



IJPPR

INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH  
An official Publication of Human Journals

ISSN 2349-7203




Human Journals

Review Article

March 2022 Vol.:23, Issue:4


© All rights are reserved by Kavade K.A. et al.

## A Review on *Costus speciosus*: An Important Medicinal and Ayurvedic Plant



**IJPPR**  
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH  
An official Publication of Human Journals

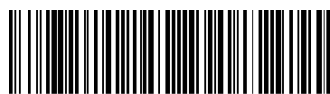
ISSN 2349-7203



**Kavade K.A.<sup>\*1</sup>, Walave K.M.<sup>2</sup>, Tote A.G.<sup>3</sup>, Magar K.I.<sup>4</sup>, Bhagwat S.K.<sup>5</sup>, Patil R.N.<sup>6</sup>**

*Ashvin College of Pharmacy, Manchi hill, Ashvi B.K.,  
Tal- Sangamner,  
Dist- Ahmednagar, 413714. India.*

**Submitted:** 20 February 2022  
**Accepted:** 25 February 2022  
**Published:** 30 March 2022



HUMAN JOURNALS

[www.ijppr.humanjournals.com](http://www.ijppr.humanjournals.com)

**Keywords:** *Costus speciosus*, Ayurvedic, pharmacological activities, diosgenin.

### ABSTRACT

An important medicinal and Ayurvedic plant used to cure different diseases. *Costus speciosus* study involves qualitative HPTLC separation and preliminary screening of secondary metabolites from the rhizome of *costus* species. *Costus speciosus* (koenex,retz.)sm (costaceae) is an Indian Ayurvedic plant that has long been used medicinally in traditional systems of medicine. Many pharmacological activities such as antioxidant, anticholinesterase, larvicidal, antihyperglycemic, antifungal, antibacterial, anti-inflammatory, analgesic, antipyretic, antidiuretic estrogenic, and antistress activity of *costus speciosus* plant are studied. The rhizome of these plants is used as an alternative source for diosgenin and is generally used to control diabetes. This article indicated that plants should be studied for their herbal and medicinal effect it also includes the phytochemical, pharmacological properties, and structures of *costus speciosus* as a medicinal herbal, ornamental plant.

## 1.1 INTRODUCTION:-

The world in traditional, as well as a modern system of medicine, Utilizes higher plants which are a major source of therapeutic agents. Currently, more than 2,000 species are used as a single drug. (1)The most popular species in the genus is *C. speciosus* which has emerged as an important and medicinal herbal and antidiabetic ornamental plant. (4)The rhizome is the major source of diosgenin which is antidiabetic in nature and used in the treatment of Diabetes mellitus. (2,3)India consists of near about 20,000 plant species which is about to 2,500 that are of medicinal value, Which is rich in indigenous herbal resources. (4)*Aspergillus* sp. is antidiabetic in nature and used in the treatment of diabetes mellitus it causes pulmonary infection. Before the prehistoric period, plants have been used for medicinal purposes. Herbal medicines are mostly prepared from leaves, roots, barks, seeds, and flowers of plants. The most popular species in genus *C. speciosus* emerges as important antidiabetic plants. The steroidal sapogenin, diosgenin has been reported from the rhizome of *Costus speciosus*(4).In Ayurveda, where the rhizome has been used to treat fever, asthma, bronchitis, and intestinal worm, *Costus speciosus* used for the treatment of smallpox and purgative. Hence, *Costus speciosus* plants are traditionally, medicinally, and pharmacologically important. *Costus speciosus* is an important medicinal and Ayurvedic plant. (5,6)*Zingiberaceae* is a family of more than 1,300 species distributed throughout tropical Africa, Asia, and the Americas. It has fifty-two genera. (7)It is popularly known as kemuka, Kushta, Kashmira, Shura, Katar in Sanskrit, pushpamoola in Kannada, kashmeeramu in Telugu keukand, Keu in Hindi and Bengali, ChengalvaKoshta' in Telegu and Kannada, 'Kottam' or 'Koshtam' in Tamil and 'Penava' or 'Pushkarmula' in Marathi, Jomlakhuti in Assamese, Crepe ginger in English. (8,9,10,11)



## 1.2 Classification:-

**Table 1: Taxonomic Classification<sup>(12)</sup>**

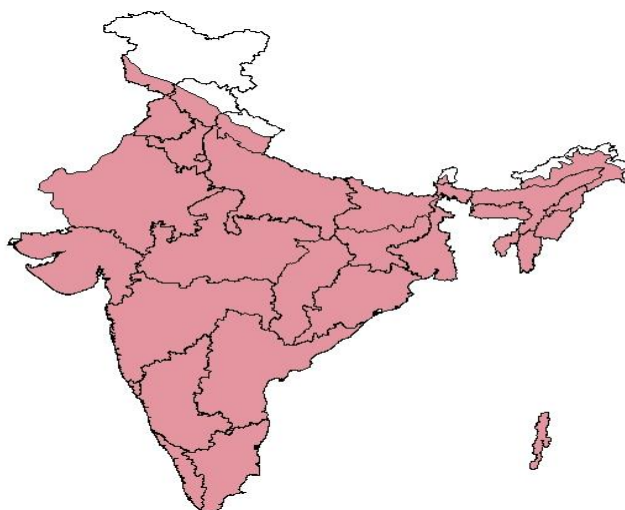
Kingdom	Plantae
Subkingdom	Tracheobinota
Superdivision	Spermatophyta
Division	Mangoliophyta
Class	Liliopsida
Sub class	Zingiberidae
Order	Zingiberales
Family	Coastaceae
Genus	Costus
Species	speciosus

**Table 2: Scientific Classification<sup>(12)</sup>**

Kingdom	Plantae
clade	Tracheophytes
clade	Angiosperms
clade	Monocots
clade	Commelinids

## 1.3 Geography:-

Costus speciosus is found in the moist and wet evergreen areas of the Indo-Malayan region and Sri Lanka Costus speciosus found. <sup>(13)</sup>Costus speciosus have been used for medicinal purposes are also distributed in the Kalsubai Harishchandragad wildlife sanctuary, Ahmednagar. <sup>(14)</sup> In India, C. speciosus occurs throughout the foothills of Himalayas from Himachal Pradesh to Assam, Vindhya Satpura hills in Central India, Eastern Ghats of Andhra Pradesh and Western Ghats of Maharashtra, Karnataka, Tamil Nadu, and Kerala. <sup>(15)</sup>



**Geo-Distribution Map for *Costus speciosus***

#### **1.4 Morphology:-**

Plant, rootstock tuberous stem, sub-wood at the base, thick creep in rhizomes (120-300 cm height). <sup>(17)</sup> it grows upto 2-2.7m in height with long lanceolate leaves and white fragrant flowers in terminal clusters. <sup>(18)</sup> It is a dramatic landscape plant with large dark green, subsessile, elliptic, or obovate leaves arranged on the stalk in spiral form. It can grow up to 3.1 m in height in frost-free areas but usually grows to about 1.8 m tall in cooler areas where its roots get hardened but die back in winter. <sup>(19)</sup> The plant flowers during July and August and, the aerial parts wither away during the winter season. <sup>(20)</sup> The *Costus speciosus* plant flowers look like crepe paper, thus the common name is "Crepe ginger". The flowers are 5-6 cm long with a cup-shaped labellum and crest yellow stamens. Fruit is red in color whereas seeds are black, five in number with a white fleshy aril. <sup>(21)</sup>

#### **1.5 Cultivation:-**

In rainy seasons it is mainly cultivated. It grows well on rich moist soil or clayey loam soil in a shady area under mixed deciduous forests of South India. It grows well on rich moist soil or clayey loam soil in a shady area under mixed deciduous forests of South India. It grows well in a climate with high humidity and low temperature. *Costus speciosus* is propagated by different methods such as vegetative methods using rhizome species, division of culms, stem cuttings, or via seeds dispersed by birds. <sup>(22,23,24,25)</sup>

## 1.6 Cultivation technique:-

**a. Land preparation:-** The land is plowed 2-3 times. The soil is brought to fine tilth FYM @15/hairs applied and mix well with the soil and furrows made 50cm apart.

Propagation:- Although the plant can be propagated from seeds, stem cutting, and rhizomes; commercially, it is being propagated only through rhizome cuttings. The selection of rhizomes for planting is however important. The rhizomes have several buds most of them being concentrated around the stem scars and the tips. The formation of buds on the rhizome is poor during April. The cuttings of rhizome pieces for propagation should have at least 2 viable buds. Rhizome pieces weighing around 40 g should be selected. About 2000-2400 kg of fresh rhizomes is required for planting one hectare of land.

**b. Planting:-** The rhizome pieces are placed at a depth of 8-10 cm taking care to place the eye buds facing upwards, horizontally in rows 50 cm apart and covered with soil. The crop is irrigated immediately after planting. The thick-sized pieces sprout slowly only after 40 - 45 days of planting. This is due to the eye buds being dormant on these rhizome pieces which take a longer time to develop, especially in the case of the crop planted in April. After 70-75 days, about 90-95% sprouting is obtained.

**c. Manure and Fertilizer:-** Trials suggest that the optimum dose for obtaining a maximum yield of Diosgenin is 45 Kg N, 30 Kg P<sub>2</sub>O<sub>5</sub>, and 30 Kg K<sub>2</sub>O along with 15 t/ha of FYM. The FYM and a half dose of P and K are applied in two split doses at 20 and 60 days from the time of planting, the remaining half dose of P and K is given along with the second dose of N after the 60th day of planting.

**d. Weeding and Interculture:-** One weeding during the sprouting period of the crop followed by two more keeps the crop fairly free from weeds. During the period of active vegetative growth (July to Sept), most of the weeds are suppressed. If the monsoon is erratic, at least one more weeding is required. Weeding once or twice during the dormant season helps in better sprouting of the crop during the next season. In the second year of the crop, the inter-row space between the plants is covered by the canes and only 2-3 weeding are necessary before the crop is harvested in August or September. <sup>(27,28,29,30,31,32,33)</sup>

### 1.7 Conservation:-

There is a need for the propagation of plants, Due to low multiplication rate, poor seed viability, low percentage of seed germination, and scanty delayed Antibacterial rooting of vegetative cuttings. For commercial propagation and preservation of *Costus speciosus* plant, Different plant biotechnological approaches such as micropropagation, germplasm preservation and various tissue culture techniques which result in large scale production of uniform planting material can be used. <sup>(34)</sup>

### 1.8 Medicinal Uses:-

**a. Leaves:-**Leaves are also crushed and used in a poultice applied to the head. In Malaysia, the plant is boiled in water to prepare a decoction, which is used to bathe a patient with a high fever. Decoction of the plant is applied as a lotion for smallpox. Stem. The scrapings of the stem are applied to leprous skin.

**b. Shoot:-** Juice of the tender shoots or pith is squeezed into the eye for ailments of the eye □ Rhizome. The juice of the fresh rhizome is taken as a purgative. In India, the rhizome is powdered and taken for colds, rheumatism, and pneumonia. It is also believed to be a tonic, depurative, and aphrodisiac. In Java, the rhizome is used after confinement, and also to treat syphilis.

**c. Diosgenin:-** These plants are widely used as starting material in the commercial production of steroidal hormones. It is chiefly obtained from certain species of *Dioscorea* of which *Dioscorea deltoidea* constitutes the main Indian raw material. This source, however, has limitations in ensuring large supplies on a sustained basis due to its restricted distribution in few localities in North-West Himalaya and poor response to domestication. It become necessary to search for an alternative botanical source that could be easily cultivated under a Uses, Sanskrit verse.

**d.** The powder of the rhizome of *Costus speciosus* is given in a dose of 3-5 g with honey to treat cough and asthma. The powder of the rhizome is given in a dose of 3- 5 g with hot water to treat indigestion and anorexia. To treat difficulty in labor and pain associated with labor, the fresh juice of rhizome of *costus speciosus* is given. The paste of the leaves and rhizome is applied locally over the skin affected with discoloration, black spots, and itching due to ringworm infection and converted into a paste. The decoction of the rhizome of *Costus speciosus* given in a dose of 20-25 ml in the condition of elephantiasis, fever, and

intestinal worms. The cold-infusion of the rhizome of *Costus speciosus* acts like a blood purifier, hence beneficial in a patient suffering from repeated skin diseases. <sup>(36)</sup>

e. **Grahi** - Absorbent, useful in diarrhea, IBS. **Deepana** - Improves digestion strength. **Pachana** - Digestive, relieves Ama Dosha.

### 1.8 Indications:-

Jwara - Fever of Kapha and Pitta

Kushta - Skin diseases

Kasa - Cough, cold

Prameha - Urinary tract disorders, diabetes

Asra - Blood disorders such as abscess, skin disorders, bleeding disorders such as menorrhagia, nasal bleeding, etc.

### 1.9 Side effects:-

No adverse effect is known or reported after the use of Kebuka. Interaction with medicines, suppleme range of agro-climatic conditions and provide the industry with a raw mat.

### 1.10 Ayurvedic medicines containing Kebuka:-

a. **Krimigh nakashaya**:- It is a decoction used in the treatment of worm infestation (Helminthiasis) This Kashaya is derived from Krimighna Gana of Charaka.

b. **Nisoshiraditaila**: It is an oil used to treat diabetes carbuncles and abscesses. It helps to heal wounds quickly.

c. **Brihatpurna Chandra Rasa**:- It is a medicine in tablet form, used in anti-ageing therapy, digestive disorders, cough, cold, asthma, anorexia, abdominal colicpain, low backache, heartburn, indigestion, gastritis, fistula, jaundice, anemia, urinary tract disorders, gout.

d. **Asana eladitaila**: It is a herbal oil used in the treatment of headache, ear, and eye diseases. It is used for external applications only. <sup>(35)</sup>

## 1.11 CONCLUSION:-

In our day-to-day life, medicinal plants are important for us so their study is very important for us. Investigation of traditional medicine is very important for the Welfare of rulers and tribal communities for the treatment of conventional illness. *Costus speciosus* is interested in research purpose in the development of new drug molecules every part of species is important for the preparation of medicine the optical potential should be also be seen in combination with other medicinal agent shows not only medicinal but also an Ayurvedic uses. Production of medicine.

## REFERENCES:-

1. Rajasekharan. S, Pushpangadan. P and Biju, S.D,1996. Folk Medicines of Kerala - A Study on Native Traditional Folk Healing Art and its Practitioners in Jain, S.K. (ed) Deep Publications, New Delhi India pp167-172.
2. Roy, M.M and Datta, S.C.1977. Investigation of *Costus speciosus*(Koen) sm. as a source of Diosgenin: Part-I. Indian Drugs, 15:14-16.
3. Dasgupta, B.and Pandey, V.B.1970.A new Indian source of Diosgenin (*Costus speciosus*)Experiment,26:475.
4. Bavara G.H, Narasimhacharya A. V. R. L., 2008.Phytotherapy Research, 22(5), 620-626.[3] A. H. EL - far, and I. I. Abou - Ghanem, Biochemical and hematological evaluation of *Costus speciosus* as a dietary supplement to Egyptian buffaloes," African Journal of Pharmacy and Pharmacology, 7(42), pp. 2774-2779, 2013.
5. S. Srivastava, P. Singh, K. K. Jha, G. Mishra, S. Srivastava, R. L. Khosa, "Anthelmintic activity of aerial parts of *Costus speciosus*," International Journal of Green Pharmacy, 5, pp. 325-328, 2011. 24-27, 2012.
6. J. P. Robinson, S. J. Britto, and V. Balakrishnan "Micropropagation of *Costus speciosus* ( Koem, ex. Retz) Sm., an Antidiabetic plant by using Explants of Pseudostems," Botany Research International, 2(3), pp. 182-185, 2009.
7. H. EL - far, and I. I. Abou - Ghanema, Biochemical and hematological evaluation of *Costus speciosus* as a dietary supplement to Egyptian buffaloes," African Journal of Pharmacy and Pharmacology, 7(42), pp. 2774-2779, 2013.
8. B. K. Kirchoff and R. Rutishauser, "The Phyllotaxy of *Costus* (Costaceae)," Bot. Gaz, 151, pp. 88-105, 19V. Devi D and A. Urooj, "Nutrient Profile and Antioxidant components of *Costus speciosus* Sm. And *Costus igneus* Nak.," Indian Journal of Natural Products and Resources, 1(1), pp. 116-118, 2010.
9. M. S. Rajesh, M. S. Harish, R. J. Sathyaprakash, A. R. Shetty, T. N. Shivananda, "Antihyperglycemic activity Of the various extracts of *Costus speciosus* rhizomes," Journal of Natural Remedies, 9(2), pp. 235-241, 2009.
10. G.V. Satyavathi, "Medicinal plants of India," ICMR. New Delhi, Vol. 1, 1976. [14]N. Choudhury, K.
11. N. Choudhury, K. J. Chandra and H. Ansarul "Effect of *Costus speciosus* Koen on reproductive organs of female albino mice," International Research Journal.
12. S. Srivastava, P. Singh, G. Mishra, K. K. Jha, R. L. Khosa, "*Costus speciosus* (Keukand): A review," Der Pharmacia Sinica, 2 (1), pp. 118-128, 2011.
13. A. H. EL - far, and I. I. Abou - Ghanema, Biochemical and hematological evaluation of *Costus speciosus* dietary supplement to Egyptian buffaloes," African Journal of Pharmacy and Pharmacology, 7(42), pp. 2774-2779, 2013.
14. Y. K. Sarin, K. L.Bedi, and C. K. Atal, "*Costus* A. H. EL - far, and I. I. Abou - Ghanema, Biochemical and hematological evaluation of *Costus speciosus* dietary supplement to Egyptian buffaloes," African Journal of Pharmacy and Pharmacology, 7(42), pp. 2774-2779, 2013*speciosus* rhizome as a source of Diosgenin," Current Science, 43(18), pp. 569-570, 1974.



15. A. S. Wabale, M. N. Kharde, K. J. Salunke and A. S. Petkar, "Costusspeciosus (Koeing.) J. E. Sm., Lobelia nicotianaefolia Roth. And Urginea indica Kunth- the important Ethnomedicinal Plants from the Western Ghats," Asian J. Exp. Biol. Sci., 2(1), 169-170, 2011.
16. Suggested citation for the Website: Editors: D K Ved, Suma TagadurSureshchandra, Vijay Barve, Vijay Srinivas, Sathya Sangeetha, K. Ravikumar, Kartikeyan R., Vaibhav Kulkarni, Ajith S. Kumar, S.N. Venugopal, B. S. Somashekhar, M.V. Sumanth, Noorunissa Begum, Sugandhi Rani, Surekha K.V., and Nikhil Desale. 2016. (envis.frlht.org / frlhtenvis.nic.in). FRLHT's ENVIS Centre on Medicinal Plants, Bengaluru. Copyright: FRLHT, Bengaluru and MoEFCC, GoI.
17. J. Karthikeyan, V. Reka, and R. V. Giftson, "Characterization of bioactive compounds in Costusspeciosus (Koen.) by reverse-phase HPLC," International Journal of Pharmaceutical Sciences and Research, 3(5), pp. 1461-1465, 2012.
18. N. Choudhury, K. J. Chandra and H. Ansarul "Effect of Costusspeciosus Koen on reproductive organs of female albino mice," International Research Journal of Pharmacy, 3(4), pp. 200-202, 2012.
19. V. Devi D and A. Urooj, "Nutrient Profile and Antioxidant components of Costusspeciosus Sm. And CostusigneusNak.," Indian Journal of Natural Products and Resources, 1(1), pp. 116-118, 2010.
20. Eti, A. Narayanan, B. Ganesan, "Studies on Costus speciosus Koen Alcoholic Extract for Larvicidal Activity," International Journal of Pharmacognosy and Phytochemical Research, 5(4), pp. 328-329, 2013.
21. Nehete, M. Bhatia and M. Narkhede, "In-vitro Evaluation of Antioxidant Activity and Phenolic Content of Costusspeciosus (Koen) J. E. Sm.," Iranian Journal of Pharmaceutical Research, 9(3), pp. 271-277, 2010.
22. S. K. Muniyandi, A. T. Nandanani, S. C. Veeti, A. Narayanan, B. Ganesan, "Studies on Costus speciosus Koen Alcoholic Extract for Larvicidal Activity," International Journal of Pharmacognosy and Phytochemical Research, 5(4), pp. 328-329, 2013.
23. P. N. Prasad, "Studies on Costusspeciosus (Koen) sm. and C. malortieanus H Wendl. Ph.D. Thesis, University of Madras, Tamil Nadu, India, 1982.
24. S. Srivastava, P. Singh, K. K. Jha, G. Mishra, S. Srivastava, R. L. Khosa, "Anthelmintic activity of aerial parts of Costusspeciosus," International Journal of Green Pharmacy, 5, pp. 325-328, 2011
25. A. S. Rani, G. Sulakshana and S. Patnaik, "Costusspeciosus, an antidiabetic plant-review," FS J Pharma Res, 1(3), pp. 52-53, 2012.
26. Chopra, R.N., S.L Nayar, and I.C. Chopra (1956). Glossary of Indian Medicinal Plants. New Delhi: CSIR Publications and Information Directorate. 78-79.
27. Chunekar, K.C. 1982. Bhavaprakashanighantu of Sri Bhavamishra. Commentary, Varanasi (in Hindi).
28. Dasgupta, B. and V.B Pandey (1970). A new Indian source ofDiosgenin (Costusspeciosus). Cell. Molec. Life. Sci. 26:475-476.
29. Gamble J.S. 1987. Flora of the presidency of Madras. VolIII. BishenSingh Mahendra Pal Singh, Dehra Dun, India. Pp. 1478-1493.
30. Gideon, O. 1991. Costoideae or Costaceae: A taxonomic bank controversy. Zingiberaceae Workshop, Songkla University, HatYai, Thailand. p20.
31. Khanna, P., G.L.Sharma. A.L. Rathore and S.K Manot (1977).Effect of cholesterol on in vitro suspension tissue cultures of Costusspeciosus (Keon.) Dioscorea floribunda, Solanumaviculare, and solanum xanthcarpum. Ind.J. Exptl.Biol.15:1025-1027.
32. Kirtikar, K.R. and Basu, B.D. 1987. Indian Medicinal Plants. BookDistributors, Dehra Dun.p.2444-2449.
- Moosad, T.C.P. 1983. Amarakosam- Commentary. Kottayam (in Malayalam). P.361.Mooss, N.S. 1984b. Identification of kebuka. Anc. Sci. Life., 4(2): 100-102.
33. Prakash, V., and B.N. Mehrotra (1996). Zingiberaceae of India'sBiological screening and ethnobotanical diversity: In proceeding of the Biological symposium on the family Zingiberaceae, South China Institute of Botany 229-237.
34. J. P. Robinson, S. J. Britto, and V. Balakrishnan "Micropropagation of Costusspeciosus(Koem, ex. Retz) Sm., an Antidiabetic plant by using Explants of Pseudostems," Botany Research International, 2(3), pp.
35. L.Wanwasia, K.Pakanit, C.Nuannoi, W. Susan, K. Sajeera, "The Effects of Wild Ginger, Costusspeciosus Rhizome Extract and Diosgenin on Rat Uterine Contractions," Reprod. Sci., 18 (6), pp. 516-524, 2011.
36. Costusspeciosus (Koen ex. Retz.) Sm.: Current status and future industrial prospects (36)Google image.