

A Review on Ethnomedicinal Claims of *Gloriosa superba* Linn. (*Langali*)

Uganta Meena^{1*}, Das Ashokkumar Nathulal²

Abstract

Gloriosa superba Linn., is a procumbent herbaceous climber. Different parts of *G. superba*, have wide diversity of uses especially in traditional system of medicine among local healers. The goal of the current review was to gather information on research updates and claims pertaining to ethnomedicine and folklore that is currently accessible. Information and data regarding reported ethnomedicinal uses and folklore claims of the *G. superba* were searched from ethnomedicinal books and published research articles. *G. superba* has been identified by 48 different tribes/communities in two countries and eight states of India and known by 16 names in eight different languages. It has been used in the management of 36 disease conditions for its traditional folklore therapeutic uses. Additionally, pharmacological studies have reported its anti-arthritis, anti-inflammatory, abortifacient, and oxytocic activities. The claims found in folklore can serve as a basis for future research to support their ethnic origins through pharmacological and clinical studies.

Keywords: Ethnomedicine, folklore, *Gloriosa superba*, *Langali*, Liliaceae

INTRODUCTION

According to estimates from the World Health Organization (WHO), traditional medicine serves about 80% of the world's population. More than 550 tribal communities and about 70% of the country's population in India use a variety of plants as folk medicine to treat their basic medical requirements [1]. Today in developing countries, many modern researchers involved to explore the huge potential of ethnobiological knowledge for curing various diseases. The tribal and aboriginal populations of our nation frequently use ethnomedicine to treat a variety of illnesses [2]. Proper documentation and information of traditional knowledge through ethnobotanical studies is very essential for conservation and utilization of indigenous people's knowledge from the tribe for the use of human kind [1].

Gloriosa superba Linn., also known as *Langali*, is a medicinal plant from the Liliaceae family, which has long been used in traditional medicine and folklore with proven ethnomedicinal benefits.

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Received Date: May 02, 2024

Accepted Date: July 12, 2024

Published Date: July 25, 2024

Citation: Uganta Meena, Das Ashokkumar Nathulal. A Review on Ethnomedicinal Claims of *Gloriosa superba* Linn. (*Langali*). Research & Reviews: A Journal of Ayurvedic Science, Yoga & Naturopathy. 2024; 11(2): 14–23p.

Information regarding the ethnomedicinal and folklore uses of *G. superba* has been documented across various years and presented in different formats such as surveys, glossaries, reviews, and notes in various publications including journals, reports, books, and web-based sources. Therefore, efforts have been made to compile the currently available data into a single comprehensive article.

MATERIALS AND METHODS

Data Collection

Information on the documented ethnomedicinal uses and traditional claims of *G. superba* Linn. was gathered from a variety of ethnomedicinal research articles found in libraries, as well as through

searches on Google Scholar, Shodhganga, ResearchGate, and other web-based search engines and journals. The data were organized and presented systematically.

Study Selection

Inclusion Criteria

The present review included publications that documented the traditional, medicinal and folklore use of *G.superba*, whether used alone or in combination with other herbs, for treating various human diseases through external application or internal administration. There were no restrictions based on language or publication date.

Exclusion Criteria

The current review does not include other *Gloriosa* species. The acquired data were correctly and methodically organized in tabular form. Various regional names used by various Indian tribes; the tribe's name and geographic region; the part used; the therapeutic indication; and the drug's external (E) and internal (I) usage, each were indicated in a separate column with unique references.

RESULT AND DISCUSSION

Literature Acquired

A total of 70 that is, 46 abstracts were identified from electronic search and 24 from ethnomedicinal books in the present study. The search identified 46 articles; among them 26 from Google Scholar, 10 from Shodhganga and 10 from ResearchGate. Thirty (30) articles were subjected to a full text review after repetition was eliminated and pertinent titles and abstracts were screened out.

Plant Description

G.superba a beautiful herbaceous climber with an average height of 6 m. It develops from white tuberous rhizome (underground stem) annually during the rainy season. Leaves are alternate, opposite or ternate whorled with a prominent midrib, sessile and ovate-lanceolate with acuminate tips prolonged into a tendril-like spiral. Flowers are showy, axillary, solitary or sub-corymbose flowers with six persistent, polypetalous perianths that are narrow, diffused, or reflexed; the margins of the flowers are undulate, and the stamens are six, hypogynous, and have six filaments. The anthers are oblong, linear, versatile, and extrorse. Three-celled ovary with numerous ovules in each cell, filiform style, acute deflexion, stigma three segments, stigmatose, yellow, and finally scarlet or crimson. Fruits are large, coriaceous, septical capsule, ellipsoid-oblong, fusiform or linear-oblong capsules. Seeds are subglobose, testa spongy, embryo cylindrical, grey, and many [3, 4] (Figures 1a–h).

Availability

G.superba is a procumbent herbaceous climber with leaves ovate-lanceolate with acuminate tips into tendril-like spiral and possess yellow scarlet or crimson colour flowers, which mainly grows in rainy season and found throughout India, up to an altitude of 2000 m. Additionally widely distributed in the tropical and sub-tropical regions of Africa, Southeast Asia, and Senegal, Somalia, South Africa, and Zambia are the Khasia Hills, Bihar, Orissa, West Bengal, Gujarat, Himachal Pradesh, Jammu & Kashmir, Haryana, Uttar Pradesh, Maharashtra, Chhattisgarh, Andhra Pradesh, Karnataka, Kerala, Goa, Tamil Nadu, Konkan, and Andaman Islands [3, 4] (Figure 2).

Used by Tribes

G.superba is used by 48 different tribes/communities to combat various diseases condition in two countries across the globe and eight states of India (Tables 1 and 2, Figure 2).

Local Name

G.superba is known by 16 names in eight languages. In eastern part of India, in Hindi: *Kariari*, *Karihari*, *Langali*, *Kulhari*, *Languli*; Bengali: *Bishalanguli*, *Ulatchandal*, *Bisha*; Oriya: *Ognisikha*, *Garbhoghhatono*, *Panjangulia*, *Uttomorati*, *Meheriaphulo*; Santhal: *Siric samano*; Western part in

Gujarati: *Dudhiovachnag*, *Varhvardi*; Marathi: *Nagkaria*, *Indai*, *Kariannag*, *Kallavi*; Southern part in Kannad: *Kolikuttuma*, *Agnisikhe*, *Akkatangaballi*, *Karadikanninagadde*; Malyalam: *Ventoni*, *Mendoni*, *Menttonni*, *Kantal*, *Mettonni*, *Medoni*, *Malattamara*; Tamil: *Kalaippaik-kishangu*, *Karttikaik-kishangu*, *Kalappaikkilanku*, *Nabhikkodi*; Telugu: *Agni-skikha*, *kalappa-gadda*, *Adavinabhi*, *Potti dumpa*, *Ganjeri*; Other countries in English: Malbar glory lily; Pakistan (Urdu): *Kanol*, *Kulhar*; Singapore: *Neyangalla* [3] (Tables 1 and 2).

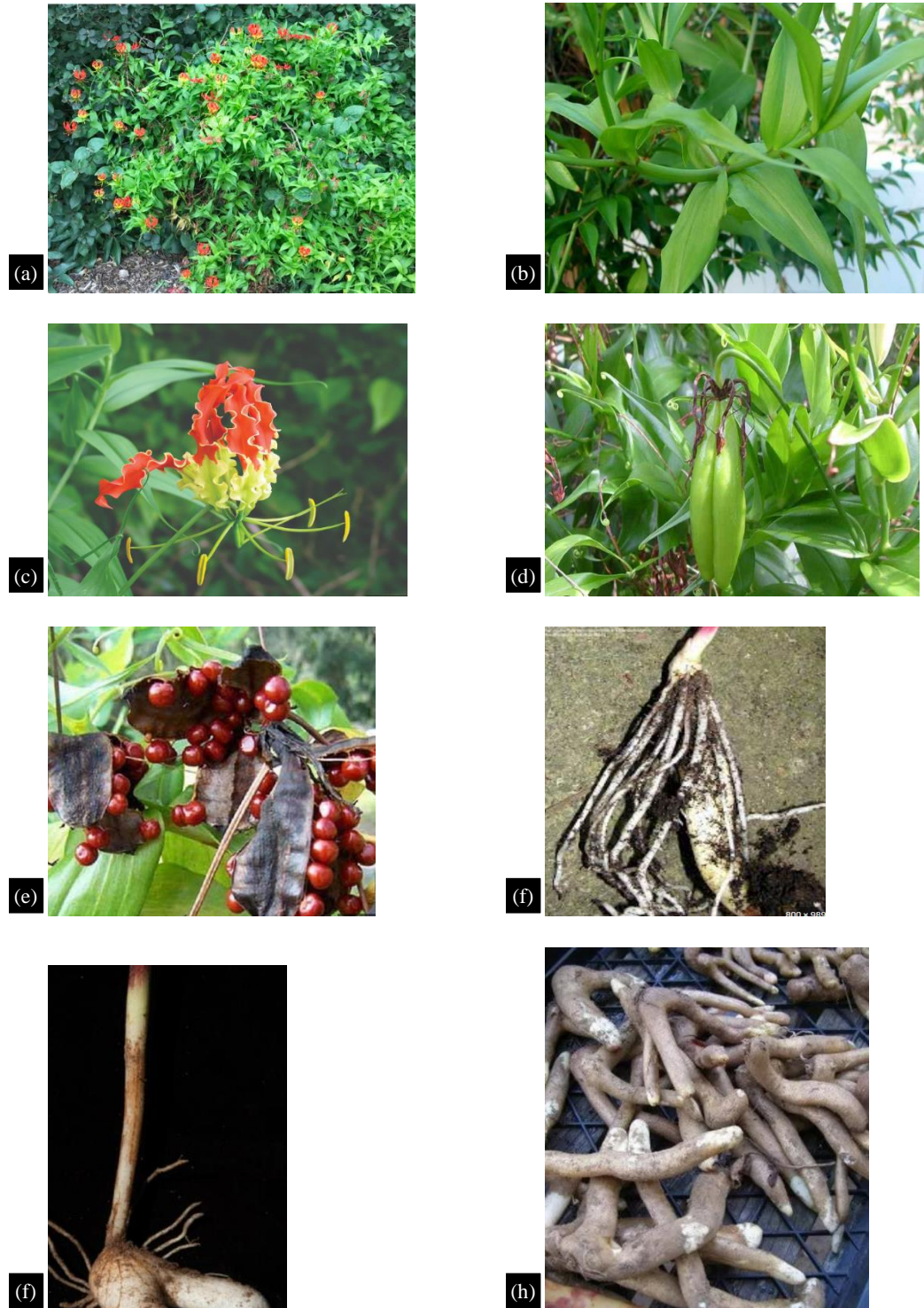


Figure 1. General plant morphology of *G. superba* Linn. (a) Natural habitat; (b) Leaves; (c) Flowers; (d) Fruits; (e) Seed; (f) Root; (g) Bulb; (h) Tuber.

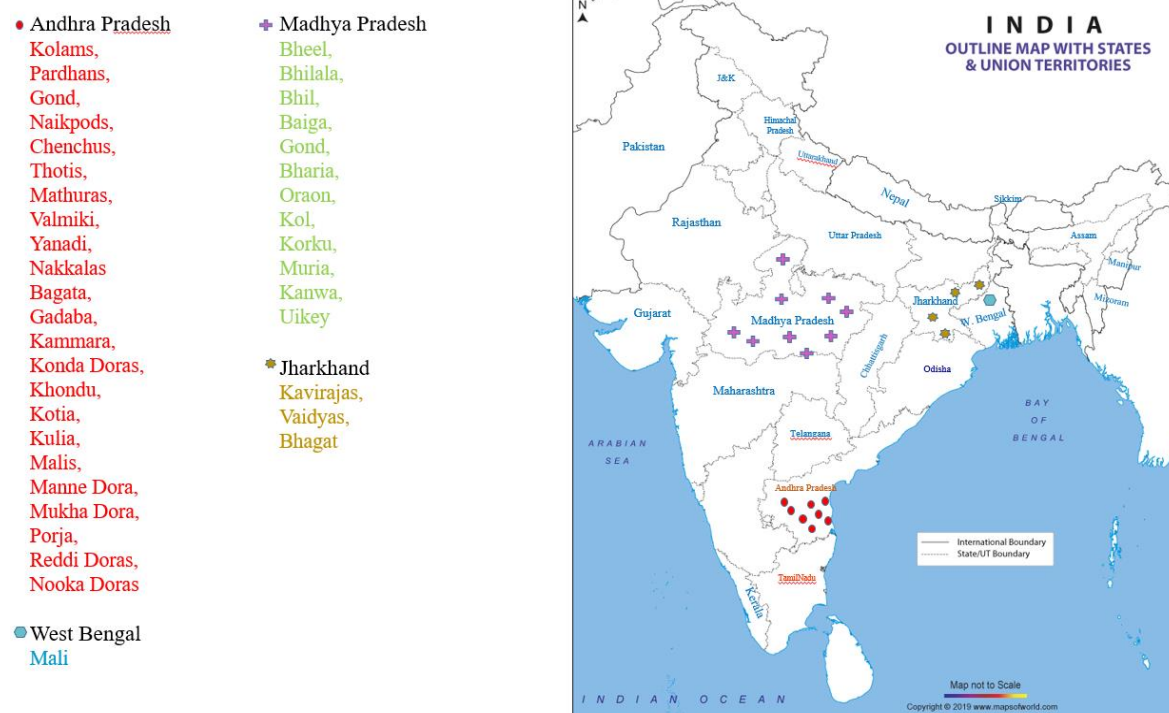


Figure 2. Use of *G. superba* by different tribes in various Indian states.

Area of Reporting

It was observed that *G. superba* is used as medicine in two countries across the globe that is, Kenya and Tanzania and in eight states of India, namely Andhra Pradesh, West Bengal, Jharkhand, Odisha, Madhya Pradesh, Maharashtra, Telangana, and Tamil Nadu (Tables 1 and 2).

Therapeutic Uses

It was observed that various parts such as whole plant, leaf, root, tuber and unspecified plant parts are used in 36 different disease condition (Table 3).

Parts Used

It has been noted that different parts of the plant have been claimed for use in ethnomedicine and traditional folklore. Of these, the tuber has the highest claim, followed by the root, leaf, and whole plant of *G. superba*, as well as the bulb. These parts can be used alone or in combination with other medications to treat 36 different medical conditions, either internally or externally.

There are reports of approximately 12 external applications and three internal administrations. The most common claims are for diseases conditions affecting tubers (12) (external 4, internal 1), roots (7) (external 5, internal 1), leaves (6) (external 3), bulbs (2) (internal 1), and entire plants (2). Certain plant parts are not mentioned in specific studies; however, it has been reported that the application or administration method, whether internal or external, is not disclosed for a variety of plant parts (Tables 1 and 2).

Dosage Form

Tuber, root, leaf, whole plant and bulb of *G. superba* are used in three dosage forms that is, paste (11), juice (3), and decoction (1) (Tables 1 and 2).

Recent Researches

Phytochemistry

On studying the pharmacognostical characters of *G. superba*, very few researches have been reported with presence of starch grains having concentric striation with hilum and vascular bundle of collateral type [3].

Table 1. Ethnomedicinal claims of *G.superba*.

S.No.	Local names	Tribes/Areas	Dosage form Internal(I)/ External (E)	Therapeutic claims
1	<i>Kal-lavi</i>	Yavatmal, Maharashtra	Whole plant	Antidote snake poison [5]
2	-	Kenya and Tanzania	Whole plant	Asthma, Wounds, Antimalarial [4]
3	<i>Konda Nabhi, Venkayya puvvu</i>	Kolams, Naikpods, Pardhans, Gonds, Thotis, Chenchus, Mathuras/Adilabad, A.P.	Leaf juice applied over head to kill head lice (E)	Head lice [6]
4	<i>Nabhi</i>	Srikakulam, A.P.	Leaves	Leprosy, Piles, Mumps [7]
5	-	-	Leaves	Asthma, Ulcers, Piles, Pimples [4]
6	<i>Diwali Gaddalu</i>	Khammam, Telangana	Leaf paste heated, applied on forehead and neck for 7 days. (E)	Asthma [8]
7	-	-	Leaf juice with honey	Gonorrhoea, Leprosy, Colic, Intestinal worms, Labor pains [4]
8	<i>Adavinabhi</i>	Savaras, Jatapus, Gadabas/Srikakulam, A.P.	Leaves paste applied (E)	Rheumatism [9]
9	<i>Konda Nabhi, Venkayya puvvu</i>	Kolams, Naikpods, Pardhans, Gonds, Thotis, Chenchus, Mathuras/Adilabad, A.P.	10 g bulbs are pounded with 10 g garlic given with one glass of goat milk in early pregnancy (I)	Abortion [6]
10	<i>Kalihari, Kachla, Ranchendi</i>	Bhil, Bhilala/Jhabua, M.P.	Aqueous extract of bulb	Arrow poisoning [10]
11	-	Bagata, Gadaba, Kammara, Konda Doras, Khondu, Kotia, Kulia, Malis, Manne Dora, Mukha Dora, Porja, Reddi Doras, Nooka Dora, Valmiki/Pedabayalu Mandalam, A.P.	Root	Abortion, Anthelmintic [11]
12	<i>Diwali Gaddalu</i>	Khammam, Telangana	Root-stock crushed and boiled in sesamum oil for an hour and applied on joints (E)	Rheumatism [8]
13	<i>Kalihari</i>	Bhil, Bhilala/Jhabua, M.P.	Root as poultice (E)	Boils [12]
14	<i>Nabi</i>	Komram Bheem, Telangana	Root as paste (E)	Boils, Abscesses [13]
15	<i>Kalihari</i>	Bhil, Bhilala/Dhar, M.P.	Paste of roots applied (E)	Snake-bite, Scorpion-sting [14]
16	<i>Panchangulia</i>	Bhubaneswar, Odisha	Root made into paste with mustard oil applied on the body (E)	Fever [15]
17	<i>Kalihari</i>	Baigas, M.P.	Fresh root paste (20 g) and three fruits of <i>Piper nigrum</i> are mixed in a glass of lukewarm goat's milk and given orally once for three days of pregnancy, up to three months at bedtime (I)	Abortifacient [16]
18	-	Bagata, Gadaba, Kammara, Konda Doras, Khondu, Kotia, Kulia, Malis, Manne Dora, Mukha Dora, Porja, Reddi Doras, Nooka Dora, Valmiki/Pedabayalu Mandalam, A.P.	Tuber	Cut, Stomach problems [11]
19	<i>Puraphula, Meriakanda</i>	Gandhamardan hills, Odisha	Tubers	Abortion [17]

S.No.	Local names	Tribes/Areas	Dosage form Internal(I)/ External (E)	Therapeutic claims
20	<i>Konda Nabhi, Venkayya puvvu</i>	Kolams, Naikpods, Pardhans, Gonds, Thotis, Chenchus, Mathuras/Adilabad, A.P.	Tuber are made to paste and applied (E)	Boils [6]
21	<i>Kaanthal Kizhangu</i>	Nilgiri hills, Tamil Nadu	Tuber	Snake bite, Leucorrhoea, Piles, Worm infestation, Diseases of <i>vatam</i> , Skin diseases [18]
22	-	Kani/South India	Tuber paste to the lower part of the belly (E)	Easy childbirth [4]
23	-	-	Decoction of tuber (I)	Anti-abortive, Purgatives [4]
24	-	-	Tubers	Anthelmintic [4]
25	-	Similipal tribes	Tuber paste with <i>P.longum</i> for 20 days	Rheumatoid arthrits [4]
26	<i>Jhagdaha</i>	Baiga, Gond, Bharia, Bhils, Oraon, Kol, Korku, Muria, Kanwa, Uikey/M.P.	Tuber paste twice a day	Leucoderma [19]
27	-	Kavirajas, Vaidyas, Bhagat/Singhbhum, Latehar (Jharkhand)	Tubers boiled and mixed with mustard oil (E)	Headache [20]
28	<i>Languli lata, Ulatchandal</i>	Bhumij/Purulia, W.B.	Tuber paste is applied on the body (E)	Small pox, Leprosy [21]
29	-	Bhagatha, Kondadora, Valmiki, Kondakapus, Kotia, Benthoriya, Yendia, Yerukalas, Nookadoras, Kammara, Khonds, Gadaba and Poorja/Paderu Mandal, A.P.	Tuber	Backache [22]

“-”: Not Reported; Andhra Pradesh (A.P.); Tamil Nadu (T.N.); Madhya Pradesh (M.P.), West Bengal (W.B.)

Table 2. Ethnomedicinal claims of *G.superba* with unspecified plant parts.

S. No.	Local names	Tribes/Areas	Dosage form Internal(I)/External(E)	Therapeutic claims
1	<i>Nabhi/Nagetigadda</i>	Yanadi, Nakkala, Irula/Tirumala hills, A.P.	-	Leprosy, Abortifacient [23]
2	<i>Kanvalikilangu</i>	Pachamalai hills, T.N.	-	Stomachic, Anthelmintic, Abortifacient, Neuralgic pain, Skin troubles [24]

“-”: Not Reported

Table 3. Reported uses of *G. superba* in various disease conditions.

S.No.	No. of claims	Diseases condition	Area of reporting (Part used)
1	6	Abortion/Abortifacient	Andhra Pradesh [Bu, R, (-)]; Odisha (Tu); Madhya Pradesh (R); Tamil Nadu (-)
2	4	Leprosy	Andhra Pradesh [L,(-)]; - (L); West Bengal (Tu)
3	3	Anthelmintic	Andhra Pradesh (R); - (Tu); Tamil Nadu (-)
		Asthma	Kenya (Wp); Tanzania (Wp); - (L); Telangana (L)
		Boils	Madhya Pradesh (R); Telangana (R); Andhra Pradesh (Tu)
		Piles	Andhra Pradesh (L); - (L); Tamil Nadu (Tu)
		Snake-poison	Maharashtra (Wp); Madhya Pradesh (R); Tamil Nadu (Tu)
4	2	Intestinal worm	- (L); Tamil Nadu (Tu)
		Rheumatism	Andhra Pradesh (L); Telangana (R);

S.No.	No. of claims	Diseases condition	Area of reporting (Part used)
5	1	Skin diseases	Tamil Nadu [Tu, (-)]
		Stomach problem	Andhra Pradesh (Tu); Tamil Nadu (-)
		Wound	Kenya (Wp); Tanzania (Wp)
		Antimalarial	Kenya (Wp); Tanzania (Wp)
		Head lice	Andhra Pradesh (L)
		Mumps	Andhra Pradesh (L)
		Ulcer	- (L)
		Pimples	- (L)
		Gonorrhoea	- (L)
		Colic	- (L)
		Labor pain	- (L)
		Arrow poisoning	Madhya Pradesh (Bu)
		Backache	Andhra Pradesh (Tu)
		Small pox	West Bengal (Tu)
		Headache	Jharkhand (Tu)
		Rheumatoid arthritis	- (Tu)
		Leucoderma	Madhya Pradesh (Tu)
		Leucorrhoea	Tamil Nadu (Tu)
		Diseases of Vatam	Tamil Nadu (Tu)
		Easy childbirth	South India (Tu)
		Anti-abortive	- (Tu)
Purgative	- (Tu)		
Abscesses	Telangana (R)		
Scorpion bite	Madhya Pradesh (R)		
Fever	Odisha (R)		
Cut	Andhra Pradesh (Tu)		
Neuralgia pain	Tamil Nadu (-)		

Not reported “- “; Whole plant (Wp); Root (R); Leaf (L); Bulb (Bu); Tuber (Tu); Unspecified plant part (-)

The plant reported presence of colchicine, gloriosine, tannins, superbine, phenyl amine, tyrosine, benzoic acid, colchicine glycoside, beta sitosterol, flucoside in tubers; salicylic acid, colchicine, sterols in leaves; N-formyl-deacetyl colchicines in flowers; sitosterol, glucopyranoside in root; and thiolcolchicoside in seeds. [3, 4, 25].

Pharmacology Study

Different parts have been reported for their neuroprotective, enzyme inhibition, analgesic, anti-arthritic, anti-inflammatory, spasmolytic, uterine stimulant, antimicrobial, antibacterial, anthelmintic, abortifacient and oxytocic, and anti-coagulant activities (Table 4).

Table 4. Research updates of *G.superba* Linn.

S. No.	Part used	Ethnomedicinal claims	Extraction medium	Activity reported
1	Whole plant	Asthma	Acetone	Antibacterial activity [26]
		Wound	Methanol	Antimicrobial activity [27]
		Snake bite	Chloroform	Enzyme inhibition activity [25]
2	Leaves	Head lice, Pimple	Methanol	Antimicrobial activity [27]
		Leprosy, Gonorrhoea	Acetone	Antibacterial activity [26]
		Piles	Methanol	Anti-inflammatory [28]

		Asthma	Acetone	Antibacterial activity [26]
		Ulcer, Colic, Intestinal worms	Ethanol and Water	Anthelmintic activity [29]
		Labor pain	Aqueous	Abortifacient and oxytocic activity [30]
		Rheumatism, Piles	Methanol	Anti-inflammatory [28]
3	Root	Rheumatism	Methanol	Anti-inflammatory [28]
		Abortion/Abortifacient	Aqueous	Abortifacient and oxytocic activity [30]
		Boils, Abscesses, Fever	Acetone	Antibacterial activity [26]
		Snake bite, Scorpion sting	Chloroform	Enzyme inhibition activity [25]
4	Tuber	Cut, Skin diseases, Leucoderma	Methanol	Antimicrobial activity [27]
		Stomach problem, worm infestation		Anthelmintic activity [29]
		Abortion/Abortifacient, Easy childbirth	Aqueous	Abortifacient & Oxytocic activity [30]
		Boils, Leucorrhoea, Leprosy	Acetone	Antibacterial activity [26]
		Piles	Methanol	Anti-inflammatory [28]
		Diseases of <i>Vatam</i>	Hydro-alcoholic	Neuroprotective activity [25]
		Rheumatoid arthritis	Methanol	Anti-arthritis activity [31]
		Headache, Backache	Dichloromethane	Analgesic activity [32]
		Snake bite	Chloroform	Enzyme inhibition activity [25]
4	Bulb	Abortion/Abortifacient	Aqueous	Abortifacient and oxytocic activity [30]

CONCLUSION

G. superba is a herbaceous climber and folklore traditional ethnomedicinal plant being known by 16 names in eight languages by 48 different tribes/communities in two countries across the globe and eight states of India in the management of 36 diseases conditions as 12 external application and three internal administration. Maximum values were reported for the treatment of leprosy, rheumatism, asthma, abortion, etc. Some unidentified plant parts and unique folklore claims can be used as the basis for additional research. Future studies should establish the plant's ethnic claims, and the plant itself needs to be evaluated scientifically through pharmacological activities and clinical studies in order to fully explore this herb.

Consent

It is not applicable.

Ethical Approval

It is not applicable.

Competing Interest

Authors have declared no competing interest.

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