bark is grey and at first smooth but peels on older trees. The bark can be as thick as 5 mm. The wood is pale brown or yellowish in color, and not prone to cracking [11]. The leaves are opposite or in whorls of 30 to 50 cm in length, pinnate, with six to ten oval leaflets each up to 20 cm in length and 6 cm wide. Some birds/insects are attracted to the flowers where they use the strong stems as footholds. Their scent is most notable at night, indicating their reliance on pollination by bats which visit them for pollen and nectar. It flowers between the months of August and November [12]. Flowers are bisexual, very large; pedicel up to 11 cm long up curved at tip; calyx shortly tubular to campanulate 2 to 4.5 cm long, suddenly widening and incurring upwards, limp 2-lipped, with the super or lip 2-lobed, the lower one 3-lobed and recurved [13]. The huge, grey-brown fruit is a woody berry 30 to 100 cm long and up to 18 cm wide. It weighs between 4 to 10 kg and hangs from a long and fibrous stalk [14]. The fruit is fibrous and pulpy, containing numerous hard seeds which are inedible to humans. However, several species of mammals eat the fruits/seed, for example baboons, bush pigs, monkeys, porcupines, savannah elephants, giraffes and hippopotami. The seeds are dispersed via their dung. In Malawi, during famine the seeds are roasted and eaten by humans. Brown parrots and brown-headed parrots also eat the seeds [15, 17].

Constituents of K. Africana
The understanding of the phytochemical constituents of medicinal plants like K. Africana is imperative not only because of the understanding of the scientific rationale for its usage but also for the discovery of novel compounds of pharmaceutical value [18]. Several phytochemical studies revealed that the extracts from many species of Bignoniaceae contained secondary metabolites such as saponins, tannins, flavonoids, quinones, alkaloids, anthralene derivatives, reducing sugars, glycosides, carbohydrates, querletin, kaempferol, α-sitosterol, terpenes, steroids, coumarins secondary metabolites and their derivatives [19, 20]. These bioactive constituents are reported to be present in the fruits, stem bark, root bark and leaves of K. africana and iridoid, verminoside and polyphenols like verbascoside [21-25].

A notable number of bioactive compounds have been recorded from the Bignoniaceae family of plants that reportedly demonstrate a number of important activities which are beneficial to human beings. The various activities included mosquito larvicidal [26], anti-oxidant [27-30], anti-plasmodial [31], antiprotozoal [32, 33], anti-amoebic [34], anti-diarheal [35-37], anti-inflammatory [38-40], anti-microbial [41], antibacterial [42-46], anti-depressant/central nervous system (CNS) stimulant effects [47], anti-cancer [48-52], anti-diabetic, anti-nociceptive, anti-snake venom and neurotrophic [53] activities. However, efforts at the further elucidation of how these activities are executed in vivo or in vitro remains to be established by researchers.

Table: 1 Pharmacological activities of different phytoconstituents of KigeliaAfricana

<table>
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<tr>
<th>Activity</th>
<th>Irridoids</th>
<th>Naphthoquinone</th>
<th>Meroterpenoid</th>
<th>Coumarin</th>
<th>Lignans</th>
<th>Sterols</th>
<th>Flavonoids</th>
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K. africana is an interesting example of a plant, used in traditional medicine for many years which is now attracting interest and use far beyond its original geographical range. Experiments into the effect of Kigelia extracts and some of the pure compounds contained therein, on microorganisms and cancer cells have shown that the traditional use of this plant is given considerable justification. The chemical constituents of the plant provide molecules, which could be of immense medicinal applications. Considering the many medicinal purposes for which it is used, there is enormous scope for future research on K. africana, and further pharmacological investigation is warranted.

Conflict of interest:

There is no conflict of interest

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