

A REVIEW ARTICLE ON *STHAVARA VISHA* (PLANT POISON)*LANGALI (GLORIOSA SUPERBA)*Dr. Chavhan Kalpana R.<sup>1</sup>, Dr. Suryawanshi Shama S.<sup>2</sup><sup>1</sup>Assistant Professor, <sup>2</sup>Professor;

Department of Agadtantra, Government Ayurveda College, Nagpur, Maharashtra, India

## ABSTRACT

*Langali (Gloriosa superba)* is an irritant plant poison which is mentioned *Sthavara mula Visha* in ancient Ayurveda texts. This plant belongs to Liliaceae family. It is elegant; climbing hedge plants grows in Mysore and in low jungles throughout India. Popularly it is known as *Kalahari* in Hindi and *Glory lily* in English. This plant is a part of folk medicine from ancient time. Popularly it is used as abortifacient by quacks. *Rasshastra* texts include this plant in category of mild poisons i.e. called *Upavisha*. These *Upavisha* are low in toxic potency. Beside the toxic impact *Langali* is having therapeutic uses mentioned in Ayurveda. It is used in treatment of external swelling, wounds, Haemorrhoids, Arthritis and many more diseased conditions. *Langali* also poses forensic importance as it is popularly used for criminal abortion, used as a suicidal agent and accidental poisoning may occur when the tuber of *Gloriosa superba* is mistaken for sweet potato. This article helps in telling about description of most common *Upavisha* i.e. *Langali*, its therapeutic usage, fatal dosage and various toxicological aspects mentioned in Ayurveda science.

**Keywords:** *Langali, Gloriosasuperba, Sthavara Visha*, Plant Poison

## INTRODUCTION

Poisons have been classified into two kinds-*Sthavara* (vegetable and mineral poison) and *Jangam* (Animal poison) in ancient Ayurveda texts.<sup>[1]</sup> Inanimate i.e. Vegetable and mineral poisons termed as *Sthavara Visha* and animate poisons termed as *Jangam visha*. In *Ashtang Hrudaya visha* is again classified as natural i.e. *Krutrim visha* and artificial poison i.e. *Akrutrim visha*, and *Akrutrim vishais* again classified as *Sthavara* and *Jangama Visha*.<sup>[2]</sup> Basic texts of *Rasa Shastra* also classifies *visha* based on toxic potency as *Visha* and *Upvisha*. *Upavisha* are considered as less potent as compared to *Visha*.<sup>[3]</sup> The substances which are not so lethal but produces certain toxic symptoms are categorised under *Upavisha*.<sup>[4]</sup> *Langali (Gloriosa superba)* is one of the mild poison mentioned in *Rasa Shastra* texts like

*Rasendrasar Sangraha*<sup>[5]</sup>, *Rasa Ratna Samuchchaya*,<sup>[6]</sup> and *Rasatarangini*<sup>[7]</sup>. *Langali* is an elegant, climbing hedge plant grows in Mysore & in low Jungles throughout India.<sup>[8]</sup> It is known as *Kalahari* in Hindi. The glory lily (*Gloriosa superba L.*) is a vine that blossoms with exotic, patterned flowers. Glory lilies grow in many parts of tropical Africa and Asia, especially India. This spectacular lily is native of Africa and is the national flower of Zimbabwe.<sup>[9]</sup> Though Ayurveda and Unani medicine traditions say that glory lilies have medicinal value, all parts of these plants are toxic. This makes them dangerous plants to have in a house or garden with young children or pets. They are considered perennial herbs and climbing vines, with tendrils on the ends of the leaves that allow them to attach them-

selves to support structures as they climb.<sup>[10]</sup>

**Physical Characteristics:** -<sup>[11]</sup> This plant Belonging to family Liliaceae is a large, herbaceous, climbing annual. An herbaceous tall glabrous branching climber

**Root Stock:** -Arched, solid, fleshy white, cylindrical tuber, 15-30cm (length) X 2.5-3.8 cm (diameter), tapering at both the end, bifurcately branched forming 'V-shape, roots fibrous. **Stem:** -Annual 3-6 mts long, herbaceous, given off from the young tubers.

**Leaves:** -Sessile or nearly so, 7.5cm to 15cm X 2 to 4.5 cm, scattered or opposite. Sometimes arises from the separation of the internodes, ternately whorled, ovate/ lanceolate, acuminate tip ending in a tendril like spiral, base cordate and nerves parallel.

**Flowers:** -Large axillary, solitary or sub-corymbose towards the end of the branches from the nearness of the leaves, remain about 7 days without withering, Pedicels-7.5-15 cm

long, the tip is deflexed. Perianth: 6.3cm X 8-13cm long, linear lanceolate. With crispy waved margins at first, then turn yellow passing through orange and scarlet to crimson red. Filament: 3.8-4.5cm long, anthers/spreading 13mm long, style-5cm long, and arms about 6mm long. **Fruit:** Capsule about 2X4.5 cm, linear oblong, three celled.

**Seed:** Sub-globose: Testa spongy, wing like.

**Taxonomical Classification of *Langali***<sup>[12]</sup>

Kingdom: Plantae

Sub Kingdom: Tracheobionta

Division: Magnoliophyta

Sub-Division: Angiospermae

Class: Monocotyledon

Sub-class: Liliidae

Order: Liliales

Family: Liliaceae

Sub-family: Wurmbeodiaceae

Genus: *Gloriosa*

Species: *superba*



## TUBERS OF LANGALI/ FLOWER OF LANGALI

**Botanical Name:** *Gloriosa superba* Linn.

**Botanical Name:** -*Gloriosa Superba*

Family: -Liliaceae, *Rasonkula*<sup>[13]</sup>

**Vernacular Names:** - **Synonyms:** - *Agni shikha, Kalihari, Garbhanut*

**Sanskrit Names:** - *Langali, Kalikari, Vishalya*<sup>[14]</sup> *Agnimukhi, Garbhapatani, Agnisikha, Garbhanut*<sup>[15]</sup> *Kaliharika, Agnijivha, Swarnapushpa, Dipta, Naktendupushika, Vddujwala, Vhanhishikha Hali, Langalini*<sup>[16]</sup> *Halini, Shukrapushpi, Ananta, Vanhivaktra*<sup>[17]</sup>

**English:** -Climbing-lily, Glory-lily, Tiger's claw, Creeping-lily, Flame-lily, *Gloriosa lily* Malabar Glory<sup>[18]</sup>

"Mauve beauty", "Purple prince", "Modest", "Orange gem", "Salman Glow", and "Orange Glow"<sup>[19]</sup>

**Hindi:** -*Kalahari*,<sup>[20]</sup>

*Kathari, Kulhari, Languli, Kaliyari*<sup>[21]</sup>

**Telugu:-** Adavi-nabhi, Potti

*Dumpa*<sup>[22]</sup> *Kalappagadda, Ganjeri*

**Bangala: -** *Vishalanganiya, Eshalangal*<sup>[23]</sup>

**Marathi: -** *Khadyanaag, Kal-lavi*<sup>[23]</sup>

**Gujarati: -** *Dudhio, Bacchanaag*<sup>[23]</sup>

**Malayalam: -** *Medoni*<sup>[24]</sup>

**Tamil: -** *Kala*<sup>[24]</sup>

**Classification: -**

**Ayurveda: -** *Sthavar Visha* (Vegetable Poison)

<sup>[25]</sup> *Kanda visha*<sup>[26]</sup> *Upa visha*<sup>[27]</sup>

*Gana: -* *Shak varga*<sup>[28]</sup>

*Guduchyadu varga*<sup>[29]</sup>

*Mishrakadi varga –Upvisha gana*<sup>[30]</sup>

**Modern toxicological classification:**

-Irritant, Organic Vegetable Poison<sup>[31]</sup>

-Gastric Irritant Plant<sup>[32]</sup>

**Plant Description: -**

<sup>[33]</sup> *Gloriosa Superba* L. is a perennial climber, extensively scattered in the tropical and sub-tropical parts of the India, including the foot-hills of Himalayas. This spectacular lily is native of Africa and is the national flower of Zimbabwe. In India, it is widely distributed and is the state flower of Tamil Nadu. *Gloriosa* derives its name from the word 'glorious', which means handsome and *superba* from the word 'superb' means splendid or majestic. The fondness for floral beauty has also placed *Gloriosa* as a pot plant in gardens. It is known as 'Malabar glory lily' in English, 'Kalihari' in Hindi, 'Agnisikha' in Sanskrit. Earlier than 1980, the tubers were indiscriminately harvested from the wild and utilized for medicinal applications. Because of continuous overexploitation of tubers from wild, the species was on the verge of extinction and was one of the endangered species among the most valued medicinal plants. Until this period, up to 75% of raw material required by pharmacies and drug manufacturers was fulfilled only from wild. *Gloriosa superba* has been reported to occur naturally in Africa, India and South eastern Asia and distributed widely throughout the tropics. It has natural occurrence through

much of tropical Asia including: India, Sri Lanka, Malaysia and Burma. It occurs in thickets, forest edges and boundaries of cultivated areas in warm countries up-to height of 2530 m. In temperate countries, *Gloriosa superba* is grown as an ornamental in conservatories and greenhouses. Places known for its distribution are Nasik, Ratnagiri, Savanthwadi (Maharashtra); Uttara Kannada, Hassan, Chikmangalur, Coorg, Mysore (Karnataka); Cannanore, Palakkad, Trivandrum (Kerala); Tamil Nadu and Goa. Tamil Nadu has the largest area under glory lily cultivation (up-to 6000 acres) spread over seven districts viz., Karur, Tirupur, Dindigul, Salem, Ariyalur, Perambalur and Nagapattinam and holds monopoly in production of glory lily seeds with an annual production of over 600 -700 tonnes. *Gloriosasuperba* contains active principle Colchicine which is mainly present in tuberous roots and leaves of plant and so there are the parts which are used for medicinal and other purposes.

**Properties: -**<sup>[34]</sup>

*Guna- Laghu, Tikshana*

*Rasa- Katu, Tikta*

*Virya- Ushna*

*Vipak- Katu*

*Prabhav- Garbhapatan*

*Doshakarma- Kaphavaatshamak*

**Part Used: -** Tuberous root/corm<sup>[35]</sup>, Leaves<sup>[36]</sup>

**Medicinal Dose: -** 1-2 *Ratti*<sup>[37]</sup>

**Active principle (Chemical composition): -**

Colchicine, Puteolin,  $\beta$ -sitosterol, Isoperlolyrine, Cornigerine, Bbechuanine, Colchicamide, Colchicoside etc.<sup>[38]</sup>

***LangaliShodhana* (Detoxification / Purification method):-**

1] Pieces of *Langali* tuber soaked in *Saindhava* and buttermilk for 4 to 5 days. Later washed with hot water & dried. Change the buttermilk every day.<sup>[39]</sup>

2] Dip the *Langali* tuber in Cow -urine for 1 day, it will also reduce the toxic potency<sup>[40]</sup>.

#### **Controversial Aspects of *Langali*: -**

1. *Puga.c. speciosus* having synonym *Kebuka* is used as a substitute for *Langali* (*Gloriosa Superba*).<sup>[41]</sup>

2. Vaidya Bapalalji claims it to be non-poisonous. He quotes that Vagabhata in '*As-tang Hridaya*' has it as *Rasayan* so it should not be considered as *Upavisha*. The word *Languli* which synonym, may be confused with *Langali*. Even in *Amarkosh*, he gives synonym for *Jalapippali* as *Langali*. *Charaka*, *Sushruta*, and Vagabhata have not mentioned the term *Langali*, latter writers like *Bhavprakash* gave it.<sup>[42]</sup>

3. Bapalalji reported that by mistake the term *Langali* or *Languli* is identified with *M.Pruries.Langali* without any controversy identified as *Gloriosa superba* and there is no second opinion over this issue. *Languli* may be the synonym of *kapikacchu*, however the name *Langula* indicates a variety of rice i.e. *Sali Dhanya*.<sup>[43]</sup>

4. In *Charak Smhita Sutrasthana Langalaki* is mentioned as a vegetable (*shaka*). But it is not clear whether *Gloriosa* leaves are used or *costus* rhizomes be used. It is possible that the term *Langala* and *Langalakhya* are indicative of *Costus*. It is observed that *Costus speciosus* is often used as substitute for *Gloriosa Superba* in market.<sup>[44]</sup>

#### **Toxic Effects: -**<sup>[45]</sup>

The toxicity reported from ingesting colchicine-containing plants has in general been less severe than that reported after overdose with the drug colchicine. Common effects after plant ingestion includes nausea, vomiting, diarrhoea, abdominal pain, tachycardia and chest pain in a series of nearly 50 patients with *Gloriosa Superba* poisoning, 16% developed chest pain. More severe effects such as hypotension, bradycardia, seizures, bone marrow suppres-

sion, coagulopathy, ECG changes, and death have been reported less commonly.

#### **Common toxic symptoms: - (Acute poisoning)**

- Severe vomiting
- Diarrhoea
- Abdominal pain
- Hypotension
- Respiratory Failure
- *Akshep*(Convulsions)<sup>[46]</sup>
- *Annanalika Daha* (Burning in GI track)
- Burning in Uterus
- Circulatory embarrassment, collapse and death<sup>[47]</sup>

#### **Fatal Dose: -**<sup>[48]</sup>

Pure colchicine-7 to 60 mg

Tubers of *Langali*- 2.5 to 5 gm.

#### **Forensic Significance of Plant: -**

- Accidental poisoning may occur when the tuber of *Gloriosa Superba* is mistaken for sweet potato.
- Generally used as abortifacient.<sup>[49]</sup>
- Used as suicidal.<sup>[50]</sup>

#### **Medicinal uses: -**

1. It is used as appetizer in medicinal dose, skin disorders, scorpion & snake venom, Leprosy, Haemorrhoids, & in worm infestations.<sup>[51]</sup>
2. Root of this plant is used as an ingredient in many Ayurveda classical formulations and indicated for various clinical conditions such as, *Shotha* (inflammation / oedema), *Vrana* (wound), *Gandamala* (lymphadenitis), *Charmaroga* (skin diseases), *Khalitya* (hair loss), *Aagnimandya* (loss of appetite), *Aarsha* (piles), *Vatavyadhi* (joint pain / arthritis) and many others.<sup>[52]</sup>
3. Root of *Langali* is enlisted as an essential drug, to be kept in delivery room<sup>[53]</sup> and especially indicated in delayed labour and expulsion of placenta.<sup>[54]</sup>
4. In the Indian Systems of Medicine, the tubers are used as tonic, antiperiodic, anthelmintic and against snake bites. In

1992, Duke has reported the abortifacient action of the plant rhizome. It is used as poultices to relieve neuralgia, used in topical applications to treat arthritic conditions, swellings of the joints, sprains and dislocations. The tuber is traditionally used for the treatment of bruises and sprains, colic, chronic ulcers, haemorrhoids, cancer, and leprosy and for inducing labour pains. Paste of the tuber is externally applied for parasitic skin diseases.<sup>[55]</sup>

5. Tubers of herb *Gloriosa superba* is having significant antimicrobial and anthelmintic activity<sup>[56]</sup>
6. *Bahyashotha* (external swelling) *Langali mula lepa* is indicated<sup>[57]</sup>
7. It is clearly indicated in *Rastarangini* that *Langali* should be always used externally.
8. It is used in treatment of *Bhagandar* (Fistula)<sup>[58]</sup>
9. *Langalyadi Taila* (oil) is indicated as *Gandamala* (Mumps)*nashak*.<sup>[59]</sup>

**Other Uses: -**<sup>[60]</sup>

- The juice from leaves is used as pediculicide i.e. to kill head lice.
- Root is used to treat various ailments in folk medicines.

**Medicinal preparations: -**

- *Kasisadi Taila*
- *Langali Rasayana*<sup>[61]</sup>
- *Langalyadivati*<sup>[62]</sup>

## DISCUSSION

Since India is a tropical country, it is host to rich and varied flora of thousands of plants, some of which are extremely poisonous. Most people in rural areas depend for their food upon farms and gardens. Cases of accidental poisoning occur not infrequently due to mistaken ingestion of toxic plant products or contamination of food stuffs. Some cases are related to intake of harmful herbal remedies and traditional medicines. A substantial number of cases involve children for

whom plants are accessible and attractive. *Langali* (*Gloriosa Superba*) is one of such plant which is commonly found in many parts of India. Besides the poisonous properties it is a well-known drug with therapeutic uses in Indian system of medicine. It is included among the Irritant, Organic Vegetable Poison in modern toxicology and *Sthavara Mula Visha* in *Ayurveda toxicological classification*. *Rasshastra* texts include this plant in category of mild poisons i.e. called *Upavisha*. These *Upavisha* are low in toxic potency than *Visha*. Beside the toxic impact *Langali* is having therapeutic uses mentioned in Ayurveda. It is used in treatment of external swelling, wounds, Haemorrhoids, Arthritis and many more diseased conditions. *Langali* also poses forensic importance as it is popularly used for criminal abortion, used as a suicidal agent and accidental poisoning may occur when the tuber of *Gloriosa superba* is mistaken for sweet potato. The juice from leaves is used as pediculicide i.e. to kill head lice and root is used to treat various ailments in folk medicines. Popularly it is used as abortifacient by quacks. It possesses strong abortifacient action so named as *Garbhapatini*, *Garbhanut* etc. In ancient Ayurveda texts, Root of *Langali* is enlisted as an essential drug, to be kept in delivery room and especially indicated in delayed labour and expulsion of placenta. *Langali* is part of medicinal formulations like *Kasisadi Taila*, *Langali Rasayana* and *Langalyadivati*. *Acharya Charaka* mentioned that an acute poison can become an excellent drug if it is properly administered, and similarly even a drug, if not properly administered, becomes an acute poison. Likewise, *Langali* is a plant poison which having the medicinal properties and can be used with the therapeutic intentions for treating diseased conditions.

## CONCLUSION

*Langali* (*Gloriosa Superba*) mild poison mentioned in Ayurveda and modern toxicol-

ogy. *Rasshastra* texts categorised the plant as mild poison i.e. *Upavisha* and described its medicinal preparations and other theopoetic uses. It is mentioned as essential drug to be kept in labour room in *Charka Samhita* especially indicated in delayed labour and expulsion of placenta. It is a popular abortifacient plant known practiced by quack and accidental poisoning is very common due to frequent availability of it as garden plant; cases involve children for whom plants are accessible and attractive & mistaken for sweet potato.

## REFERENCES

1. Shastri A., Forwarded by Dr. Mehata P.M., Sushrut Samhita Chukhambha Sanskrit sansthana, Vranasi, Ed. Reprint 2012, Kalpasthana, Ch. 2, peg. 18
2. Dr. Garde G.K., Sarthvaghata-Ashtang Hrudaya, Proficient Publishing House Pune, Reprint 2009, Uttartantra Ch. 35, peg. 52.
3. Pt. Kashinath Shastri, Rasatarangini, Motilala Banarasidas, Delhi, Ed. 11, 1979, Chaturvinshati Adhyaya, peg. no. 648.
4. Prof. Nishteswar K., Dr. Anil Kumar A., Agadtantra & Vyavhar Ayurveda, Chukhambha Surabharti Prakashan, Varanasi Ed. 1<sup>st</sup>, 2009, ch. 04 Peg 28.
5. Pandeya R. Rasendra Sar Sangraha, Chukhambha Sanskrit Pratishthan., Delhi, Reprint Ed. 2000, Prathamodhyaya-396, peg. 69
6. Kulkarni D.A., Rasaratna Samuchaya, Part 1, Meharchand Lchamandas Publications, New Delhi, Rerint 2010, Ch. 10, Upavishavarga-peg 199.
7. Pt. Kashinath Shastri, Rasatarangini, Motilala Banarasidas, Delhi, Ed. 11, 1979, Chaturvinshati Adhyaya, peg. no. 676
8. Dr. Namburi Shekhar U.R., A Textbook Of Agadtantra, Chukhambha Sanskrit Sansthan, Varanasi, Reprint 2013, peg no. 143.
9. S Padmapriya, K Rajamani, V A Sathiyamurthy Glory Lily (*Gloriosa superba* L.) - A Review, ISSN: 0976 822X, December, 2015.
10. <http://homeguides.sfgate.com/>
11. Dr. Satej Banne, Dr. Hemant Toshikhane, Dr. Hetal Amin, Dr. Amit Upasani Pharmacognostic And Phytochemical Study Of Langali (*Gloriosa Superba* Linn.): An Experimental Study, ISSN-2321-0974, July 2016, Pharmagene
12. <http://www.classification of medicinal plants .com>
13. Sharma P. Dravyaguna-Vigyana, 2nd part, Chukhambha Bharti Academy, Varanasi, Ed 2nd 1969, peg. No. 603.
14. Dravyagugavigyaniyam, 2nd khand, Vaidya Yadavajitrikamji Acharya, Shresharma ayurveda mandir, 5th Ed., 2001, peg. no. 364
15. Dravyaguna Vijnanadr. J.L.N. Shastry, Prof. K.C. Chuneekar, ed. 3rd, 2008, Chukhambha orientaliavaranasi, peg. no. 1002
16. Pt. Kashinath Shastri, Rasatarangini, Motilala Banarasidas, Delhi, Ed. 11, 1979, Chaturvinshati Adhyaya, peg. no. 740.
17. Mishara B. Edited by Shree shastry B. & Vaishya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed. 8, 1993, peg no. 313.
18. Dravyaguna Vijnanadr. J.L.N. Shastry, Prof. K.C. Chuneekar, ed. 3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasi, peg. no. 1002
19. Ade, R., Rai, M.K. Review: Current Advances in *Gloriosa Superba* L. Biodiversitas 2009; Volume 0 (4), October; 210-214. International Journal of Pharmacy and Pharmaceutical Sciences ISSN- 0975-1491, Vol 6, Issue 5, 2014
20. Dravyagugavigyaniyam, 2<sup>nd</sup> khand, Vaidya Yadavajitrikamji Ach

- arya, Shreesharmaayurveda mandir, 5<sup>th</sup> Ed., 2001, peg.no.364
21. Dravyaguna Vijnanadr .J.L.N. Shastry, Prof.K.C. Chunekar, ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002
22. Dravyaguna Vijnanadr. J.L.N. Shastry, Prof.K.C. Chunekar, ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002
23. Dravyagugavigyani-yam, 2<sup>nd</sup> khand, Vaidya Yadavajitrikamji Acharya, Shreesharmaayurveda mandir, 5<sup>th</sup> Ed., 2001, peg.no.364
24. Dravyaguna Vijnanadr. J.L.N. Shastry, Prof.K.C. Chunekar, ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002
25. Acharya Shukla V., Prof. Tripathi R., Charak Samhita 2<sup>nd</sup> part, Chukhambha Sanskrit Pratisthan, Delhi, ed. Reprint 2012, Chikitsa sthana Ch.23, peg 539
26. Dr. Shastri A., Sushrutsamhita Purwardha, Chukhambha Sanskrit Sansthan, Varanasi, Reprint 2007, Kalpasthana ch.02, Peg 17
27. Pt. Kashinath Shastri, Rasatarangini, Motilala Banarasidas, Delhi, Ed.-11, 1979, Chaturvinshati Adhyaya, peg.no.648.
28. Dr. Tripathi B. Dr. Panday G.S., Charak Samhita, Chukhambha Surabharti Prakashan, Varanasi, Ed, 7<sup>th</sup> 2000. Sutrasthana ch.27, peg 513.
29. Mishara B. Edited by Shree Shastry B. & Vaishya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.313.
30. Editors Dr. Oza Z., Dr. Mishra U. Dhanvantari Nighantu, Chukhambha Surabharti Prakashan, Varanasi, Reprint 2004, Mishrakadivarga ch.7, peg 357.
31. Pillay V.V., textbook of Forensic Medicine & Toxicology, Paras Publication, Hyderabad, Reprint 2007, Ch.05, peg 422.
32. Pillay V.V., Comprehensive Medical Toxicology, Paras Medical Publisher, Hyderabad, Ed 2<sup>nd</sup>, 2008, peg no.849.
33. S Padmapriya, K Rajamani, V A Sathiyamurthy, Glory Lily (Gloriosa superba L.) - A Review December, 2015 ISSN: 0976 822X
34. Mishara Edited by Shree Shastry B. & Vaishya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.314
35. Dravyaguna Vijnanadr. J.L.N. Shastry, Prof. K.C. Chunekar, ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002
36. Pillay V.V., Comprehensive Medical Toxicology, Paras Medical Publisher, Hyderabad, Ed 2<sup>nd</sup>, 2008, peg no.849.
37. Mishara B. Edited by Shree shastry B. & Vaishya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.314
38. Dr. J.L.N. Shastry, Prof.K.C. Chunekar, Dravyaguna Vijnana, Ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002
39. Mishara B. Edited by Shree shastry B. & Vaishya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.314
40. Mishra G., AyurvedPrakash, Chukhambha Vidya Bhawan, Varanasi, Ed.2<sup>nd</sup> 1962, Ch.06, peg no.501
41. Dr. Shastry J.L.N., Prof. Chunekar K.C., Dravyaguna Vijnana ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.983.
42. Vd. Bapalal, Some Controversial Drugs in Indian Medicine, Chukambha Orientalia, Varanasi, U.P, Ed 1<sup>st</sup>, Peg. No 247.
43. Dr. Shastry J.L.N., Prof. Chunekar K.C., Dravyaguna Vijnana ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.176.
44. Dr. J.L.N. Shastry, Prof.K.C. Chunekar, Dravyaguna Vijnana, Ed.3<sup>rd</sup>, 2008, Chukhambha orientaliavaranasasi, peg.no.1002.

45. Pillay V.V., Comprehensive Medical Toxicology, Paras Medical Publisher, Hyderabad, Ed 2<sup>nd</sup>, 2008, peg no.849.
46. Mishara Edited by Shree shastry B.& Vaisya R., Bhavaprakasha, Purwardhwam, Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.314
47. Nandy A., Principles of Forensic Medicine , New Central agency(P) Ltd., Calcutta, Ed.2<sup>nd</sup>, 2000, Ch.39,peg 558
48. Pillay V.V.,Comprehensive Medical Toxicology,Paras Medical Publisher, Hyderabad, Ed 2<sup>nd</sup>, 2008, peg no.849.
49. Dr. Namburi Shekhar U.R, A Textbook Of Agadtantra, Chukhambha Sanskrit Sansthan,Varanasi,Reprint2013,peg no.143 .
50. Prof. Nishteswar K., Dr.Anil Kumar A.,Agadtantra & Vyavhar Ayurveda, Chaukhambha Surabharti Prakashan, VaranasiEd.1<sup>st</sup>,2009,ch.04 Peg 113.
51. Mishara Edited by Shree shastry B.& Vaisya R., Bhavaprakasha,Purwardhwam,Chukhambha Sanskrit Sansthana, Varanasi, Ed.8, 1993, peg no.314
52. Bhide B., Acharya R.,Uses of Langali ( Gloriosa superba Linn.): An Ethnomedicinal Perspective, AyurpharmInt J AyurAlli Sci., Vol.1, No.3 (2012) Pages 65 - 72 ,ISSN: 2278-4772
53. Dr.TripathiB. Dr.Panday G.S.,Charak Samhita , Chaukhambha Surabharti Prakashan, Varanasi,Ed,7<sup>th</sup> 2000, sharirsthana ch.08,peg 957.
54. Ibidem 1. Database on medicinal plants used in Ayurveda, Vol. 4. p.342
55. S Padmapriya, K Rajamani, V A Sathiyamurthy Glory Lily (Gloriosa superba L.) - A Review, ISSN: 0976 822X, December, 2015.
56. Suryavanshi S., Rai G., Malviya S.N. Evaluation Of Anti-Microbial And Anthelmintic Activity Of Gloriosa Superba Tubers, Advance Research in Pharmaceuticals & biologicals ISSN 2250-0774, Vol -2 (1) JAN- March 2012
57. Pt.Kashinath Shastri,Rasatarangini, Motilala Banarasidas, Dilhi,Ed.-11,1979,ChaturvinshatiAdhyaya,peg.no.74 1.
58. ShastriA., Forwarded by Dr.Mehata P.M., Sushrut Samhita Chukhambha Sanskrit sansthana,Varanasi, Ed.Reprint 2012, Chikitsasthana, Ch. 08,peg.47.
59. Pd.Shastrey D., Sharangdharsmhita, Madhyam Khanda, Chukhambha Vidyabhavan,Varanasi, Ed.reprint 2002, peg.no.428.
60. Pillay V.V.,Textbook of Forensic Medicine & Toxicology, Paras Publication, Hyderabad, Reprint 2007,Ch.05.peg 427.
61. Dr. Deshpande A.P., Dr.Jawalgekar, Dr. Ranade S.,Dravyaguna Vigyana, Anmol-Prakashana,Pune,Reprint 2003,peg no.984
62. Dr.J.L.N. Shastry, Prof. K.C. Chunekar, DravyagunaVijnana, Ed.3<sup>rd</sup>,2008, Chukhambha orientaliavaranasi, peg.no. 1003.

#### CORRESPONDING AUTHOR

**Dr. Chavhan Kalpana R.**

**Email:** drkalpanachavhan@gmail.com

**Source of Support:** Nil

**Conflict of Interest:** None Declared