

## Uses of Langali (*Gloriosa superba* Linn.): An Ethnomedicinal Perspective

Bhargav Bhide<sup>1</sup>, Rabinarayan Acharya<sup>2\*</sup>

1. Ph.D. Scholar, Dept. of Dravyaguna, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar, Gujarat, India.

2. Associate Professor, Dept. of Dravyaguna, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar, Gujarat, India.

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### Abstract

Langali, botanically identified as *Gloriosa superba* Linn., of family Liliaceae, a native of tropical Asia and Africa, is one of the drugs, reported for its uses by the tribal people of India. Here, an attempt has been made to compile those scattered reporting from various published research articles and books related to ethnobotany. Total 46 research articles highlighting the ethnomedicinal aspect of *Gloriosa superba* Linn. were traced out with regards to its reported clinical efficacy. In India, the plant is being used in 12 states viz. Assam, Chhattisgarh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal and by 36 tribes (Santal, Munda, Oraon, Irular, Baiga, Gond, Mullu Kuruma, Pawara, Mavachi, Kokani, Bhil etc.). Various parts, such as leaf, rhizome and seed of the plant are claimed as useful parts by 3, 34 and 3 tribes respectively. It is being used in 29 disease conditions, like leprosy (5 tribes), lice (4), wound along with ulcers and sores (4), rheumatism (3), snakebite (2), scorpion bite (2), gout (2), abdominal pain (1); and useful as abortifacient (6), anthelmintic (3) etc.

**Keywords:** Langali; *Gloriosa superba*; ethnomedicine; rhizome; abortifacient.

### \*Address for correspondence:

Rabinarayan Acharya,

Associate Professor, Dept. of Dravyaguna,

I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar – 361008.

E-mail: [drnmacharya@gmail.com](mailto:drnmacharya@gmail.com)

### INTRODUCTION

Langali, *Gloriosa superba* Linn., (Liliaceae), a glorious herbaceous climber with underground tuberous rhizome is found throughout India, upto an altitude of 2000 m, in Khasia hills, Bihar, Odisha, W. Bengal, Gujarat, Konkan and Andaman Islands.<sup>[1]</sup>

Root of this plant is used as an ingredient in many Ayurvedic classical formulations and indicated for various clinical conditions such as, shotha (inflammation / oedema), vrana

(wound), gandamala (lymphadenitis), charmaroga (skin diseases), khalitya (hair loss), agnimandya (loss of appetite), arsha (piles), vatavyadhi (joint pain / arthritis) and many others.<sup>[2]</sup> Root of langali is enlisted as an essential drug, to be kept in delivery room<sup>[3]</sup> and especially indicated in delayed labour and expulsion of placenta.<sup>[4]</sup> Other than Ayurvedic classical texts, traditionally many tribals use this plant for curing various ailments. Despite of being a useful plant, information regarding its ethnomedicinal uses is not available in a single place. Classical texts of Ayurveda

report certain uses of the drug but traditionally many other uses are recorded and Ayurveda advocates to report those uses for the benefit of the society.<sup>[5]</sup> Many such uses of plants have been recorded during various survey studies and reported in different ethnobotany and ethno-medicinal research journals. Single hand information on an individual plant about its ethnic uses is lacking. Recently the demand of *Gloriosa superba* has been increased due to its colchicine content, which is used in various clinical conditions such as acute gout,<sup>[6]</sup> acute pericarditis,<sup>[7]</sup> cirrhosis of liver,<sup>[8]</sup> severe constipation<sup>[9]</sup> etc.

Hence, in the present article, an attempt has been made to gather information regarding the reported ethnobotanical uses of *Gloriosa superba* from various ethnobotanical journals (10), research journals (15), and books (7). The information obtained is arranged in a tabular form, concerning the use of the plant in different tribes, reported from different parts of India, local name of the plant, parts used, indications and mode of administration etc.

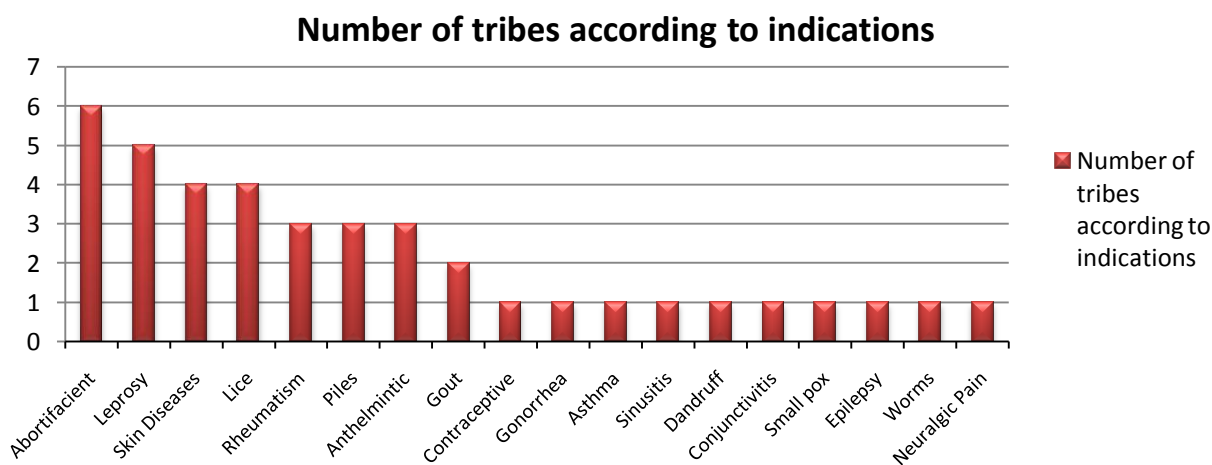
## RESULTS AND DISCUSSION

Total 46 articles and 7 books related to ethnobotany were searched for traditional uses

of Langali from which about 29 clinical conditions were observed. The claims regarding this plant are depicted in Table 1 and number is depicted in Graph 1. The conditions are abortion, cancerous wounds, scorpion bite, painful delivery, suppressed urination, arrow poisoning, epilepsy, stomachic, anthelmintic, skin troubles, rheumatism, joint pain, asthma, sinusitis, contraceptive, gout, dandruff, head lice, antivenom for snakebite, small pox, piles, abdominal pain and intestinal worms. It is also useful in veterinary practices like foot and mouth disease (anthrax) and easy delivery of cattle. Various actions of *Gloriosa superba* have also been evaluated scientifically which support the reported claims about this plant. These actions are reported in Table 2.

It is not only the tribals who uses langali for many disease conditions but also in the classical texts of Ayurveda, langali is used in 158 formulations having an indication in more than 30 disease conditions like aparapatana (removal of placenta), vrana (vrana), agnimandya (loss of appetite), jvara (fever), grahani (irritable bowel syndrome), kasa (cough), hikka (hiccough), kushtha (leprosy), shvitra (leucoderma), visarpa (erysipelas), arsha (piles) etc.<sup>[2]</sup>

**Graph 1: Showing various indications of Langali**



**Table 1: Various reported indications of Langali (*Gloriosa superba* Linn.)**

Sr. No.	Local name	Part used and form / mode of application	Uses	Tribal area
1.	Ulatchandal (B); Samansom (O); Selep Samonom (S); Daini (H)	20 gm root paste with 7 black pepper and goat milk	Induce abortion <sup>[10][11]</sup>	Oraon
2.	Kalihari (H)	Bulb boiled with mustard oil, leaves, seeds	Cancerous wounds <sup>[12]</sup>	Chhattisgarh
3.	Bhadrosi Kalihari	Bela, Plant	Edible <sup>[13]</sup>	Kalpi
4.	Kalihari (H)	Grinded rhizome with ghee orally	Induced abortion <sup>[14]</sup>	Gond
5.	Menthonni (Mal)	Root paste on bitten spot	Scorpion bite <sup>[15]</sup>	Mullu kuruma
6.	Langalya (Ba)	Tuber powder, leaf extract	Painful delivery, suppressed urination <sup>[16]</sup>	Jaunsuri
7.	Kalihari, Ranchendi, Kachla (Bh)	Aqueous extract of bulb	Arrow poisoning <sup>[17]</sup>	Jhabua
8.	Senganthal (Tm)	Rhizome paste	Wound <sup>[18]</sup>	Malayali
9.	Kanvalipoo, Kazhappaikilangu (Tm)	Tuber paste, seed	Tuber for inflammation and abortion, seeds for epilepsy <sup>[19]</sup>	Malayali
10.	Akkinichilam (Tm)	Tubers	Used as stomachic, anthelmintic and skin troubles <sup>[20]</sup>	Salem
11.	Kal-lavi (Mr)	Tuber paste	Rheumatism <sup>[21]</sup>	Nandurbar
12.	Kalappaikilangu (Tm)	Rhizome	Poisoning <sup>[22]</sup>	Pallapatty, Tamil Nadu
13.	Kalihari (H)	Decoction of kalihari root stock in sesame oil is filtered and applied twice a day followed by massage on joints	Pain continued for one month <sup>[23]</sup>	Meerut
14.	Kal-lavi (Mr)	Tuber decoction (5-10ml), tuber paste	Decoction for asthma, paste applied over head and nose to relieve from sinusitis <sup>[24]</sup>	Jalgaon
15.	Bachnag (Mr)	Roots extract (25ml) is given orally twice a day for 6 days	Abortifacient <sup>[25]</sup>	North Maharashtra
16.	<i>Gloriosa superba</i>		Herbal contraceptive <sup>[26]</sup>	
17.	Kalihari (H)	Tuber extract mixed with <i>Solanum virginianum</i> Linn root extract	Abortifacient; intake of tubers fatal, causes gastrointestinal irritation, vomiting and purgation <sup>[27]</sup>	Sothorn Aravalli hills
18.	Kalgari (Rj)	Tubers crushed and applied over toes of cattle and are fed with decoction of 50gm <i>Tinospora cordifolia</i> (Willd.) Miers. (whole plant) and a spoonful of <i>Curcuma longa</i> L. dried rhizome powder twice a day for three days; For easy delivery flower paste is given with warm water and applied over palms and shown to cattle facing labour pain	Foot and mouth disease (Anthrax); easy delivery <sup>[28]</sup>	Udaipur
20.	Kalappaikilangu (Tm)	Seeds and tubers	Gout, rheumatism <sup>[29][30]</sup>	Dindigul, Madurai, Theni; Tamil Nadu
21.	Agnisikha (Tl)	Roots of plant and seeds of <i>Piper nigrum</i> are ground. 2 spoonfuls of paste mixed with a pinch of ghee administered early in the morning	Abort pregnancy upto 3 months <sup>[31]</sup>	Konda reddis

22.	Kannuvalikodi (I)	Root, leaves	Anthelmintic, in leprosy, parasitical infections of skin, piles; leaves to destroy head lice <sup>[32]</sup>	Irular
23.	Kalihari (H)	Tuber paste orally	Antivenom for snakebite <sup>[33][34]</sup>	Bhil, Meena, Thabua
24.	Languli lata (Bh), Ulatchandal (B)	Tuber paste applied on body, juice	Paste for small pox, leprosy, juice to kill lice <sup>[35]</sup>	Purulia
25.	Kalhari (H)	Tuber extract	Gout, rheumatism, gonorrhoea <sup>[36]</sup>	Bijargarh
26.	Agnishika (K)	(a) Paste prepared from tuber and zinger in equal parts is applied at affected part for 3 days, (b) tuber crushed and paste applied at affected parts once every two till it cures	(a) Piles, (b) skin diseases <sup>[37]</sup>	Bidar
27.	Kalihari (H)	Rhizome paste is rubbed on the body externally for 3 days	Leprosy <sup>[38]</sup>	Raigarh (CG)
28.	Kalihari (H)	Fresh root bark is chewed	Abdominal pain <sup>[39]</sup>	Balaghat
29.	Khindaula (D)	Leaves	To remove intestinal worms <sup>[40]</sup>	North Cachar hills district, Assam
30.	Kalappaikizhangu (Tm)	Dried powdered tubers mixed with <i>Pongamia pinnata</i> Pierre oil applied on the scalp	Kill lice and remove dandruff <sup>[41][42]</sup>	Kanyakumari, Phulbani
31.	Menthonni (Mal.)	Fresh root paste is applied on supra pubic region and the vagina	To promote labour pain <sup>[43]</sup>	South Kerala
32.	Akkatangi balli (K)	a) Leaf extract is applied to hairs, b) root paste to relieve pain	a) To Kill lice, b) root paste in scorpion bite, <sup>[44]</sup> lice and snake bite <sup>[45]</sup>	Chikhaldara
33.	Languli (H)	Warm poultice of root tuber	Rheumatism, neuralgic pains; spleen complaints, tumours, erysepelas, sores, syphilis <sup>[46]</sup>	Uttaranchal
34.	Vachhnag (Sau)	Seed paste externally	Dermatitis <sup>[47]</sup>	Saurashtra Biligiri
35.	Kannovina gida (K)	Tuber paste applied on eyebrows	Conjunctivitis <sup>[48]</sup>	Rangana Betta, Karnataka
36.	Bachnag (Mr)	Roots, seed paste	Roots – purgative, piles, ulcers, leprosy, scabies, snake bite, seeds – quick delivery <sup>[49]</sup>	Thane
37.	Languli (S)	Root	Insect repellent of insecticide <sup>[50]</sup>	Bankura (WB)
38.	Kewari (N)	Root	Purgative, cholagogue, anthelmintic, in leprosy, parasitical affections of skin, piles, colic <sup>[51]</sup>	Madhubani, Sitamarhi

B – Bengali, O – Oraon, Mal – Malayalam, Ba – Baiga, Bh – Bhil, Ml – Malayali, Tm – tamil, Mr – Marathi, Tl – Telugu, I – Irular, K – Kannada, D – Dimasa, Rj – Rajasthan, S – Santhali, Sau – Saurashtra, N – Nepali.

**Table 2: Showing researches on the activities of *Gloriosa superba***

Sr. No.	Traditional uses	Supporting research activity	Title of the research
1.	Abdominal pain, worms, anthelmintic	Anthelmintic activity	Anthelmintic activity of <i>Gloriosa superba</i> Linn (Liliaceae) <sup>[52]</sup>
2.	Abortifacient (6 tribes), painful delivery	oxytocic activity and early abortifacient activity	Effect of the aqueous extract of <i>Gloriosa superba</i> Linn (Langli) roots on reproductive system and cardiovascular parameters in female rats <sup>[53]</sup>
3.	Gout, rheumatism, neuralgic pain	Analgesic and anti-inflammatory activity	Analgesic and anti-inflammatory activities of hydroalcoholic extract from <i>Gloriosa superba</i> Linn. <sup>[54]</sup>
4.	Snakebite	Potent neutralizing effect on rattlesnake venom when used subcutaneously to mice	Ethnobotanical survey of folk plants for the treatment of snakebites in Southern part of Tamilnadu, India <sup>[55][56]</sup>
5.	Wounds, skin diseases	Significant antimicrobial and antifungal activity of aqueous and alcoholic extracts of leaves	Antimicrobial activity of aqueous and alcoholic extracts of leaves of <i>Gloriosa superba</i> Linn. <sup>[57]</sup>
6.	Wounds, skin diseases	Antimicrobial activities of <i>Gloriosa superba</i> rhizome extracts	Antimicrobial activities of <i>Gloriosa superba</i> Linn (Colchicaceae) extracts <sup>[58]</sup>
7.	Wounds, skin diseases	Antimicrobial activity of the leaf extracts	Assessment of the antimicrobial potency of leaf extracts from <i>Vitex nugundo</i> and <i>Gloriosa superba</i> <sup>[59]</sup>
8.	Cancerous wounds	antimicrobial and mutagenic properties of the methanolic, aqueous and petroleum ether extracts of the root tubers	Antimicrobial and mutagenic properties of the root tubers of <i>Gloriosa superba</i> Linn. (Kalihari) <sup>[60]</sup>
9.	Insecticide	flower methanol extract has the potential for the control of the <i>R. microplus</i> , <i>P. cervi</i> , <i>A. subpictus</i> , and <i>C. tritaeniorhynchus</i>	Laboratory determination of efficacy of indigenous plant extracts for parasites control <sup>[61]</sup>

### Regions of India:

The plant is being used in about twelve regions/states of India viz. West Bengal (Purulia), Chhattisgarh (Raigarh), Madhya Pradesh (Balaghat, West Nimar, Jhabua), Uttar Pradesh (Meerut), Jharkhand, Kerala (Wayanad), Tamil Nadu (Kanyakumari, Salem, Kolli hills, Pallapatty, Coimbatore), Maharashtra (Jalgaon, Nandurbar), Odisha (Phulbani), Assam (North Cachar Hills), Rajasthan (Udaipur, Aravalli hills) and Karnataka (Bidar, Gulbarga).

### Tribes:

The thirty five tribes who use Langali are: Santal, Munda, Oraon, Irular, Baiga, Gond, Mullu Kuruma, Pawara, Mavachi, Kokani, Tadvi, Kodava, Bhilala, Bhil, Garasia, Damor,

Gamati, Kathodia, Menna, Kharadi, Mohradi, Randhor, Parmar, Meghwal, Chakma, Marma, Tripura, Konda reddy, Bhumij, Lambanis, Korwa, Korku, Dimasa, Malayali, Jaunsuri.

The plant is also reported to be useful for leprosy, lice, piles, scorpion bite among 5, 4, 3 and 2 tribal communities respectively. The drug is used for cancerous wound, epilepsy, contraceptive, gonorrhoea, asthma, sinusitis, dandruff, small pox and conjunctivitis among one tribal community; though the drug is used for various diseases among the tribes further researches are required to support the reported data.

### Dosage form:

Tuber paste is most widely used dosage form among 18 tribals, followed by tuber/rhizome

decoction by 7 tribals; and leaf, root and seed powder by 3, 2 and 2 tribals respectively.

Colchicine is the major constituent of *Gloriosa superba* and its demand is increasing day by day. This has led to exploitation of this plant all over the world. Because of over exploitation it is extinct (EW) in the wild in Darjeeling Himalaya, endangered (EN) in Himachal Pradesh,<sup>[63]</sup> it is given endangered 'B' status in Himachal Pradesh<sup>[64]</sup> and Tamil Nadu,<sup>[65]</sup> endangered plant of Asia and Africa.<sup>[66]</sup> Seeing the profitability of this plant the farmers of southern districts of Tamil Nadu are practicing its mass cultivation which is necessary to cope up with the today's demand.

## CONCLUSION

36 tribes use langali (*Gloriosa superba* Linn.) as a medicament. It is being used as an abortifacient and for the management of 29 disease conditions such as leprosy, lice, rheumatism etc. Its major chemical constituent colchicine, is reported for its use in various clinical conditions leading to its over exploitation. *Gloriosa superba* has been enlisted under endangered category and needs immediate attention.

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