

**AN OVERVIEW OF *ENSETE SUPERBUM*: CHEMISTRY & PHARMACOLOGICAL
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Road, Debari, Udaipur-
313003. Rajasthan.**ABSTRACT**

Ensete superbum (Roxb.) Cheesman is a wild banana species has been used widely by the tribals of Khandesh region of North Maharashtra for the medicinal and edible purpose. It is also endemic to Satpura range forests of northern Maharashtra, Western Ghats, Matheran and some other places in Southern India. The chemical ingredients reported from this plant belong to the different classes such as alkaloids, saponins, tannins, phenols, glycosides and flavonoids. It is commonly known as “Jungalee kela” or “rankeli” in this region and has a number of medicinal uses. Many of which have been verified and elaborated by different workers with scientific methods, in classical literature. This review article summarizes the chemistry and pharmacological profile of the plant.

KEYWORDS: *Ensete superbum*, rankeli, cliff banana, ethnomedicine.**INTRODUCTION**

Ensete superbum (Roxb.) Cheesman is a small shrub belonging to family Musaceae. It is also known as “Cliff banana” or “Jungalee kela” or “Rankeli” mostly occurring in the India subcontinent especially in the northern part of Maharashtra state, Western Ghats as well as some states of Southern India. This plant is also found naturally in Africa and Thailand. Nine species of *Ensete* are previously reported in the classical literature.^[1] *Ensete superbum* is a Perennial shrub with dark green leaves, 150 cm long deeply grooved petiole with a 30 cm drooping inflorescence. The plant can grow 2 to 5 feet. It has been used by the tribals for various medicinal purposes including stomachache, for facilitating easy delivery, treatment of dog bite, leukoderma and treating patients of renal calculi etc.^[2,3,4,5]

Description

Ensete superbum (Roxb)^[6] (Musaceae) is a monocarpic, non-stoloniferous unbranched herb, locally known as “ran keli” in this north Maharashtra region and found throughout other dry and warm parts of India. It attains an average height of 3 to 4 m and is characterized by an enormous swollen base of 2.5 to 3 m circumference. Leaves are bright green on sides about 1.5 m long and 45 cm broad with a short green petiole and a prominent red midrib. Leaf sheaths are persistent at the base and closely set scars on the corm. Inflorescence is globose at first (30-32 cm diameter) later drooping and elongating to one third the length of the trunk. The bracts are corbicular, dark brown red reaching 30 to 32 cm in length, breadth

and subtend dense biseriate rows, each of 10 to 15 flowers. The fruits are sub coriaceous 7.5 to 8 cm long, 3.5 cm diameter, more or less triangular and contain numerous black seeds. The seeds are sub globose but angled by pressure 0.8 to 1.3 cm in diameter.^[7]

Chemistry

Various chemical constituents from different chemical classes have been reported from *Ensete superbum* till date including alkaloids, saponins, tannins, phenols, flavonoids, anthraquinone glycosides, steroids and amino acids etc. Pharmacological activities of these chemical constituents are given in table I and II respectively.

Classical Uses and Other Pharmacological Studies

According to many published ethnobotanical and ayurvedic reports it is observed that *E. superbum* is frequently used in folk medicine to treat various ailments nationwide. The ointment of leaves in butter is reported to be applied to treat leukoderma. Similarly decoctions of seeds and stem are administered to treat victims of dog bite while the root decoction is used to treat patients of venereal diseases by the tribals of north Maharashtra region.^[4] Reports are also available about the use of entire plant in the treatment of jaundice⁸. Ethnomedical reports are also available about the use of seed powder of *E. superbum* in the treatment of psychosomatic disorders.^[9] Some workers have also reported the application of fresh root juice for easy delivery in pregnant women as well as use of powdered seeds with cow milk for semen production.^[3] Paste of 6 in peduncle with honey is reported to be administered to eliminate

kidney stones.^[5] Reports are also available about total 38 ethnomedicinal uses of entire plant in treating different ailments by tribals of various different states.^[10] Pith region is taken orally in raw form to cure appendicitis.^[11] Ethno medical investigations^[12] have also revealed that tribals in many parts of Satpura range forests of North Maharashtra region frequently use seed paste of *E. superbum* for treating snake bite victims. Further pharmacological studies of *E. superbum* in the treatment of various disorders and other activities have been undertaken by many workers.

Antiviral Activity: *E. superbum* seeds have been reported to possess significant percentage of anti-variola and anti-vaccinia principles and showing prominent *in vitro* antiviral Activity.^[15]

Prevention of urinary stone formation: Diana,^[14] has studied the efficacy of aqueous seed extract of *E. superbum* on *in vitro* crystallization and growth patterns of Calcium hydrogen phosphate dehydrate (CHPD) crystals using single diffusion gel growth technique. This technique was utilized as a simplified screening static model to study the growth inhibition of urinary stones under *in vitro* conditions. The study has revealed the prominent anti urolithiatic activity and the efficacy of seed extract of *E. superbum* to inhibit the growth of CHPD crystals.

Nephroprotective Activity: Nephroprotective activity of hydro alcoholic extract of seeds of *E. superbum* against streptozotocin induced diabetic nephropathy in rats have been reported by Kulkarni *et al.*^[15]

Anti-inflammatory activity: Inflammation is part of the complex biological response of body tissues to harmful stimuli such as pathogens, damaged cells or irritants. It is the protective response that involves immune cells, blood vessels and molecular mediators. Salvi^[16] have demonstrated significant anti-inflammatory activity of ethanolic extract of seeds of *E. superbum* against carrageenan induced mouse paw edema using female Sprague Dawley rats.

Anti-fertility activity: More recently the anti-fertility activity of 4-(4-hydroxy-3-methyl-hex-5-enyl)-chroman-2, 7-diol isolated from the ethanolic extracts of seeds of *E. superbum* have been evaluated on physical and spectral basis.^[17] The isolated fraction was reported to have shown significant anti-estrogenic activity in immature female rats at the dose of 5m/kg. Similarly same research workers have demonstrated the prominent anti-ovulatory activity in immature female rats. Similarly some research workers have reported significant anti-fertility activity of the substance VIDR-2GD isolated from the seeds of *E. superbum* and inhibition of pregnancy in mice, rats and rabbits.^[18]

Contraceptive spermicidal activity: Abu Sarwar and coworkers.^[19] have demonstrated a prominent *in vitro*

contraceptive spermicidal activity and complete immobilization of human spermatozoa due to degradation of their plasma membrane with ethanolic seed extract of *E. superbum*.

Other activities: Apart from above mentioned activities, Roy *et al* has also reported cholinergic like and anticoagulant effect with *E. superbum* in his work.^[20]

CONCLUSION

The extensive literature survey has revealed that *Ensete superbum* is an important plant with variety of ingredients, which is used in the form of crude dosage forms in folk medicine by tribals since ancient times. The main pharmacological properties indicated its anti-viral, anti-fertility and nephron protective activity. The research are still insufficient and so many aspects are unexplored, such as different chemical constituents of seeds and root portion and their isolation. This needs due separate attention. Further studies should be carried out to explore the concealed areas and their practical clinical application which can be utilized for welfare of human beings.

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CONFLICT OF INTEREST

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

Abbreviations

E. Superbum- Ensete superbum.

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