



Review Article

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EXPLORING THE MEDICINAL HERBS USED IN TOXICOLOGICAL PRACTICES FROM THE GARUDA PURANA: A REVIEW

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ABSTRACT

Garuda Purana is one of the eighteen Maha puranas in Hinduism, composed in Sanskrit and belonging to the tenth century CE. The presently available text is of three hundred and eighteen chapters. Amongst these a few chapters are exclusively dedicated to descriptions of health, various diseases and their symptoms, treatments, and a listing of medicinal herbs. Poisoning and its management form an important topic in Garuda Purana, wherein anti-toxic hymns, herbs, animal products, dietary recommendations, metals, minerals, and precious stones are recommended for their management. Treatment of poisoning is an emergency management and could be benefited if these single herbs were widely available and used. The objective of this project was to compile the single herbs or simple recipes for poisoning from Garuda Purana, understand and validate its pharmacological application with inputs from Ayurvedic lexicons, tribal claims, and contemporary research on these herbs. After critiquing the book, at least 30 herbs were found utilized as anti-toxic remedies of which fourteen were identified as being administered as single herb therapies in Visha chikitsa.

Keywords: Ayurveda, Garuda Purana, toxicology, medicinal herbs, snake bite.

INTRODUCTION

There is ample evidence that India's medical heritage is scattered in a codified form across several literary works.¹ Garuda Purana, one such Maha purana of Hinduism, has a highly diverse collection of topics such as cosmology, various schools of Hindu philosophy, Ayurveda, Visha chikitsa (toxicology), knowledge on different medicinal herbs, metals, minerals, animal products and formulations, politics, Mantras and tantras (occult practices), Ratna pariksha (testing gemstones), veterinary medicine, statutes, palmistry, Indian ethics, Sanskrit grammar, geography to name a few. Garuda Purana is known to have nineteen thousand verses; however presently available texts have eight thousand eight hundred verses documented in them. The text is divided into two parts, Purvakhand² and Uttarakhand³. Purva khanda, also known as Achara khanda has two hundred and forty chapters. Uttara khanda comprises two khandas which are, Dharma khanda including forty-nine chapters and Brahma khanda comprising twenty-nine chapters. The text of Garuda Purana in its present available form has three hundred and eighteen chapters. There are several disagreements about the period of Garuda Purana (most placing it in tenth century CE), but few scientists quote that the text has evolved over many centuries mostly in a Vaishnava religious context.

Previous studies on Garuda Purana have ascertained the botanical identities of numerous medicinal plants.⁴ Another study traced the ethnomedicinal information from Garuda Purana highlighting that the text has information on dental care, hair care, skin care, bone care, respiratory care, and others.⁵ This clearly validates the usage of single herbs in therapeutics was in practice and there is scope for exploring the application of such practices in health and illness. Single herb therapy, also known as Ekala Dravya

Prayoga, is a cost-effective, convenient, and straightforward approach to administration, particularly beneficial in urgent situations. It exhibits a multitude of effects, is practical, and involves the utilization of minimal quantities of the substance for desired outcomes. Moreover, it presents lower risks of adulteration and helps reduce the burden on the ecosystem.

The methods of counteracting poisons or toxins were existent from ancient days and people had good knowledge and skills in practical applicability of medicine for its cure. Treatment of poisoning is an emergency management and could be benefited if the herbs used were single and widely available. The paper is a review of all the single herb or simple recipes for poisoning from Garuda Purana with an effort to compare and validate its pharmacological application with Ayurveda lexicons,^{6,7} folklore uses and contemporary research on these herbs.

Compilation and tabulation of Visha hara (which are mentioned as anti-toxic) herbs were done from Garuda Purana. Rasa (taste), Guna (quality), Veerya (potency), Vipaka (drug metabolism), Action on Doshas and useful part of the herbs were compiled from Bhavaprakasa Nighantu,⁸ Nighantu Adarsha,⁹ and Textbook of Dravyaguna¹⁰ which was tabulated. The tabulated data were then analyzed. Pharmacological application and folklore usage of the medicinal herbs in poison management or envenomation were searched and compiled from PubMed and google scholar.

Four chapters from the Garuda Purana majorly have the anti-toxic herbs and remedies. One amongst these chapters named Vishahara praneshwarividya nirupanam majorly deals with treating poisons. On complete screening at least thirty herbs were found utilized as anti-toxic remedies in various ways. Animal products such as yogurt (Dadhi), clarified butter (Ghrita) and

honey (Madhu) are the three animal products found repeatedly used as a part of envenomation therapies.

The single herbs documented for various envenomation and poisoning are tabulated in (Table 1). Fourteen herbs were found used as single herb preparation for envenomation with the details of their mode of administration and dosage forms. In this text, these herbs are found indicated either generally for treating all kinds of poisoning (with terminologies such as Visha, Sarva visha or Nana visha) or specifically for poisoning by plants (Dhattura visha and Karaveera visha) or bites (snake bite, rat bite). Five herbs such as, *Boerhavia diffusa*, *Trianthema portulacastrum*, *Bombax ceiba*, *Biophytum sensitivum* and *Aconitum ferox* are used to treat snake bite cases. *Albizia lebbbeck* and *Calotropis gigantea* roots are useful in treating poisonous conditions. *Alangium salvifolium* is the only herb found to treat Gara visha (an artificial/ man-made type of poison) in Garuda Purana. Garavisha is an artificial type of poison formed by combination of two nonpoisonous substances as depicted in the treaties of Ayurveda.¹¹ Arsenic compounds such as Orpiment (Haratala) and Realgar (Manashila) are found used to treat poisoning in Garuda Purana.

The medicinal herbs were reviewed for their Ayurvedic pharmacological actions from the Ayurveda lexicons (Table 2). The predominant taste of most of the herbs used in Visha chikitsa were observed to be sweet (Madhura) and bitter (Thikta). None of the herbs were found to be sour (Amla) in taste. Predominant Guna, Vipaka and Virya were Laghu (light / easy to digest) Ushna and Katu (pungent in taste post-digestion) respectively. *Amaranthus spinosus*, *Benincasa hispida* and *Glycyrrhiza glabra* were the anti-toxic herbs of Madhura Vipaka.

Shirisha and Pratyangira are used synonymously in the Nighantus which are both mentioned for treating different poisons in Garuda Purana.¹² These are identified as two different species *Albizia procera* (L.) Benth and *Albizia lebbbeck* (L.) Benth by Bapalal Vaidya Ji.

Traditional antidotes against snake venom toxicity have been scientifically and experimentally proven by many researches (Table 3).¹³⁻¹⁵ Root extract was found to be used commonly along with other parts of the drug for the study and hemorrhagic activity and other complications were found to be neutralized. Although it has been stated to act as complementary remedy for venomous conditions, the anti-snake venom property of these single herbs and their pharmacological action(karma) is like the folklore claims.

Table 1: Single herb anti-toxic therapies from Garuda purana

Plant reference from Garuda Purana	Botanical identification	Part used	Dosage form	Indication
Pratyangira	<i>Albizia procera</i> (L.) Benth	Roots	Juice	Visha (poisoning)
Punarnava	<i>Boerhavia diffusa</i> L.	Fruits and Roots	Juice	Visha (poisoning), Sarpavisha (Snake bite)
Shirisha	<i>Albizia lebbbeck</i> (L.) Benth	Roots and Seeds	Juice	Visha (poisoning), Durduravisha (Datura Poisoning)
Ankota	<i>Alangium salvifolium</i> L.f. Wang	Roots	Decoction	Visha (poisoning) and Garavisha (concocted poison)
Patha	<i>Cissampelos pareira</i> L.	Roots	Powder	Sarvavisha (anti- poisonous)
Shalmali	<i>Bombax ceiba</i> L.	Roots	Paste	Sarpavisha (snake poisoning)
Lajjaluka	<i>Biophytum sensitivum</i> (L.) DC	Roots	Paste or Amulet	Pannaga or sarpavisha (snake poisoning) Damshakavisha (poisoning due to bites)
Shweta Arka	<i>Calotropis gigantea</i> (L.) Dryand	Roots	Paste	Damshakavisha (poisoning due to bites) Karaviradijamvisham (poisoning due to Karavira)
Mahakala	<i>Aconitum ferox</i> Wall.	Roots	Paste	Dundubhasarpavisha (Boa snake poison)
Tanduliyaka	<i>Amaranthus spinosus</i> L.	Roots	Paste	Sarpavisha (all poisoning)
Kushmandaka	<i>Benincasa hispida</i> (Thunb.) Cogn	Not mentioned	Juice	Damshakavisha (poison due to bites)
Yashtimadhu	<i>Glycyrrhiza glabra</i> L.	Roots	not mentioned	Mushakavisha (rat poison)
Nili	<i>Indigofera tinctoria</i> L.	Root	Paste	Damshakavisha (poison due to bites)
Shukla Varshabhu	<i>Trianthema portulacastrum</i> L	Whole plant	not mentioned	Sarpadamsha (snake poison)
Dhavalva Gunja	<i>Abrus precatorius</i> L.	Root, fruit, and seeds	Juice and powder	Nanavisha (variety of poisoning), Kushta (skin disorders), Kandu (itching) Krimi (worm infestation), Indralupta (Alopecia Areata), Khalitya (hair fall) Jwara (fever), Vrana (wound) Netramaya (eye disorders) Mukhashosha (dryness of mouth)

Table 2: Summary of properties and actions of the herbs from Ayurveda lexicons

Botanical identification	Rasa (Taste)	Guna (Properties)	Taste after digestion	Pharmacological action & Indication
<i>Albizia lebbbeck</i> (L.) Benth	Madhura (sweet), Tikta (bitter), Kashaya (astringent)	Laghu (light to digest) Ushna (hot)	Katu (pungent)	Tridoshaghna (balances all tridoshas), Vishaghna (Anti-poisonous), Twakdosha hara (Anti- dermatosis) Kasahara (Anti- tussives), Poushtika (Nutritional) Vajikara (Aphrodisiac), Grahi (Adsorbent) Vishahara (Anti- poisonous)
<i>Boerhavia diffusa</i> L	Tikta (bitter),	Hima (cold) Laghu (light to digest)	Katu (pungent)	Vatala (increases Vata Dosha), Grahi (Adsorbent) Pittavikara (cures Pittaja diseases), Raktavikara (cures Raktaja diseases), Vishavikara (Anti- poisonous) Netravikara (cures eye diseases)

<i>Alangium Salvifolium</i> L.f. Wang	Katu (pungent) Tikta (bitter), Madhura (sweet)	Tikshna (penetrating) Snigdha Ushna (hot) Laghu (light to digest) Snigdha (unctuous)	Katu (pungent) Madhura (sweet)	Rechana (purgatives), Mutrala (diuretics) Swedajanaka (induce sweating), Jwarahara (anti- pyretic) Krimighna (anti- helminthics), Vishahara (anti- poisonous) Shopha (anti- inflammatory), Visha (anti- poisonous) Kapha-pitta-raktavikara (cures diseases of kapha and pitta dosha, raktaja disorders), Mushika visha (against rat poison) Sarpavisha (against snake poison)
<i>Bombax ceiba</i> L.	Madhura (sweet)	Shita (cold)	Madhura (sweet)	Rasayani (Immuno- modulators), Sleshmala (increases Kapha Dosha), Raktapittajith (cures Rakta pitta)
<i>Biophytum sensitivum</i> (L.) DC	Tikta (bitter) Kashaya (astringent)	Shita (cold)	Katu (pungent)	Kaphahara (reduces Kapha Dosha), Raktapitta (cures Rakta pitta), Atisara (cures Atisara)
<i>Calotropis gigantea</i> (L.) Dryand	Katu (pungent) Tikta (bitter)	Sara (mobile nature) Ushna(hot)	Katu (pungent)	Vatahara (Reduces Vata Dosha), Kushta (Anti- dermatosis) Kandu (anti- pruritic), Visha (anti- poisonous) Vrana (wound healing), Pleecha- gulma-arshas (cures diseases of spleen, tumors, piles), Shleshmodara (abdominal distension due to Kapha dosha)
<i>Cissampelos pareira</i> L.	Tikta (bitter)	Tikshna (pungent), Laghu (light) Ushnavirya (hot)	Katu (pungent)	Shula (anodyne), Jwara (anti- pyretic), Kushta (anti- dermatosis), Hridruja (cardio tonic), Kandu (anti- pruritic) Visha (anti- poisonous), Shwasa (anti- dyspnetic) Daha (coolant), Krimi (anti- helminthic), Gara (against concocted poison), Vrina (wound healer)
<i>Trianthema portulacastrum</i> L.	Katu (pungent) Kashaya (astringent)	(Not specifically mentioned)	Katu (pungent)	Mutrala (diuretic), Deepani (appetizers) VataKaphahara (reduces Vata and Shleshma Dosha) Gara (against concocted poison)
<i>Abrus precatorius</i> L.	Madhura (sweet) Bija- ushna	Snigdha (unctuous)	Katu (pungent)	Keshya (hair tonic), Vrishya (aphrodisiac) Balya (strength promoters), Jwarahara (anti- pyretic) Vatapittahara (reduces Vata and Pitta Dosha)
<i>Amaranthus spinosus</i> L.	Madhura(sweet)	Laghu (light), Shita (cold), Ruksha (dry)	Madhura (sweet)	Pitta- kapha-asrujith (cures pittaja, kaphaja, raktaja diseases) Mutrajanana (diuretic), Vishahara (anti-poisonous)
<i>Benincasa hispida</i> (Thunb) Cong.	Madhura (sweet)	Hima (cold) Laghu (light)	Madhura (sweet)	Brimhana (nourishing), Vrishya (aphrodisiac) Hridya (cardio tonic), Mutrala (diuretic) Medhya (nootropic), Visarpahara (cures Visrapa)
<i>Glycyrrhiza glabra</i> L.	Madhura (sweet)	Shita (cold)	Madhura (sweet)	Balya (strength promoter), Vrishya (aphrodisiac) Snehana (induces oleation) Pitta- anila- asrujith (cures pittaja, vataja and raktajavikara) Vrina (wound healing), Shotha (anti-inflammatory) Vishapaha (anti- poisonous)
<i>Indigofera tinctoria</i> L.	Tikta (bitter)	Ushnavirya (hot potency)	Katu (pungent)	Amavata (cures amavata), Udavarta (cures udavarta), Mada (cures intoxication), Vishamuddhatam (cures severe poisoning)

Table 3: Proven pharmacological activity validating the traditional claims

Plant name	Plant part and extract used	Model studied	Reference
<i>Albizia lebeck</i> (L.) Benth	Seed methanolic extract -hot extracts by the Soxhlet method using different solvents (1:25 w/v) with increasing polarity (n-hexane, chloroform, ethyl acetate, methanol and water)	Neutralization potential against the toxic enzymes of ECV (proteases and hyaluronidases), prevented the characteristic ECV induced hemorrhage and myotoxicity ¹⁶	16
<i>Calotropis gigantea</i> (L.)	Methanolic extract of plant	Neutralization of Hemorrhagic Activity, Neutralization of Necrotizing Activity, Neutralization of Edema forming activity ¹⁷	17
<i>Alangium salvifolium</i> L.f. Wang	Roots and its methanolic extract	<i>In vitro</i> and <i>in vivo</i> neutralizing potential of <i>Alangium salvifolium</i> extract against Russell' s viper (<i>Daboia russelii</i>) ¹⁸	18
<i>Cissampelos pareira</i> L.	Aerial parts and roots and its alcoholic extract	The effects of <i>Cissampelos pareira</i> extract on envenomation induced by <i>Bothrops diporus</i> snake venom ¹⁹	19
<i>Amaranthus spinosus</i> L.	Whole plant and its aqueous extract	Snake- Antivenom activities of Aqueous extracts of <i>Amaranthus spinosus</i> L. against <i>Naja subfulva</i> venom ²⁰	20

DISCUSSION

Single drug therapy or Eka Mulika Prayoga is an important part in the indigenous treatment practice of India especially to the folklore practitioners and tribals. Usage of single herbs is sustainable and simple in application. The limitations of compound formulations might have paved the way for monotherapy practice which yielded tremendous effect in curing the diseases or fatal conditions. Although information of single herb therapy is scattered in our ancient Indian medical and other

literature, efforts are required to popularize their use backed by scientific evidence and folklore wisdom.

Usage of medicinal plants for the treatment of toxic conditions were found scattered in 15 chapters of this text. Herbs such as *Albizia lebeck*, *Boerhavia diffusa*, *Alangium salvifolium*, *Cissampelos pareira* and *Amaranthus spinosus* are equally prevalent for treating toxic conditions as ingredients of compound formulations in Ashtanga Hridaya, one among the classical treatises of Ayurveda.²¹ The medicinal plants administered in

snake bite such as *Boerhavia* and *Trianthema* are sources for the herb Punarnava in Ayurvedic literature. Experimental studies have shown nephroprotective potential of *Boerhavia* in different models.²² Renal failure is a common complication of Viper snake venom where in *Boerhavia* can be integrated to the current treatment strategy based on evidence.²³

Review the predominance of herbs with bitter, sweet taste and Madhura vipaka (post digestive effect). Two herbs of Madhura vipaka such as *Amaranthus spinosus* and *Benincasa hispida* are enumerated as anti-toxic vegetable sources in Ayurveda treatises.²⁴

Several plants documented in Garuda Purana for poisonous bites also find tribal claims. Few such herbs are fresh leaves or roots and seeds of *Abrus precatorius* L, *Calotropis gigantea*, *Albizia lebbek*, root juice or leaf juice of *Indigofera tinctoria*, root bark of *Alangium salvifolium*, roots of *Cissampelos pareira* and *Amaranthus spinosus*.^{25,26}

Extracts from plants have been used among traditional healers, especially in tropical areas where there are plentiful sources, as therapy for snakebite for a long time. Several medicinal plants, which appear in old drug recipes or which have been passed on by oral tradition, are believed to be snakebite antidotes.

Poison is enumerated as a causative agent for diseases in Garuda Purana. Alcoholism is described in detail in an independent chapter and is said to disturb the mind. The present review of the Garuda Purana for plants with anti-toxic effects revealed nearly thirty herbs (Table 1). Almost all the herbs mentioned in Puranas for treating poisonous bites were found documented in the classical Ayurvedic texts and lexicons. On further probing these medicinal plants mentioned in Garuda Purana for treating poisonous bites were found to be prevalent as Vishahara (anti-toxic) herb in classical Ayurveda literature and lexicons (Table 2 and Table 3).

Albizia lebbek (Pratyangira) is considered as the prime herb by Acharya Charaka to treat poisonous bites or any type of poisons.²⁷ *Albizia* seed extract has demonstrated significant anti-venom activity to manage local toxicity induced by Viperidae venom in a murine model.

All parts of the plant are prescribed in the treatment of venomous bites in the form of decoction, pastes, juice, nasal drops, medicinally processed ghee to enumerate a few.²⁸

Acharya Bhavaprakasha has mentioned two types of Shirisha (*Albizia lebbek*) namely Shweta (white) and Krishna (black). Krishna (*Albizia lebbek*) variety is easily found but Shweta Shirisha (*Albizia procera*) is very rare. Punarnava (*Boerhavia diffusa*) is effective in Garavisha according to classical texts and lexicons (Ashtanga Hridaya and Bhavaprakasha). *Boerhavia diffusa* has proven hepatoprotective and *Trianthema portulacastrum* has studies showing its nephroprotective effect.

A perusal of Garuda Purana also reveals the significance of Anupana (adjuvants) and other modes of usage of the various medicinal herbs by external and internal routes for anti-toxic action against animal poisons or bites and chronic poisoning (Gara Visha).²⁹ Importance of time of collection of herbs from the wild is also mentioned as we get reference regarding Pushya constellation and others for the best effect. Metals and minerals such as Haratala and Manashila (purified Arsenic compounds) were also used for treating toxicity. Shirisha, Ankola, and Nili are prominent anti-toxic herbs in Ayurveda practice.

Poisonous bites and their treatment using medicinal plants are an important part of traditional wisdom. Till date the only scientifically validated treatment for envenomation is Anti-venom serum therapy. However, there are drawbacks to this therapy such as limited or no access to antivenoms in the rural areas of developing countries, where most of the accidents occur. There is clinical consensus that antivenom therapy is of limited effectiveness against the effects of local envenoming that develop rapidly after a bite from several species of venomous snakes. Moreover, venom-induced chronic local-toxicity continues even after anti-snake venom treatment. There are also significant variations in venom composition and antigenic reactivity due to geographic and taxonomic diversities of snakes which may pose serious clinical limitations during serotherapy. Therefore, traditional antidote plants knowledge must be gathered and tested in laboratory settings for its effectiveness against venom-induced toxicity to evaluate its anti-venom remedy. The use of medicinal plants against the effects of snake bite has been long recognized and several plants have been used by traditional healers especially in tropical areas as therapy for snakebite for a long time. Consistent efforts have been made in recent years for the development of snake venom antagonists from plant sources.

CONCLUSION

Monotherapy with Anti-toxic or anti-poisonous action is recognized in Garuda Purana to a feasible extent. Many herbal and Herbo-mineral formulations are also mentioned more as a treatment to the various poisonous conditions. We also get to see the proven anti-toxic action of the herbs or drugs mentioned in the Garuda Purana from the contemporary research articles and citing, from which it can be inferred that the knowledge of the Toxicology was very well known and documented in possible ways. There is tremendous scope for the students and scholars to further research more regarding the same to bring out the facts and emphasize the claims and help the mankind for the new and better cure for the Poisonous conditions.

REFERENCES

1. Hafeel A, Suma TS, Unnikrishnan PM. Documenting and revitalizing local health traditions. In: Shankar D, Unnikrishnan, PM, editors, Challenging the Indian medical heritage. Delhi: Centre for Environment Education; 2004;114-27. DOI: <https://doi.org/10.1017/UPO9788175968752>
2. Dutt MN, Jain S. The Garuda Mahapurana of Maharshi Veda Vyasa. Part I- Purvakhand, 4th edition, Visha Chikitsa: Chapter 191, Delhi, New Bharatiya Book Corporation, 2016; p. 474-475.
3. Dutt M N, Jain S. The Garuda Mahapurana of Maharshi Veda Vyasa. Part II- Uttarakhand, 4th edition, Srikrishna-Garuda samvada prasha prapancha Nirupanam: Chapter 1, Delhi, New Bharatiya Book Corporation, 2016; p 603-963.
4. Jadhav D, Ethnomedical information in Garuda Purana, Journal of Ayurveda, 2021;15(2)123-126. DOI: http://dx.doi.org/10.4103/joa.joa_83_20
5. Sensarma P. Plant names - Sanskrit and Latin. Anc Sci Life. 1992 Jul;12(1-2):201-20.
6. Tripathi I, Tripathi DS. Yogaratnakara with Vaidyaprabha Hindi Commentary, 4th edition, Visha nidana-chikitsa prakaranam: Chapter 13, Varanasi, Chaukhambha Krishnadas Academy, 2013; p 854-873.
7. Sharma PV. Chakradatta of Chakrapanidatta, 1st edition, Visha Chikitsa: Chapter 65, Varanasi, Chaukhamba publishers, 2013; p 567-572.

8. Mishra B, Vaisya R. Bhavaprakasha of Sri Bhavamishra, 12th edition, Visha adhikara: Chapter 67, Varanasi, Chaukhambha Sanskrit Bhawan, 2018; p.720-748.
9. Vaidya BG, Nighantu Adarsha, Vol.2, 2nd edition, Nirgundyadi varga: Chapter 34, Varanasi, Chaukhambha Bharati Academy, 1999; p.238
10. Hegde PL, A Harini, A Textbook of Dravyaguna Vijnana, Vol.2, 1st edition, New Delhi, Chaukhamba Publications, 2011; p.80-92.
11. Datta S, Chattopadhyay A. Physiological concept of hapten-carrier adduct vis-a-vis Garavisha. Ayu. 2017 Jan-Jun;38(1-2):3-6. DOI: https://doi.org/10.4103/ayu.ayu_85_16
12. Shastri JL. The Garuda Purana of Veda Vyasa, Part 2, 1st edition, Visha Chikitsa: Chapter 191, Delhi, Motilal Banarasidass Publishers, 1957; p.567-569.
13. Bhavya J *et al.* Ethnomedicinal plants and isolated compounds against Snake venom activity: A review. Indian J Nat Prod Resour. 2021;12(4): 491-505. DOI: <http://op.niscair.res.in/index.php/IJNPR/article/view/26552>
14. Fattepur S, Gawade S. Preliminary Screening of Herbal Plant Extracts for Anti-venom activity against Common Sea Snake (*Enhydrina schistosa*) Poisoning. Pharmacognosy Magazine [Internet]. 2007;3(9):56-60. (Cited on May 24, 2024) <https://phcog.com/article/assets/v3/i9/PhcogMag-3-9-56.pdf>.
15. Alam MI, Gomes A. Snake venom neutralization by Indian medicinal plants (*Vitex negundo* and *Embllica officinalis*) root extracts. J Ethnopharmacol 2003; 86: 75-80. DOI: [https://doi.org/10.1016/s0378-8741\(03\)00049-7](https://doi.org/10.1016/s0378-8741(03)00049-7)
16. Amog PU, Manjuprasanna VN, Yariswamy M, Nanjaraj Urs AN, Joshi V, Suvilesh KN *et al.* *Albizia lebbek* seed methanolic extract as a complementary therapy to manage local toxicity of *Echis carinatus* venom in a murine model. Pharm Biol. 2016 Nov;54(11):2568-2574. DOI: <https://doi.org/10.3109/13880209.2016.1171882>
17. Chacko N, Ibrahim M, Shetty P and Shastry C.S.: Evaluation of Antivenom Activity of *Calotropis Gigantea* Plant Extract against Vipera Russelli Snake Venom. Int J Pharm Sci Res, 2012;3(7): 2272-2279. DOI: [http://dx.doi.org/10.13040/IJPSR.0975-8232.3\(7\).2272-79](http://dx.doi.org/10.13040/IJPSR.0975-8232.3(7).2272-79)
18. Movalia D, Manek R, Dudharejiya A. In vitro and in vivo neutralizing potential of *Alangium salvifolium* extract against Russell's viper (*Daboia russelii*). Asian J. Pharm. Pharmacol. 2019;5(5):972-978. DOI: <http://dx.doi.org/10.31024/ajpp.2019.5.5.17>
19. Verrastro BR, Torres AM, Ricciardi G, Teibler P, Marunak S, Chiara Barnaba, *et al.* The effects of *Cissampelos pareira* extract on envenomation induced by *Bothrops diporus* snake venom. J. Ethnopharmacol. 2018; 212:36-42. DOI: <https://doi.org/10.1016/j.jep.2017.09.015>
20. Yego KK, Njagi ENM, Orinda GO, Gikunju JK. Snake-Antivenom activities of Aqueous extracts of *Amaranthus spinosus* L. against *Naja subfulva* venom. International Journal of Innovative Sciences and Research Technology. 2022; 7(12): 1489- 1493. DOI: <https://doi.org/10.5281/zenodo.7527603>
21. Murthi S.K.R. Ashtanga hridaya, Vol. 3, 7th edition, Uttarasthana, Chapter 42/ Verse 69-73, Chaukhambha Orientalia Varanasi, Reprint-2009; P 399.
22. Dey A, De JN. Traditional use of plants against snakebite in Indian subcontinent: a review of the recent literature. Afr J Tradit Complement Altern Med. 2011;9(1):153-74. DOI: <https://doi.org/10.4314/ajtcam.v9i1.20>
23. Karwasra R, Kalra P, Nag TC, Gupta YK, Singh S, Panwar A. Safety assessment and attenuation of cisplatin induced nephrotoxicity by tuberous roots of *Boerhaavia diffusa*. Regul Toxicol Pharmacol. 2016 Nov; 81:341-352. DOI: <https://doi.org/10.1016/j.yrtph.2016.09.020>
24. Kaviraja Ambika Dutta Shastri (ed). Sushruta Samhita, 1st edition, Sutrasthanam (20/5). Varanasi: Chaukhamba Sanskrit Sansthan, 2018; p.107
25. Upasani SV, Beldar VG, Tatiya AU, Upasani MS, Surana SJ, Patil DS. Ethnomedicinal plants used for snakebite in India: a brief overview. Integr Med Res. 2017 Jun;6(2):114-130. DOI: <https://doi.org/10.1016/j.imr.2017.03.001>
26. Jadhav D, Ethnomedicinal plants in Garuda Purana used for the treatment of Poisonous bites, Science and culture. 2021;87(7-8):291. DOI: http://dx.doi.org/10.36094/sc.v87.2021.Ethnomedicinal_Plants_in_Garua_Puraona.Jadhav.291
27. Acharya YT (ed). Charaka Samhita of Agnivesha, 5th edition, Sutrasthanam (25/40). Varanasi: Chaukhambha Orientalia, 2001; p.131
28. Kapoor L.D, Handbook of Ayurvedic Medicinal Plants, 1st edition, CRC Press, Boca Raton, Florida, 2001; p.353-360.
29. Idaikkidath VS, Paulose KG. Garuda Mahapurana of Veda Vyasa, 1st edition, Vivdhousada tantravidhi nirupanam: Chapter 191, Kerala, DC Books, 2014; p.618-619.

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