

REVIEW ARTICLE ON VISHGHANA PROPERTY OF MANJISTHA

Kritica sharma¹, Ritu Kapoor², Manoj Adlakha³¹PG Department of Agada Tantra Evam Vyavahara Ayurveda, PGIA, Jodhpur, Rajasthan, India² Associate Professor & HOD, PG Department of Agada Tantra Evam Vyavahara Ayurveda, PGIA, Jodhpur, Rajasthan, India³ Associate Professor, PG Department of Dravyaguna, PGIA, Jodhpur, Rajasthan, IndiaCorresponding Author: kittu198.sharma@gmail.com<https://doi.org/10.46607/iamj111112023>

(Published Online: November 2023)

Open Access

© International Ayurvedic Medical Journal, India 2023

Article Received: 09/10/2023 - Peer Reviewed: 25/10/2023 - Accepted for Publication: 10/11/2023.



ABSTRACT

Poisoning being the major health problem in modern era which is increasing day by day. There are different sources from where people are consuming poison directly or indirectly. According to *Ayurvedic* point of view, there are different types of poison like *Sthavar Visha*, *Jangam Visha*, *Gara Visha*, *Dushi Visha*. So, after taking such poison shows harmful effect in human health which leads different kinds of diseases to death. So, to protect from such kinds of poisoning *Ayurveda* has mentioned different types of detoxifying *Dravyas* that help to diminish or destroy the poisonous effect in human body. The Concept of *Ayurvedic Vishaghna mahakashaya* explained by *Acharya Charaka* has the properties of detoxifying action. As per *Ayurved* classics, it is included in the *Vishaghna gana* (Anti poisonous drugs) and is an important constituent of several *Agada* (Anti-poisonous formulations). *Agada*, one of the modalities used for treatment of poisoning is a combination of different herbs. *Manjistha*, as a single and multiple preparations are available which indicates its utility in many poisonings. *Manjistha* is not only used as *Vishaghna* (anti poisonous) drug, but it has multiple therapeutic values, which are discussed in the article. Selection of all logical references are done and collection, correlation and explanation as per requirement. It can be useful for diseases which come under area of any field of toxicity. Hence, we can prevent and treat many toxicological disorders.

Keywords: Ayurveda, Manjistha, Detoxifying, Vishaghna, Agada

INTRODUCTION

Poison is a substance (may be solid, liquid or gaseous) which if introduced in the living body or brought into contact with any part thereof will produce ill-health or death by its constitutional or local effects or both.¹ It's another definition is "A substance, either natural or synthetic which will lead to injury of living tissue or damage living tissues or show fatal effect on the body, whether it is ingested, inhaled or absorbed or injected through skin. All these harmful effects may show immediate or after long term². Thus, by the above definition *Visha* and poison seem to be analogous to each other. There are eight branches of *Ayurveda*, which have been written in Different *Samhita*. Among them, *Agadatantra* is one, which deals with all kinds of poisons produced by different types of Snakes, Spider, Scorpion, Rat, etc. animals, plants, combination of different types of poisonous or non-poisonous things including their properties, their actions, sign and symptoms and their management. One of the earliest treatises of Indian medicine, the *Charaka Samhita*, mentions the use of over 2000 herbs for medicinal purpose. *Charaka Samhita* has mentioned ten antitoxic herbs in *Vishaghna Mahakashaya*. In that system *Manjistha*, which belongs to the family Rubiaceae is a very important herb with a broad spectrum of pharmacological activities, medicinal properties and *Vishaghna* (Anti poisonous) properties. One of the famous Traditional systems of medicine is the *Ayurveda* system of medicine since antiquity. Having importance to herbal plants and their therapeutic usage for treating diseases. *Manjistha*, one among the *Vishaghna mahakashayas* mentioned by *Acharya Charaka*. Each drug of *Vishaghna Mahakashaya* is chief ingredient of many classical prepa-

ration and *agada* preparation (Anti-poisonous ayurvedic preparation) which has large area of therapeutic uses. The pharmacological properties of drug *Manjistha* are having broad spectrum in the field of *Ayurvedic*.

Material and Method:

This review has done with an intention to provide an overview on Pharmacological activities and *Vishaghna* (Anti poisonous) property of *Manjistha*. The data were collected from *Ayurveda* authentic texts, scientific journals and through the electronic media.

Common Description & Scientific classification :³⁻⁵

Habitat: *Rubia cordifolia* is a climbing plant growing in the North-west Himalayas, Nilgiris and other hilly districts of India (Altitude: 1500-2500m)

Botanical description: It is Perennial, prostrate or climbing herb. Stems sharply 4-angled, minutely prickly; leaves in whorled of 6-8, elliptic to ovate-cordate, long petiolate, flowers in axillary panicles of dichotomous cymes, greenish yellow; fruits 2-celled, globose, smooth, shining, purplish-black when ripening.

Flowering and fruiting: June-October and Part used: Root and Stem mainly. Cultivation: The tolerable thermal range for the species varies from 15-35°C in high altitude of Himalayas. The plant prefers loose, moist, light soil with some shade. As the root goes deep into soil, porous well-aerated soils are beneficial for cultivation. Irrigation is recommended at weekly intervals to maintain moist conditions in the beds. For vegetative propagation, pieces of the stem are planted directly.⁶

Taxonomical Classification

Kingdom	Plantae
Class	Dicotyledons
Subclass	Sympetalae
Order	Rubiales
Family	Rubiaceae

Genus	Rubia
Species	Cordifolia ⁷

Vernacular names :⁸

- ❖ English Indian Madder
- ❖ Sanskrit Aruna, Bhandi, Bhandiralatik
- ❖ Hindi Manjit, Manjishtha
- ❖ Urdu: Majith Malayalum Manjithi
- ❖ Marathi Manjestha
- ❖ Kashmiri Dandu, Mazait
- ❖ Assamese Majathi, Mandar
- ❖ Tamil Mancitti

- ❖ Kannada Siragatthi, Bhandeera, Manjishtha
- ❖ Konkani Itari
- ❖ Punjabi Kattha, Majitha
- ❖ Gujrati Majitha
- ❖ Manipuri Moyum
- ❖ Oriya Manjishtha
- ❖ Tibetan Brtsod
- ❖ Tulu Manjishtha
- ❖ Nepali Majito

Ayurvedic pharmacodynamic properties by Different Nighantu⁹⁻¹¹

Literature	Rasa	Guna	Veerya	Vipaka	Karma
Bhav prakash Nighantu	Kashya, Tikta, Madhura	Guru	Usna	Katu	Kaphapittasamaka, Varnya, Svarya, Visaghna , Sothaghna, Kusthaghna, Pramehaghna, Vrnaya, Krimighna, Stambhana, Artavajanana, Rasayana
Dhanvantari Nighantu	Madhura Kashaya	Guru	Usna	Madhur	Kapha-Vrana-Meha-Asra- Visha -Aamyajeeta
Kaiyadev Nighantu	Kashaya Tikta	Guru	Usnaa	Madhur	Yoniroghana Kaphasho- Vishapaha Visarpa-Meha-Kustha-Arsa-Vrana-Rakta-Atisarajeeta
Raj Nighantu	Madhura Kashaya	Guru	Usnaa		Vrana-Meha-Jwara-Sleshma- Visha -Netramayapaha

Chemical Composition of Manjistha

- ❖ *Rubia cordifolia* is most known for its anthraquinones and naphthohydroquinones phytochemical constituents¹².
- ❖ The chief constituents of *Rubia cordifolia* are Rubiadin¹³, Rubicordone A¹⁴, Rubiasins A-C¹⁵, Rubiatriol¹⁶ and two pentacyclic triterpenoid- Rubicoumaric acid Rubifolic acid¹⁷.

Description of Manjistha in Ayurved literature.

S.No	Ayurvedic Literature	General classification	Vishaghna Classifications
1.	<i>Charaka Samhita</i> ^{18,19,20}	Varnya, Jwarhar	+
2.	<i>Susruta Samhita</i> ^{21,22}	Priyavadi and Ambashthadi gana	-
3.	<i>Ashtanga Hridaya</i> ^{23,24,25}	Priyavadi Varga	+
4.	<i>Bhavaprakasha Nighantu</i> ²⁶	Haritkyadi varga	+
5.	<i>Raj Nighantu</i> ²⁷	Pippalyadi varga	+

6.	<i>Kaiyadeva Nighantu</i> ²⁸	<i>Aushadhi varga</i>	+
7.	<i>DhanvantariNighantu</i> ²⁹	<i>Guduchtadi varga</i>	+
8.	<i>Priya Nighantu</i> ³⁰	<i>Pippalyadi varga</i>	+

Antitoxic activity of *Manjistha*

Rubia cordifolia shows potent antioxidant activity against lead nitrate and radiation induced toxicity.^{31,32} According to *Bhava Prakash*, *Rubia cordifolia* is able to bind itself with *Amavisha* (free radicals) and *garavisha* toxins which cause inflammation, skin disease, ulcers and others' problems.³³ Alizarin Bi-

omarker of *Rubia cordifolia* is responsible for Anti-genotoxic activities.³⁴ A balanced combination of *Soma* (cooling) and *Agni* (heat) found in *Rubia cordifolia*. *Agni* allows the herb to penetrate into the cellular level of tissue and *Soma* helps to soak up toxins and neutralize them.³⁵

Therapeutic *Vishaghna Yoga* and *Agad* Preparation of *Manjistha*

S.No	Literature	Yoga and Agad Preparation	Indication	Reference
1.	Charak	<i>Rajniadi Churna</i>	<i>Visha</i>	<i>C.S.Chi.23/50</i>
		<i>Mahagandhahasti agad</i>	<i>Visha</i>	<i>C.S.Chi.23/77-94</i>
		<i>Pipplyadi Pishthi</i>	<i>Visha</i>	<i>C.S.Chi.23/185</i>
		<i>Manjishthadi Pana</i>	<i>Mandali Sarpa visha</i>	<i>C.S.Chi.23/196</i>
2.	Sushruta	<i>Mahagada</i>	<i>Vishavegahar</i>	<i>S.S.K.5/61-62</i>
		<i>Rishabhagada</i>	<i>Sarpakeeta visha</i>	<i>S.S.K.5/68-72</i>
		<i>Drakshadi agad</i>	<i>Sarpavisha</i>	<i>S.S.K.5/76-77</i>
		<i>Ksharagada</i>	<i>Vish</i>	<i>S.S.K.6/3-7</i>
		<i>Kalyanak Sarpi</i>	<i>Vish</i>	<i>S.S.K.6/8-11</i>
		<i>Snukakshiradi lehya</i>	<i>Mushak damsha</i>	<i>S.S.K.7/22</i>
3.	Vagabhatt	<i>Manjishthadi churna pana</i>	<i>Sarpa visha</i>	<i>A.H.U.36/59</i>
		<i>Kashmaryadi pana</i>	<i>Sarpa visha</i>	<i>A.H.U.36/65</i>
		<i>Pathyadi lepa</i>	<i>Vraschika visha</i>	<i>A.H.U.37/38</i>
		<i>Champakadi agad</i>	<i>Luta visha</i>	<i>A.H.U.37/71</i>
		<i>Agardhumadi lepa</i>	<i>Mushaka visha</i>	<i>A.H.U.38/18</i>
		<i>Suryodaya agad</i>	<i>Visha</i>	<i>A.S.U.40/57</i>
		<i>Priyangavadi agad</i>	<i>Visha</i>	<i>A.S.U.40/59</i>
		<i>Mushkadi yoga</i>	<i>Visha</i>	<i>A.S.U.40/81</i>
		<i>Ajeya ghrta</i>	<i>Visha</i>	<i>A.S.U.40/98</i>
		<i>Mahagada</i>	<i>Visha</i>	<i>A.S.U.42/61</i>
4.	Bhavaprakash	<i>Jatyadi Taila</i>	<i>Vishaj vrana</i>	<i>B.P.M.47/90-95</i>
		<i>Mrityupasachhedi ghrta</i>	<i>Visha</i>	<i>B.P.M.67/82-87</i>
		<i>Rajniyugmadi lepa</i>	<i>Luta visha</i>	<i>B.P.M.67/89</i>
5.	yogratnakar	<i>Jatyadi taila</i>	<i>Vishaj vrana</i>	<i>Y.R. sadyovrana 46-50</i>
		<i>Grahadhumadi yoga</i>	<i>Aakhu visha</i>	<i>Y.R. visha 111</i>
		<i>Rajnidvayadi lepa</i>	<i>Luta visha</i>	<i>Y.R. visha 138</i>
		<i>Mrityuchhardi ghrta</i>	<i>Visha</i>	<i>Y.R. visha 164-169</i>

Some Pharmacological actions of *Manjistha*:

1. Anti-tumour activity

Anti-tumour activity of RC-18, proved from *Rubia cordifolia* was repeatedly tested in different sets of

experiments on a spectrum of experimental murine tumours, viz. P388, L1210, L5178Y, B16 melanoma, Lewis lung carcinoma and sarcoma 180. RC-18 exhibited significant increase in life span of ascites leukaemia P388, L1210, L5178Y and a solid tumour B16 melanoma. However, it failed to show any inhibitory effect on solid tumours, Lewis lung carcinoma and sarcoma -180. Promising results against a spectrum of experimental tumours suggest that RC-18 may lead to the development of a potential anti-cancer representative.³⁶

2. Wound Healing Effect

Wound Healing of an herbal formulation of *Rubia cordifolia* was done. emulsion formulation of herbal drug mixture of *R. cordifolia*, *C. asiatica*, *T. belerica*, *P. zeylanica*, and *W. somnifera* was formulated. Animals were inspected daily up to 20th days and healing was good and produced wound contraction, period of epithelization and histological study. It shows that there is contraction and new epithelization of excision wound.³⁷

3. Hepatoprotective Activity -The hepatoprotective activity of an aqueous and methanol extract of *Rubia cordifolia* was investigated against acetaminophen and CCl₄ induced hepatic damage. Acetaminophen created 100% death at a dose of 1 g/kg in mice while pretreatment of animals with plant extract (500 mg/kg) reduced the fatality rate to 30%. Acetaminophen at a dose of 640 mg/kg produced liver damage in rats as manifested by the rise in serum levels of GOT and GPT to 1447±182 and 899±201 IU/L (n =10) respectively, compared with respective management values of 97±10 and 36±11. Pretreatment rats through plant extract (500 mg/kg) lower significantly (p<0.005) the respective serum GOT and GPT levels to 161±48 and 73±29.³⁸

4. Antioxidant activity extract of root of *Rubia cordifolia* and its constituent rubiadin were found antioxidant property.^{39,40,41} Hydroxyanthraquinones were the prime antioxidant phenolic constituents of *R. cordifolia*.⁴² The antioxidant properties of *R. cordifolia* extract for protection Alcoholic against lipid peroxidation and reduced glutathione (GSH) content in rat

liver homogenate compared with vitamin E and para-benzoquinone (PBQ).⁴³

5. Immunity enhancing activity: The ethanolic extracts of the whole plant of *Rubia Cordifolia* were tested for many immunity enhancing activities using a murine model. The active compound present in the extract enhanced both cell-mediated and humoral immunity. Administering the extracts to rats that were given the immunosuppressive drug, phosphamidon showed significant restoration in immunity⁴⁴.

6. Neuroprotective Properties: *R. cordifolia* has been shown to exert cell/neuroprotective properties via preventing the depletion and increasing GSH (glutathione) levels by inducing GCLC (c-glutamylcysteine ligase) expression, reducing oxidant levels by direct scavenging, and decreasing iNOS expression. The protective ability may be attributed to the GSH and vitamin C content of the herb.⁴⁵ Neuroprotective effect of *Rubia cordifolia* Linn. was studied on β-amyloid Induced cognitive dysfunction in Mice. Ethanolic extract of *Rubia cordifolia* administration significantly (P<0.01) reduced the βamyloid induced cognitive and memory dysfunction. The extract decreases neurodegeneration and helps in memory retention activity. The extract showed significant effects (P<0.05) in short term retention and increases long term retention of memory in step-down inhibitory avoidance task and an increase (P<0.05) in number of head dippings, line crossings and rearing's in the open field, and the water-maze test. The neuroprotective activity of the plant on Alzheimer's type dementia may be due to inhibition of AChE, MAO, free radical scavenging activity.⁴⁶

DISCUSSION

As we have seen in the above literature that *Manjistha* have been used as a prominent content in many *Agad* (antitoxic) preparations. These *Agad* are mainly used for different types of toxicity as such *Sarpaluta*, *Vrischhikka* and by our great sages of *Ayurveda*. By recent research, we find that *Manjistha* has Antioxidant, Anti-tumor, hepato-protective, nephro-protective, wound healing and immunomodulator

effect also. By this research, the concept of *vishaghna guna* of *Manjistha* gets strengthen.

CONCLUSION

As per the above discussion, we conclude that *Manjistha* is a *Vishaghna*(Anti-toxic) drug useful in different types of toxicity. It will be beneficial for metabolic toxicity; substances acquired acute and chronic toxicity, biological toxicity, cumulative toxicity etc. and diseases due to toxicity. *Manjistha* can be easily used in today's era for preventive as well as curative disease and make life free from toxicological agents.

REFERENCES

- Gautam Vishwas, Review of Forensic medicine and Toxicology, 4th ed. Jaypee Brothers medical publishers(P) ltd, New Delhi reprint 2019:411
- Bruce W. Halstead, Curtis D. Klaassen, et al (2019). Poison, Encyclopedia Britannica, 2019 available from <https://www.britannica.com/science/poison/biochemistry>, Accessed on November 05, 2020
- Pharmacognosy of Indigenous Drugs, Cccras-1999 - Pg-378, Vol-1, Database on Medicinal Plants Used in Ayurveda, Pg-152, Vol-1.
- Nadkarni K.M., Indian Materia Medica, Bombay Popular Prakashan, 2007, Vol-1, 750, Pg-414-415.
- Nadkarni K.M., Indian Materia Medica, Bombay Popular Prakashan, 2007, Vol-1, 2162, Pg-1075.
- Herbal wealth of Uttarkhand, Vol-1, edited by Abhimanyu kumar, Central Council for Research in Ayurvedic Sciences, edition 2014, pg-340.
17. A. Verma, B. Kumar, P. Alam, V. Singh, and S. K. Gupta, *Rubia cordifolia* –a review on pharmacognosy and phytochemistry, *IJPSR*, 7(7), 2016, 2720-2731
- Pathania S. Comparative studies of *Rubia cordifolia* L. and its commercial samples. *Ethnobotanical Leaflets*. 2006;2006(1):179- 188.
- E-Nighantu (Collection of Ayurvedic Lexicon), National Institute of Medical Heritage, Hyderabad, Raaj Nighantu-6 Versus 190-195.
- E-Nighantu (Collection of Ayurvedic Lexicon), National Institute of Medical Heritage, Hyderabad, Dhanvantari Nighantu-5 Versus 127.
- Sharma P.V., Kaiyadeva Nighantu, Chaukhamba Orientalia, Varanasi, 2006, Ch-1 Versus 910, Pg-168
- Itokawa H, Qiao Y, Takeya K. Anthraquinones and naphthohydroquinones from *Rubia cordifolia* phytochemistry. 1989; 28(12):3465-3468
- Rao GMM, Rao CV, Pushpangadan P, Shirwaikar A, Hepatoprotective effects of rubiadin, a major constituent of *Rubia cordifolia* Linn. *Journal of Ethnopharmacology*, 2006; 103(3):484-490.
- Li X, Liu Z, Chen Y, Wang LJ, Zhen YN, Sung GZ and Ruan CC, Rubiacardone, A new anthroquinone glycosides from roots of *Rubia cordifolia*. *Molecules*, 2009; 14:566-572.
- Chang LC, Chavez D, Gills JJ, Fongs HHS, Pezzuto JM, Kinghorn AD, Rubiasins A-C, new anthracene derivatives from the roots and stem of *Rubia cordifolia*. *Tetrahedron Lett*. 2000; 41(37); 7157-7162.
- Arisawa M, Ueno H, Nimura M, Hayashi T, Morita N. Rubiatriol, a new triterpenoid from the Chinese drug "Qian Cao Gen" *Rubia cordifolia*. *Journal of Natural Products*. 1986; 49(6):1114-1116
- Talapatra SK, Sarkar AC, Talapatra B, two pentacyclic triterpenes from *Rubia Cordifolia* *Phytochemistry*, 1981; 20(8):1923-1927
- Shukla V, Tripathi R, Charak S, sutrasthan 4/8(8), Choukhamba Sanskrit Pratishthan Delhi; 2006,p;72
- Shukla V, Tripathi R, Charak S, sutrasthan 4/8(11), Choukhamba Sanskrit Pratishthan Delhi; 2006,p;73
- Shukla V, Tripathi R, Charak S, sutrasthan 4/8(39), Choukhamba Sanskrit Pratishthan Delhi; 2006, p;76
- Shastri A, Sushruta samhita sutrasthan 38/45, Choukhamba Sanskrit sansthan, Varanasi; 2007, p;144
- Shastri A, Sushruta samhita sutrasthan 38/8, Choukhamba Sanskrit sansthan, Varanasi; 2007, p;148
- Tripathi R, Ashtang samgraha sutrasthan 15/21, Choukhamba Sanskrit Pratishthan Delhi; 2001, p;300
- Tripathi R, Ashtang samgraha sutrasthan 15/38, Choukhamba Sanskrit Pratishthan Delhi; 2001, p;306
- Tripathi R, Ashtang samgraha sutrasthan 16/31, Choukhamba Sanskrit Pratishthan Delhi; 2001, p;320
- Chunekar K, Bhavaprakash N, Haritkyadi varga 191, Chaukhamba bharti academy Varanasi; 2010, p;107
- Tripathi I, Raj N, pippalyadi varga 190-193, Chaukhamba Krishnadas academy Varanasi;2010,p;173-174
- Sharma P, Sharma G, Kaidev N, Aushadhi varga 1424-1427, 1 st edition Chaukhamba Orientalia Varanasi; 1979, p;264
- Ojha J, Mishra U, Dhanwantari N, guduchayadi varga 17-18, Chaukhamba Surbharti prakashan Varanasi;2004,p;107

30. Sharma P, Priya N, Pippalyadi varga 76, 1st edition Chaukhamba Surbharti prakashan Varanasi;2004,p;19
31. Lodia S, Kansala L, antioxidant activity of Rubia cordifolia against lead toxicity, international journal of pharmaceutical science and research 2012; 3(7): 2224-2232.
32. Tripathi YB, Singh AV, Role of Rubia cordifolia Linn. In radiation protection. Indian journal of Experimental Biology, 2007; 45(7): 620-625.
33. Pankaj Bhatt et al: Rubia cordifolia overview: A New Approach to treat cardiac Disorder, Int. J. Drug Dev. & Res., April- June 2013; 5(2): 47-54
34. Kaur P, Chandel M, Kumar S, Kumar N, Singh B, Kaur S, Modulatory role of alizarin from Rubia cordifolia L. against genotoxicity of mutagens. Food and Chemical Toxicology, 2010; 48: 320-325.
35. Pankaj Bhatt et al: Rubia cordifolia overview: A New Approach to treat cardiac Disorder, Int. J. Drug Dev. & Res., April- June 2013; 5(2): 47-54
36. Adwankar MK and Chitnis MP. In vivo anti-cancer activity of RC-18: A plant isolated from Rubia cordifolia Linn. against a spectrum of experimental tumour models. Chemotherapy 1982; 28(4):291-293.
37. Gupta V, Yadav SK, Singh D and Gupta N: International Journal of Pharmaceutical and Life Science 2011; 2(7):952-954.
38. Gilani AH, Janbaz KH: Effect of Rubia cordifolia extract on acetaminophen and CCl4-induced hepatotoxicity. Phytotherapy Research 1995; 9(5):372-375.
39. Tripathi YB, Sharma M, Manickam M. Rubiadin, a new antioxidant from Rubia cordifolia. Indian J Biochem Biophys. 1997; 34: 302-306.
40. Joharapurkar A A, Zambad S P, Wanjari M M, Umathe S N. In vivo evaluation of antioxidant activity of alcoholic extract of Rubia cordifolia linn. And its influence on ethanol-induced Immunosuppression. Indian Journal of Pharmacology. 2003; 35:232-236.
41. Tripathi Y B, Sharma M. The interaction of Rubia cordifolia with iron redox status: a mechanistic as pectin free radical reactions. Phylo medicine, Vol. 6(1), pp. 51- 57.
42. Cai Yizhong, Sun Mei, Xing Jie, and Corke Harold. Antioxidant phenolic constituents in root of rheum officinale and Rubiacordifolia: structure –radical scavenging activity relationships. J.Agric Chem. 2004;52:7884-7890.
43. Tripathi Y B, Shukla S, Sharma V K. Antioxidant property of Rubia cordifolia extract and its comparison with vitamin E and parabenzoquinone. Phytotherapy research .19951002.
44. V.S. Kasture, V. K. Deshmukh, and C. T. Chopde, Anticonvulsant and behavioral actions of triterpene isolated from Rubia cordifoliaLinn, Indian J. Exp. Biol., 38, 2000, 675-680.
45. Sabde S, Bodiwala HS, Karmase A, Deshpande PJ, Kaur A, Ahmed N, Chauthe SK, Brahmabhatt KG, Phadke RU, Mitra D, Bhutani KK and Singh IP, 2011. Journal of Natural Medicine 2011; 65(3-4):662-669.
46. Rawal A, Muddeshwar M, Biswas S: Effect of Rubia cordifolia, Fagonia cretica Linn, and Tinospora cordifolia on free radical generation and lipid peroxidation during oxygen-glucose deprivation in rat hippocampal slices. Biochemical and Biophysics Research Communication 2004; 324(2): 588-596

Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Kritica sharma et al: Review article on vishghana property of manjistha. International Ayurvedic Medical Journal {online} 2023 {cited November 2023} Available from: http://www.iamj.in/posts/images/upload/2724_2730.pdf