

# Medicinal Plant Review: *Manjistha* (*Rubia cordifolia*)

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## Abstract:

Now a day's lifestyle and diet of common people has been changed drastically which leads to imbalance of *Doshavatha* leading to various diseases formation in human body including Non Communicable Diseases such as Diabetes and HYPertension. Among diseases present, there are many diseases which doesn't has drugs or related treatments available for complete cure.

Ayurveda is a complete & holistic system in which a number of drugs with multiple beneficial actions are available though a massive research is required to prove the beneficial effects of the drugs.

*Manjistha* (*Rubia cordifolia*) is a well known drug mentioned in Ayurveda used for various purposes by *Acharya Charaka*, *Acharya Sushruta*, *Acarya Vagbhata* and most of *Nighantus* in Ayurvedic literature also some *Nighantus* has specifically mentioned uses of parts of *Manjistha*.

Hence, plant *Manjistha* is been selected for complete Medicinal Plant Review a step towards standardization Ayurvedic Medicinal Plant.

**Index Terms:** *Manjistha*, *Rubia cordifolia*, Ayurveda, Medicinal Plant

## Introduction:

*Manjistha* (*Rubia cordifolia*.) commonly known as Indian Madder perrineal, herbaceous, climbing belonging to family *Rubiaceae*. It is commonly occurring throughout hilly regions in India.

Madder is used in Hindu medicine as a colouring agent; medicinal oils are boiled with Madder to give them colour.

It is also useful external astringent and is applied to inflamed parts, ulcers, fractures etc.

## Literature Review:

Literature review of *Manjistha* (*Rubia cordifolia*) was done from *Vedas* up to recent works to obtain thorough knowledge about *Manjistha*.

## Brihatrayis:

In *Charaka Samhita*<sup>1</sup> it is mentioned in *Jwahaara*, *Varnya* and *Vishanagha varga* and used in *Kushtha* as a content of *Mustadi Churna* (*Chi. 7/65*), in *Vipadika* as a content of *Vipadikahara Ghrita Taila* (*Chi. 7/120*), in *Visarpa* as a content of *Mahagandhahastinamaka Agada* (*Chi. 23/79*), in *Vrana* as a content of *Twakashuddhikara Pralepa* (*Chi. 25/114*) and in *Netra Roga* as a content of *Mahani Taila* (*Chi. 26/270*).

In *Susruta Samhita*<sup>2</sup> *Manjistha* is mentioned in *Priyangvadi* and *Pittasamshana gana* and used in *Kushtah Roga* as *Samangadi Taila* (*Chi. 3/7*), in *Vidradhi* as a content of *Mahavajraka Taila* (*Chi. 9/59*) and in *Vrana* as a content of *Karanjadi Ghrita* (*Chi. 16/18*).

In *Ashtanga Hridaya*<sup>3</sup>, it is mentioned in *Varnya*, *Vishahara*, *Jwarahara* and *Priyangvadi Varga* and used in *Vrana* as a content of *Jatyadi ghrita* (*Chi. 3/102*), in *Kshudra Roga* as a content of *Manjishthadi Taila* (*Chi. 32/31*), as a content of *Kumkumadi Taila* in *Kshudra Roga* (*Chi. 32/20*) and in *Kit Luta* as a content of *Champak Agada* (*Chi. 37/81-82*).

*Acharya Chakrapani*<sup>4</sup> has mentioned *Manjistha* in *Jwara* as a content of *Angratailam* (*Chi. 1/127*), in *Jwara* as a content of *Yavachurnadi Tailam* (*Chi. 1/280*) and in *Daha* as a content of *Usheeradi Kwatha* (*Chi. 2/8*).

## Laghutrayis:

*Sharangadhara Samhita*<sup>5</sup> has mentioned role of *Manjistha* in *Vata Rakta – Kushta* as a content of *Laghumanjishthadi Kwatha* (*M.K. 2/138*), in *Sarvakushtha* as a content of *Brihatamanjishthadi Kwatha* (*M.K. 2/39*), as a content of *Kaseesadi Ghrita* in *Kushtha* (*M.K. 9/50*), *Shaphadi Ghrita* in *Dadru* (*M.K. 9/53*), as a content of *Jadhighritam* in *Vrana* (*M.K. 9/58*), as a content of *Mukhakantikara Lepa* (*U.K. 11/9*) and as a content of *Yangahara Lepa* in *Vanga* (*U.K. 11/12*).

*Bhavaprakasha Samhita*<sup>6</sup> has used *Manjistha* in *Vrana Shotha* as a content of *Swarantaka Karka Taila* (*Chi. 17/73*), *Jatyadi Taila* (*Chi. 47/92*), in *Kushtha* as a content of *Mahabhallataka Avaleha* (*Chi. 54/87*), *Laghumanjishthadi Kwatha* (*Chi. 54/99*), *Madhyam Manjishthadi Kwatha* (*Chi. 54/111*) and *Brihatmanjishthadi Kwatha* (*Chi. 54/104*).

## Other Samhita:

In *Vangasena Samhita*<sup>7</sup>, it is mentioned to use *Manjishtha* as a content of *Kalyana ghritam* in *Jwara* (*663/60*), *Manjishthadi Ghritam* in *Jwara* (*768/69*), *Angarakam Taila* (*780/70*) in *Jwara*, *Mahamanjishthadi Kashaya* in *Kshudraroga* (*91/625*), *Nava Kashaya* (*87/625*), *Mahabhallataka Taila* (*154/631*), In *Kushtha* as a content of *Manjishthadi Taila* (*66/684*) and in *Mukharoga* as a content of *Lakshadi Taila* (*113/712*).

## Nighantu

*Bhavaprakasha Nighantu*<sup>8</sup> has mentioned *Manjistha* in *Haritkyadi varga* and mention its uses in diseases like *Vrana, Prameha, Kushtha, Visha, Shotha, Atisara* and *Akshiroga*.

*DhanvantariNighantu*<sup>9</sup> has mentioned *Manjistha* in *Guduchtadi varga* and mentioned its uses in *Vrana, Prameha, Kushtha, Visha, Shotha, Atisara* and *Akshiroga*.

*Raj Nighantu*<sup>10</sup> has mentioned *Manjistha* in *Pippalyadi varga* and mentioned its uses in *Prameha, Kushtha, Visha, Jwara, Shotha* and *Atisara*.

*Kaiyadeva Nighantu*<sup>11</sup> has mentioned *Manjistha* in *Aushadhi varga* and mentioned its uses in *Vrana, Prameha, Kushtha, Visha, Shotha, Atisara* and *Akshiroga*.

*ShaligramNighantu*<sup>12</sup> has mentioned *Manjistha* in *Guduchyadi varga* and mentioned its uses in *Vrana, Prameha, Kushtha, Visha, Shotha, Atisara* and *Akshiroga*.

*Soghala Nighantu* has mentioned *Manjistha* in *Ashtha Varga* whereas *Nighantu Adarsha* and *Nighantu Sangraha* has mentioned *Manjistha* in *Manjisthadi Varga*.

### Synonyms:

- *Manjistha* - It has pleasant color, provides good color, appears very beautiful.
- *Vikasa* – Expresses too long distance.
- *Jingi* – Express all over body.
- *Samanga* – It spreads in all direction.
- *Kalameshi* – It fight against black color.
- *Bhandiri* – Provides good color and complexion.
- *Bhandi* – Provides good color and complexion.
- *Madukaparni* – Leaf is similar to frog shape.
- *Yogavavalli* – Extensive climber having long joined stem.
- *Vastrarangi* – Used as fabric coloring agent.
- *Raktangi* – Whole plant is red.
- *Hempushpa*- It has golden color flowers.
- *Chitraparni* – Leaves are arranged in whorl of four.
- *Aruna* – It has reddish stem.
- *Rangagi* – Red colored creeper.
- *Vastrabhoshana* – Roots are used to color the cloths.
- *Jwarahanta* – One which destroys Jwara.
- *Tamramoola* – Roots are coppery red.
- *Tamra* – Coppery red creeper.
- *Chatttra* – Plant has beautiful morphology.
- *Lohitalata* – Red colored creeper.
- *Rasayani* – It alleviates *Tridoshas* and helps to maintain *rasadi dhatus*.

### Vernacular names<sup>13</sup>:

Language	Names
Latin	<i>Rubia cordifolia</i>
English	Indian Madder
Bengali	<i>Manjith</i>
Gujrathi	<i>Manjith</i>
Hindi	<i>Majit, Manjit</i>
Marathi	<i>Manjestha</i>
Punjabi	<i>Khuri, Kukarphali, Manjit, Mitu, Runa, Runang sheri.</i>
Tamil	<i>Manjitti, Shevelli.</i>
Telagu	<i>Tamravalli, Chiranji</i>

Urdu	<i>Manjitha</i>
Kannada	<i>Manjustha</i>
Malayalam	<i>Manjitti</i>

**Types:**

<i>Samhita</i>	<b>Types</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>I.M.P.</b>	<i>Rubia cordofolia</i>	<i>Rubia tinctorum</i>		
<b>Raj Nighantu</b>	<i>Chola</i>	<i>Yogini</i>	<i>Crounchi</i>	<i>Simhali</i>
<b>Bhavaprakasha Nighantu</b>	<i>Nepali</i>	<i>Irani</i>	<i>Afagani</i>	<i>Hindustani</i>
<b>W.O.I.</b>	<i>Rubia cordofolia</i>	<i>Rubia tinctorum</i>		

**Pharmacodynamics:**

- *Rasa : Madhura, Tikta, Katu*
- *Veerya : Ushna*
- *Vipaka : Katu*
- *Guna :Guru, Ushna*

**Scientific Classification<sup>14</sup>:**

Kingdom	Plantae
Division	Dicotyledon
Class	Gamopetalac
Series	Inferae
Order	Rubiales
Family	<i>Rubiaceae</i>
Genus	<i>Rubia</i>
Species	<i>Cordifolia</i>

**Distribution:-**

It is commonly occurring throughout the hilly regions in India ascending to 8000 ft. altitude, frequently in Himalayan region of country from North West frontier eastwards on Himalaya and south to Ceylon and the Malay peninsula also in China, Japan, Java & in tropical Africa. Plant is generally found in Uttar Pradesh and Sub Himalayan tracts of Rohilakhanda and North Oudh and other similar areas<sup>15</sup>.

**Botanical Description<sup>16</sup>:**

Perrineal, herbaceous climbing.

- **Roots :** Very long, cylindrical, Hexuese, with thin, red bark.
- **Stem :** Often many yards long rough grooved, becoming slightly woody at base, Bark white branches scandent by means of numerous divaricate or deffexed branches and petioles quadrangular, sometimes prickly on the angles, glabrous shining.
- **Leaves :** 3.8-9 by 1.6-3.5 cms, In works longer (and with longer petioles than the other) ovate, acute. The lower leaves are larger than the upper. All scabrous above on the nerves beneath and on margins with minute white prickles, base rounded or slightly corded, the bae of upper leaves is sometimes acute, all 5 rarely 7 nerves from the base. Petioles are triangular with many sharp recurved pricles on the edgesoften defixxed.
- **Flowers :** Flowers are in terminalpanicedglabrous cymes, branches trichotomous spreading pacts, ovate , acute, leavy calyx 0.85 mm long tube globose glabrous limb. Corolla is greenish devided nearly to base, tube seareoly any lobes, ovate secute 3 mm long, styles 2 stigmas globose.

Figure No.1

*Manjistha***Chemical composition<sup>17</sup>:-**

Rubia cordifolia roots contains the coloring matter, which is mixture of purpurin and manjisthin. Purpurin is the major coloring principle while Manjisthin is an orange dye which occurs in the form of its glucosides.

The roots consists of several anthraquinone derivatives viz. 1-acetoxy-6-hydroxy-2-methylanthraquinone, rhamnolucoside, 1,4-dihydroxy-2-carbomethoxy anthraquinone, 1-hydroxy-2-carboxy-3-methoxyanthraquinone along with many other such derivatives. The roots are reported to contain pentacyclic triterpenic compounds such as rubiateriod, rubicoumaric acid and rubifolic acid. Cyclic hexapeptide derivatives, RA-1, RA-III and RA-IV have also been isolated and characterized from roots of Indian Meddar.

**Medicinal Uses<sup>18</sup>:**

*Raktaprasdana, Raktashodhana, Varnya, Dipana, Pachana, krimighna, khaphaghna, artavajanana, stanyashodhana, vishaghna, jwaraghna, rasayana, shothaghna, vranaropana, mutrakara, atisaraghna, arshoghna, pramehaghna, kushthaghna, gharbhashaya uttejaka etc.*

**Doses<sup>15</sup>:**

Root Powder: 1-3 Grams

Decoction: 60-120 MI

**Pharmacological studies:**

- Antibacterial activity of ethanolic extract of Rubia cordifolia evaluated against ESBL (Extended Spectrum Beta-Lactamase) producing urinary E.coli infection. Isolation of different E.coli strains done from urine samples of patients and all the isolates tested for different antibiotics and screened for their ESBL production. Total 7 different ESBL producing E.coli obtained and tested against the ethanolic extract of Rubia cordifolia using Kirby Bauer method and found to be inhibited variably by the extract. The plant can be a potential candidate as alternative antibacterial agent to combat drug resistant organisms<sup>19</sup>.
- Methanolic extract of Rubia cordifolia showing ameliorative effect in N-nitrosodiethylamine induced hepatocellular carcinoma in rats. Mitochondrial enzymes and respiratory chain enzymes, which decreased in Nnitrosodiethylamine treated rats, increased significantly in Rubia cordifolia treated rats. The levels of hydroxyl radicals and lipid peroxidation also decreased. Histological analysis of liver confirmed the prevention of pathological changes caused by Nnitrosodiethylamine, which suggest that Rubia cordifolia may be developed as an effective chemotherapeutic agent<sup>20</sup>.
- Psoriasis is skin disorder characterized by hyperproliferation and aberrant differentiation of epidermal keratinocytes. Ethyl acetate (EA) fraction of Radix Rubiae inhibits cell growth and promotes terminal differentiation in cultured human keratinocytes which strongly suggest its antipsoriatic activity. Evaluation is done by cornified envelope (CE) formation assay showed that EA fraction of Radix Rubiae significantly accentuated the CE formation, a well-recognized marker of terminal differentiation, in cultured HEK and HaCaT cells in a dose and time dependent manner<sup>21</sup>.
- Methanolic extract of Rubia cordifolia induced typical apoptosis in HEp-2 (Human laryngeal carcinoma) cell line through the elevation of reactive oxygen species generation. Inhibition of cell proliferation and lactate dehydrogenase release increased in a time and dose-dependent manner. Apoptotic effect of Rubia cordifolia extract (30 mg/ml) on HEp-2 cells confirmed by fluorescent and transmission electron microscopy based on morphological and ultrastructural changes<sup>22</sup>.
- Alizarin, a natural hydroxyanthraquinone derived from root of Rubia cordifolia evaluated as an osteotropic drug for treatment of bone tumors because of its high affinity to bone. Antitumor activity of alizarin investigated on human cell lines representative for bone metastases from prostate cancer, breast cancer and for three human osteosarcoma cell lines. Alizarin induced a dose-dependent inhibition of cell growth over time in osteosarcoma and breast cancer cell lines, whereas in prostate cancer cell line, it appeared to be cytotoxic only at higher concentration. Studies found that alizarin acted through the inhibition of ERK phosphorylation and cell cycle arrest in the Sphase<sup>23</sup>.



**Conclusion:**

On comprehensive review of *Manjistha* it is found that *Manjistha* is described in Vedas, Brihatrayies & Laghutraies. Various synonyma like *Manjistha*, *Vikasa*, *Jingi*, *Samanga*, *Bhandi*, *Bhandiri*, *Kalamesh* are described in various *Nigantus*. *Manjistha* (*Rubia cordifolia*) belongs to family *Rubiaceae* and commonly known as Indian Meddar. It is used in traditional ayurvedic medicine as *Raktaprasdana*, *Raktashodhana*, *Varnya*, *Dipana*, *Pachana*, *krimighna*, *khaphaghna*, *artavajanana*, *sanyashodhana*, *vishaghna*, *jwaraghna*, *rasayana*, *shothaghna*, *vranaropana*, *mutrakara*, *atisaraghna*, *arshoghna*, *pramehaghna*, *kushthaghna*, *gharbhashaya uttejaka*.

*Manjistha* is having *Guru*, *Ushna Gunas*, *Madhura*, *Tikta*, *Katu rasa*, *Ushna Veerya* and *Katu Vipaka*. On account of above properties it is *Raktaprasdana*, *Raktashodhana*, *Varnya*, *Dipana*, *Pachana*, *krimighna*, *khaphaghna*, *artavajanana*, *sanyashodhana*, *vishaghna*, *jwaraghna*, *rasayana*, *shothaghna*, *vranaropana*, *mutrakara*, *atisaraghna*, *arshoghna*, *pramehaghna*, *kushthaghna*, *gharbhashaya uttejaka*.

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