

A review on medicinal use of the kigelia plant

Author name - mahesh Padamakar Dangare
 Chaitali bhausaheb choudhri
 prof. Dhananjay landge

Submitted: 20-06-2023

Accepted: 29-06-2023

ABSTRACT

Medicinal plant play amain role of the management of the diffrent diseases.Kigelia is a popularly africana . It is also known as "sausage tree . " This tree is multi-purpose medicinal uses . It is traditional plant used in anti-cancer, anti-oxidant & anti-malarial. Itisalso highly used in the treatment of genital infections i.e. gynecological disorders.

- 4) Class - Magnoliopsida
- 5) Order - Lamiales
- 6) Family - Bignoniaceae
- 7) Genus. - Kigelia
- 8) Species - Kigelia africana

WHAT IS KIGELIA?

It is the africana tree is native in the African soils & bears sausage-shaped fruits that weight up to 12 kg (over in 26 pounds). Growing up to 25 meters tall, nickname of the kigelia tree "sausage tree", but it is referred to as worsboom in Afrikaans & Muvevha in Venda an oficial language of the South Africa.

The Kigelia fruit of a range of the nourishing anti-oxidant properties, with in the nutrient-dense seeds bearing protein, oleic acid & essential fatty acids to nurture the skin. While the fruit cannot be eaten raw, its extracts when cooked, and again powdered forms have many uses of ranging from medicinal to cosmetic and it is a revered staple of African cultures .

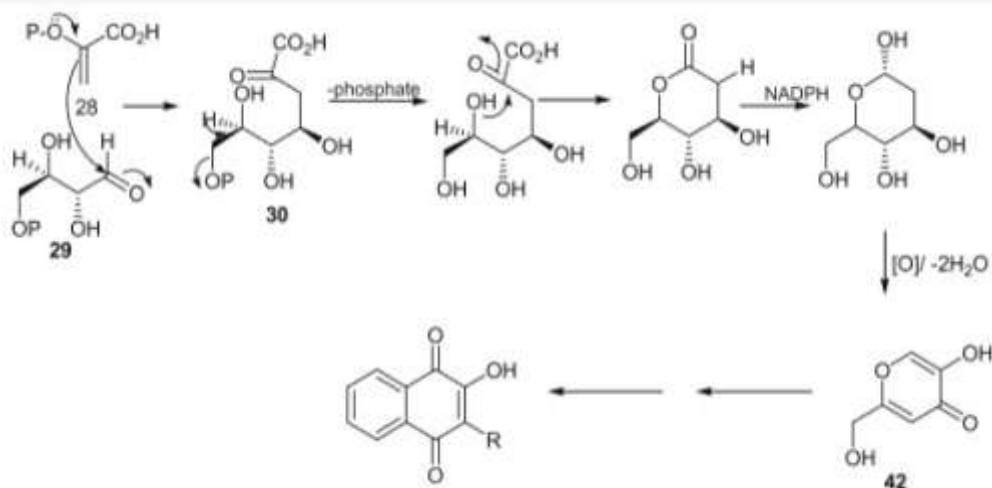
I. INTRODUCTION

" Kigelia" is a genus of the flowering plants in the family is the Bignoniaceae. The genus consists of only one species , Kigelia is africana, which occurs in throughout tropical Africa. The so-called sausage tree grows a poisonous fruit that is up to 60 cm (2 feet) long, weight about the plant 7 kg (in pound 15 pounds), and resembles a sausage in the casing.

Taxonomy of the Kigelia plant

- 1) Root -Root
- 2) Kingdom - Plantae
- 3) Phylum - Tracheophyta

Quinones and Benzophenones from the Medicinal Plants of Africa



Pharmacological Activity of kigelia plant .

Antibacterial Activity.

Antibacterial screening of different stem bark extracts and isolated compound was carried out using disk diffusion method using amoxicillin as (positive)control. (Negative) control was prepared using 10% dimethyl sulfoxide as a solvent. The methanol extract of stem bark was suspended in water and successively extracted with n-hexane-EtOAc, and water. One Gram-positive bacteria, *Staphylococcus aureus* and three Gram-negative bacteria, *Pseudomonas aeruginosa* . *Salmonella typhi*, and *Escherichia coli* are used as test microorganisms. Zone of inhibition (mm) of n-hexane-EtOAc fraction for *E. coli*, *P. aeruginosa*, *S. typhi*, and *S. aureus* was found to be 6.0 ± 0.0 , 6.0 ± 0.0 , 0.0 ± 0.0 , and 7.0 ± 0.0 , respectively. EtOAc fraction showed that zone of inhibition for *E. coli*, *P. aeruginosa*, *S. typhi*, and *S. aureus* was found to be 0.0 ± 0.0 , 0.0 ± 0.0 , 0.0 ± 0.0 , and 6.0 ± 0.0 , respectively. Zone of inhibition of aqueous fraction of stem bark was found to be 6.0 ± 0.0 , 7.0 ± 0.0 , 6.0 ± 0.0 , and 8.0 ± 0.0 for *E. coli*, *P. aeruginosa*, *S. typhi*, and *S. aureus*, respectively, while the zone of inhibition of standard drug amoxicillin for *E. coli*, *P. aeruginosa*, *S. typhi*, and *S. aureus* was found to be 0.0 ± 0.0 , 6.0 ± 0.0 , 0.0 ± 0.0 , and 0.0 ± 0.0 , respectively. Isolated compound 2-acetylfluro-1, 4-naphthoquinone showed the zone of inhibition 6.0 ± 0.0 mm for *P. aeruginosa* and *S. aureus*. Zone of inhibition of p-coumaric acid was found to be 6.0 ± 0.0 mm for *E. coli*, *P. aeruginosa*, and *S. aureus* while 7.0 ± 0.0 mm for *S. typhi* at the concentration of 0.452 mg/mL. Caffeic acid showed sensitivity only against *E. coli* with a zone of inhibition 6.0 ± 0.0 mm.

Antiviral Activity

Antiviral activity of leaves extract of plant was performed against HIV-1 reverse transcriptase. Extract of the plant showed a weak inhibitory effect extract of fruits of the plant showed 13.20% inhibition of reverse transcriptase at the dose 100 μ g/mL while found inactive at the dose of 50 μ g/mL. Methanol extract of the fruits was tested against various viral strains showed a weak activity against vesicular stomatitis virus while no any effect against herpes simplex virus Type 1, Cocksackie B2, and Semliki forest virus A7

Anticancer Activity

Aqueous, ethanol, and dichloromethane extracts of the stem bark & fruits of *K. africana*

were studied for anticancer activity against four melanoma cell lines and a renal cell carcinoma line using 2,5-diphenyl tetrazolium bromide and sulforhodamine B assays. Lapachol isolated from these extracts found effective in the treatment of solar keratosis and Kaposi sarcoma Lapachol shows cytotoxicity against *Artemia salina* in the brine shrimp bioassay, indicating antitumor potential. It was reported that the phytoconstituents norviburtinal and isopinnatal found active against melanoma cell lines .

Antifungal Activity

Antifungal activity of methanol extracts of leaves and stem bark of *K. africana* was performed against *Candida albicans* using disk diffusion method. Chloramphenicol and clotrimazole were used as standard drugs. Zones of inhibition of methanol extract of leaves at the dose of 10 mg/mL, 20 mg/mL, and 50 mg/mL were found to be respectively. Methanol extract of *K. africana* stem bark showed zone of inhibition 12.55 ± 0.55 mm, 15.50 ± 0.50 mm, Zone of inhibition of standard drug clotrimazole was found 25.50 ± 0.50 mm. MIC value of leaves extract against *C. albicans* was found 2.5 mg/mL while clotrimazole showed MIC value 0.025 mg/mL. The chloroform extract of *K. africana* stem bark showed the highest antifungal activity as compared to the petroleum ether and methanol extract of *K. africana* stem bark against the fungal strains *Cryptococcus neoformans*, *Candida tropicalis*, *Trychophyton rubrum*, *Microsporum furfure*, and *Epidermophyton floccosum*.

Anti-inflammatory Activity

Anti-inflammatory activity of methanol extract from the leaves of *K. africana* was evaluated in carrageenan-induced paw edema in rats. Methanol extract showed a significant anti-inflammatory activity at the dose level of 150 mg/kg as compared to the standard drug diclofenac sodium by reducing the hind paw diameter by 0.21% and 1.10%, respectively.

Antidiabetic Activity

Methanol extract of the leaves of *K. africana* (100–400 mg/kg) was evaluated for its antidiabetic activity in alloxan -induced diabetic rats where glibenclamide (5 mg/kg) was used as a standard drug. Methanol extract of the plant at the dose of 200–400 mg/kg decreases the level of blood glucose significantly while extract at the dose of 100 mg/kg failed to do so. Treatment of

diabetic rats with methanol extract (200–400 mg/kg) of the plant produced a significant reduction in serum levels of triglyceride and cholesterol in a dose-dependent manner which was found comparable to standard drug glibenclamide

Details about the kigelia plant

- 1) Botanical Name : *Kigelia africana*
- 2) Synonyms : *Kigelia pinnata* , *Crescentia pinnata* Jacq.
- 3) Common Name : Common Sausage Tree, Cucumber Tre
- 4) Plant Family : Bignoniaceae
- 5) Plant Form : Tree
- 6) Habit : A large tree.



Review

Traditional uses

wounds healing, rheumatism, psoriasis, dysentery stomach ailments, aphrodisiac and for skin care.

Phytochemistry

Iridoids, naphthoquinones, flavonoids, terpenes, terpenoids and phenylethano glycosides

Pharmacological activity

anti-inflammatory, analgesic, antioxidant, anti-ulcerogenic, anticancer, antidiabetic

Medicinal use of the kigelia

Traditionally, these tree is more widely known for its medicinal uses; commonly as the treatment of various skin related disease such as eczema, fungal infections, psoriasis and boils; to the more serious diseases, such as leprosy, impetigo as well as syphilis and skin cancer . It also has internal applications, including the treatment of dysentery, malaria & diabetes, pneumonia, worm infestations, venereal diseases, convulsions, toothache. ...

Cultivation and uses

It is poisonous to humans & strongly purgative; fruit are prepared for consumption by

7) Leaves : Opposite, impar pinnate, with in 3 pairs of leaflets and an odd one, elliptic-oblong, serrate or entire, sessile.

8) Flowers :

Flowers in long pendulous racemes, large, of fine chocolate red in colour.

Calyx bell-shaped of 2-5 lobes.

Corolla campanulate, tube broad with 5 spreading lobes which are two lipped deflexed and beautifully coloured hanging on long rope-like peduncles.

9) Fruit :

Amphisarca very large, indehiscent, remain hanging on the tree in groups of 2 or 3 on very large rope-like peduncles for many months.

drying, roasting as well as fermentation & Cultivation and uses.

Extracts of the bark, flower & fruit of *Kigelia africana* have been increasingly used in skincare products due to the high level of the antioxidant and anti-inflammatory constituents.

The tree is widely grown as an ornamental tree in the tropical regions for its decorative flowers and unusual fruit. Planting sites also should be selected carefully, as the falling fruit can cause serious injury to people and damage vehicles parked under the trees.

Extracts of the bark, flower and fruit of *Kigelia africana* have been increasingly used in skincare

products due to the higher level of the anti-oxidant and anti-inflammatory constituents .

II. CONCLUSION.

The fresh fruit is poisonous to humans and strongly purgative. fruit are prepared for consumption by drying, roasting or fermentation .

“The relevance of *K. africana* in the scheme of traditional medicinal plants in Africa has spanned decades with ever growing interest by the traditional medical practitioners and also academic scientific researchers. In recent time, *K. africana* has witness a surge in popularity which have a prompt a number of the scientific researches in order to provide methodical and experimental base evidence to many of its traditional therapeutic uses in the treatment of diseases.

REFERENCES

- 1)K. Inoue et al.
A naphthoquinone and a lignan from the wood of *Kigelia pinnata*
Phytochemistry
(1981)
- 2) P.J. Houghton et al.
The sausage tree (*Kigelia pinnata*): ethnobotany and recent scientific work
S. Afr. J. Bot.
(2002)
- 3)O.J. Hamza et al.
Antifungal activity of some Tanzanian plants used traditionally for the treatment of fungal infections
J. Ethnopharmacol. (2006)
- 4)C.E.M. Griffiths et al.
Pathogenesis and clinical features of psoriasis
Lancet
(2007)
- 5)O.M. Grace et al.
Bark medicines used in traditional healthcare in KwaZulu-Natal, South Africa: an inventory
S. Afr. J. Bot.
(2003)
- 6)O.M. Grace et al.
Antibacterial activity and isolation of active compounds from fruit of the traditional African medicinal tree *Kigelia africana*
S. Afr. J. Bot.
(2002)
- 7)T.R. Govindachari et al.
Isolation and structure of two new dihydroisocoumarins from *Kigelia pinnata*
Phytochemistry
(1971)
- 8)Y.G. Gouda et al.
Iridoids from *Kigelia pinnata* DC. fruits
Phytochemistry
(2003)
- 9)M.C. Gessler et al.
Traditional healers in Tanzania: the treatment of malaria with plant remedies
J. Ethnopharmacol.
(1995)
- 10) G. Fouche et al.
In vitro anticancer screening of South African plants
J. Ethnopharmacol.
(2008)