

VISHAGHNA PROPERTY OF MANJISHTHA (*Rubia cordifolia* Linn): A CRITICAL REVIEW

RADHA GUPTA¹ AND SHARAD MAROTI PORTE^{2,†}

PG Dept. of Agad tantra,^{1,2} National Institute of Ayurveda,
Jaipur - 302002 Rajasthan India)

Abstract : *Background:* Poisoning is the major health problem which is increasing worldwide including India due to utilization of chemical prepared medicine, heavy industrialization, environmental toxicity, aquatic toxicity. In *Ayurveda* the description of poisoning and its management including antidotes is available in detail. *Aims & Object:* Critical review of *Vishaghna* properties of *Manjishtha* along with its elaboration, evaluation and discussion. *Material and Method:* The text book of *Ayurveda* along with its respective commentaries has been review thoroughly. The text book of modern medicine and index medical journal has been also referred to review the material concern this topic. *Result & Discussion:* *Acharya Charaka* described ten antitoxic herbs including *Manjishtha* in *Vishaghna mahakashaya*. 37 antitoxic composition of *Manjishtha* having antitoxic efficacy has been found in *Vrahatrayi*, *Laghutrayi*. *Manjishtha* will be help to destroy the poison by arresting the *Visha vegas* and detoxification of blood by its properties like *Guru Guna* and *Tikta*, *Kashaya*, *Madhura Rasa*. *Conclusion:* *Manjishtha* and its *Ayurvedic kalpas* are useful as a antidote in the treatment of poisoning.

Keywords: Antidote. *Manjishtha*, *Prativisha*, Poison , *Rubia cordifolia* Linn, *Visha*,

Introduction

Poison is a substance (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] The toxic exposure may be acute, chronic and cumulative are increasing day by day due to manufactures and utilization of number of chemicals in various form including medicine, increased industrialization and increased eco toxicity. According to the Centers of Disease Control (CDC), in 2008 over 41000 people died as a result of poisoning and poisoning became the leading cause of injury death for the first time since at least 1980.

The poisoning death rate nearly tripled over the past 30 years.^[2] The *visha* (poison) and its toxicity is not new to us as the reference are founds since Vedic period. *Agadtantra* is the branch of *Ashtanga Ayurveda* which is devoted for poison (*Visha*), its types, action, manifestation and management along with antidotes (*Prativisha*). This subject *Ayurvedic toxicology* also in title by *Agada* means *Prativisha* and *Tantra* means technology. In *Ayurveda* there are

so many *vishaghna dravyas* are described. *Acharya Charaka* has mentioned the *Vishaghna mahakashaya* having ten herbs including *Manjishtha*. In this article critical review of *vishaghna* property of *Manjishtha* will be elaborate, evaluate and discussed along with scientific justification.

Aims and Objects

1. Critical review of *Vishaghna* properties as per *Ayurveda*.
2. To elaborate, evaluate and discussion of *Vishaghna* property of *Manjishtha*.

Material and Method

The text book of *Ayurveda* along with its respective commentaries has been review thoroughly. The text book of modern medicine and index medical journal has been also referred to review to material consent this topic.

Conceptual study

Visha (Poison) and its properties

Acharya Charaka stated that the substance which causes toxicity by producing

Vishada (depression) is called as *Visha*.^[3] As per modern medicine, a poison is a substance which, when administered, inhaled or ingested, is capable of acting deleteriously on the human body.^[4]

Acharya Susruta has mentioned the ten properties of *Visha*, these are- *Ruksha* (rough), *Ushna* (hot), *Tikshna* (irritant), *Sukshma* (minute), *Aashu* (quick-acting), *Vyavayi* (quickly absorbed), *Vikashi* (slackening), *Vishada* (non-slimy), *Laghu* (light) and *Apaki* (indigestible).^[5] *Acharya Charaka* has also mentioned ten properties of *Visha*. These properties are similar to *Susruta* except *Apaki* (indigestible). Instead of *Apaki* he has mentioned *Anirdeshya Rasa* (indistinct taste).^[6] *Acharya Sarngadhara* has mentioned the eight properties of *Visha*, these are- *Vyavayi* (quickly absorbed), *Vikashi* (slackening), *Sukshma* (minute), *chedi* (cuts / breaks), *Madavaha* (ruttishness), *Agneya* (hot), *Jivitahar* (destroy life), *Yogavahi* (promoting).^[7]

Mode of action of Visha

Visha causes roughness due to aggravation of *Vata*, hotness due to aggravation of *Pitta* along with blood, irritant effects the mind and disjoins the vital spots, due to minuteness it enters into body and damages the organs of the body, quick-acting nature of poison kills instantaneously, due to *Vyavayi* property it is absorbed and circulated all over the body, *Vikasi* property damages *Doshas*, *Dhatu*s and *Malas*, non-sliminess due to does not stick anywhere, due to lightness property difficult to treat, not digested due to difficult to eliminate and as such troubles for long.^[8]

Action of poison

As per modern medical science the poison enacted on local site, systemic or both. It also enacted as a corrosive, irritant, neurotic, asphyxiants, miscellaneous.^[9,10]

Prativisha (Antidote)

Atharvaveda mentioned *Prativisha* in the form of *Tabuva* and *Tastu* the medicinal herbs which destroy the effect of snake poison.^[11] *Acharya Chakrapani* stated in *Ayurveda Dipika* that the substance by which poison will be destroy

or used to counteract the poison is called as *Prativisha*.^[12,13] *Acharya Dalhana* stated in *Nibandha Sangraha* that the substance by which poison will be disappeared and the medicine which will be used for poison is called *Agada*.^[14,15] Antidotes are remedies which counteract or neutralize the effect of poison without causing appreciable harm to the body.^[16]

Types of antidote

On the basis of mechanism of action of antidotes, these are classified into mechanical, chemical, physiological.^[17]

Mechanism of action of antidotes

The physiological antidotes can be act by forming a non-toxic complex, by metabolic conversion, by prevention of toxic metabolite formation, by changing the physio-chemical nature of toxicant and repairing a defect or enhancing a function that corrects the effects of poison.^[18]

Mode of action Vishaghna Dravyas

Acharya Charaka stated that some drugs act by virtue of their own nature (*Dravya prabhava*), some other drugs by virtue of their qualities (*Guna prabhava*), and some drugs by virtue of their nature as well as qualities (*Dravya Guna prabhava*).^[19] Some antidotes are act on poison by their properties like *guru*, *shita*, *snigdha*, *manda*, *pichchila*, *sandra*, *mradu*, *sthira*, *shlakshna*, which will be acted by increases *ojas*, strengthens heart, protects the *dhatu*s, alleviate *Vata Pitta*, arrest the *Vishavegas* (spread of poison in the *Dhatu*s), detoxify blood. Some antidotes are act on poison by their *Rasa* like *Madhura Rasa* causes increases *Ojas Dhatu*s, strengthens the heart and alleviates *Vata – Pitta*, *Tikta Rasa* is the main *Rasa* which alleviate *Pitta Dosh*a and *Kashaya Rasa* causes arrest the *Vishavegas* (spread of poison in the *Dhatu*s). Some antidotes are act on poison by their *Vipaka* like *Madhura Vipaka* alleviate *Pitta Dosh*a, strengthens *Dhatu*s and *Ojas*. Some antidotes are act on poison by their *Virya* like *Shita Virya* causes increase *Oja* and *Dhatu*s, alleviate *Vata – Pitta Dosh*as, and arrest the spread of poison. Some antidotes are act on poison by their *Prabhava* like antitoxic effects.^[20]

Vishaghna Mahakashaya

Acharya Charak include ten herbs in *Vishaghna Mahakashaya* has follow- *Haridra* (*Curcuma longa* Linn.), *Manjishtha* (*Rubia cordifolia* Linn.), *Suvaha* (*Operculina turpethum*), *Sukshma Ela* (*Elettaria cardamomum*), *Palindi* (*Leucas cephalotes*), *Chandana* (*Santalum album* Linn.), *Kataka* (*Strychnos potatorum* Linn.), *Shirisha* (*Albizia lebeck* Benth.), *Sinduvara* (*Vitex nigundo* Linn.), *Shleshmataka* (*Cordia dichotoma* Forst. f.).^[21]

Manjishtha has *Guru Guna* and *Shleshmataka* has *Snigdha, Guru, Pichchila Gunas* and *Snigdha, Guru, Pichchila Gunas* increases *ojas*, strengthens heart, protects the *dhatu*s, alleviate *Vata Pitta*, arrest the *Visha vegas* (spread of poison in the *Dhatu*s), detoxify blood. *Manjishtha, Sukshma Ela, Chandana, Kataka, Shirisha* has *Madhura Rasa* and *Madhura Rasa* increases *Ojas Dhatus*, strengthens the heart and alleviates *Vata – Pitta*. *Haridra, Manjishtha, Suvaha, Palindi, Chandana, Kataka, Shirisha, Sinduvara,*

Table 1. Properties of *Vishaghna Dravyas* (Sharma P.V., *Dravyaguna vijñana*, 2005)

Sr. No.	Dravya name	Guna	Rasa	Vipaka	Virya
1.	Haridra ^[22]	Ruksha, Laghu	Tikta, Katu	Katu	Ushna
2.	Manjishtha ^[23]	Guru, Ruksha	Tikta, Kashaya, Madhura	Katu	Ushna
3.	Suvaha ^[24]	Laghu, Ruksha, Tikshna	Tikta, Katu	Katu	Ushna
4.	Sukshma Ela ^[25]	Laghu, Ruksha	Katu, Madhura	Madhura	Shita
5.	Palindi ^[26]	Laghu, Ruksha, Tikshna	Tikta, Katu	Katu	Ushna
6.	Chandana ^[27]	Laghu, Ruksha	Tikta, Madhura	Katu	Shita
7.	Kataka ^[28]	Laghu, Vishada	Madhura, Kashaya, Tikta	Madhura	Shita
8.	Shirisha ^[29]	Laghu, Ruksha, Tikshna	Kashaya, Tikta, Madhura	Katu	Ushna
9.	Sinduvara ^[30]	Laghu, Ruksha	Katu, Tikta	Katu	Ushna
10.	Shleshmataka ^[31]	Snigdha, Guru, Pichchila	Kashaya, Tikta	Katu	Shita

Table 2 - Physical properties of *Manjishtha* (*Rubia cordifolia* Linn) as per various Nighantu

Nighantu	Guna	Rasa	Veerya
<i>Bhav Prakash Nighantu</i> ^[34]	Guru	Madhura, Tikta, Kashaya	Ushna
<i>Raj Nighantu</i> ^[36]	Guru	Madhura, Kashaya	Ushna
<i>Kaiyadeva Nighantu</i> ^[37]	Guru	Kashaya, Tikta, Madhura	Ushna
<i>Gunaratnamala</i> ^[38]	Guru	Madhura, Tikta Kashaya	Ushna
<i>Dhanvantari Nighantu</i> ^[39]	Guru	Madhura, Kashaya	Ushna
<i>Priya Nighantu</i> ^[40]	-	Tikta, Kashaya	Ushna

Shleshmataka has *Tikta Rasa* and *Tikta Rasa* is the main *Rasa* which alleviate *Pitta Dosha*. *Manjishtha, Kataka, Shirisha, Shleshmataka* has *Kashaya Rasa* and *Kashaya Rasa* arrest the *Vishavegas* (spread of poison in the *Dhatu*s). *Sukshma Ela, Kataka* has *Madhura Vipaka* and *Madhura Vipaka* alleviates *Pitta Dosha* and Strengthens *Dhatu*s and *Ojas*. *Sukshma Ela, Chandana, Kataka, Shleshmataka* has *Shita Virya* and *Shita Virya* increase *Oja* and *Dhatu*s, alleviates *Vata – Pitta Doshas* and arrests the

spread of poison. *Haridra, Shleshmataka* has *Vishaghna Prabhava*.

Properties of Manjishtha

The root is sweet, bitter, acrid; heating, alexiteric, anti dysenteric, antipyretic, analgesic, anthelmintic; improves the voice and the complexion, cure ‘Kapha’, inflammations, diseases of uterus, the vagina, the eye, the ear, the blood, cures leucoderma, erysipelas, ulcers, urinary discharges, jaundice, piles. **The leaves** are sweet and oleaginous, increase appetite, cure ‘Vata’ and

Table 3. Therapeutic action of *Manjishtha* (*Rubia cordifolia* Linn) as per *Ayurveda*

Karma	B.P.N. - Hritakyadi varga/190-191 ^[34]	M. D.- Vividh- aushadhi varga ^[35]	Raj.N.- Pipalyadi varga: 194 ^[36]	Kaiy.N. - Aushadhivarga/ 1426-1427 ^[37]	Grm.- Haritakyadi varga ^[38]	Dha.N.- Guduch yadi varga/ 19 ^[39]	Pri.N.- Pipalyadi varga/ 76 ^[40]
<i>Vishhar</i>	+	-	+	+	+	+	+
<i>Shleshmahar</i>	+	-	+	+	+	+	+
<i>Varnya</i>	+	+	-	-	+	-	+
<i>Svarya</i>	+	-	-	-	+	-	-

B.P.N. = Bhavprakash Nighantu; M. D. = Madhava Dravyagunah; Raj.N. = Raj Nighantu; Kaiy.N. = Kaiyadeva Nighantuh; Grm. = Gunaratnamala; Dha.N. =Dhanvantari Nighantu; Pri.N. = Priya Nighantu

biliousness. The fruit cures diseases of the spleen.^[32]

Pharmacological activities

Anti-oxidant, Anti-inflammatory, Antimicrobial, Anti-malignant, Ca-channel, blocking activity, Anti-convulsant and behavioral activity, Anti-platelet aggregation activity, Antibacterial, Haemostatic, Anti-tumor, Antiviral^[33]

Almost all the *Nighantu* has mentioned the *Vishhar* and *Shleshmahar* properties of *Manjishtha* except *Madhava Dravyaguna*. *Manjishtha* act as *Varnya* as per *Bhavaprakash Nighantu*, *Madhava Dravyaguna*, *Gunaratnamala*, *Priya Nighantu* and *Manjishtha* act as *Svarya* as per *Bhavaprakash Nighantu*, and *Gunaratnamala*. (SeeTable 3)

Manjishtha are indicated in treatment of *Vrana* and *Prameha* as per almost *Nighantukar* except *Madhava Dravyaguna*. It is also indicated for *Kushtha* and *Visarpa* as per all the *Nighantukar* except *Raj Nighantu* and *Dhanvantari Nighantu*. It is also indicated for *Akshiroga* as per all the *Nighantukar* except *Madhava Dravyaguna* and *Priya Nighantu*. It

is also indicated for *Shoth* as per all the *Nighantukar* except *Raj Nighantu*, *Dhanvantari Nighantu* and *Priya Nighantu*. It is also indicated for *Raktatisar*, *Karnaroga* and *yoniroga* by *Bhavaprakash Nighantu*, *Kaiyadeva Nighantu* and *Gunaratnamala*. Only *Raj Nighantu* has mentioned the indication of *Manjishtha* in *Jwara* and *Kaiyadeva Nighantu* has mentioned the *Manjishtha* for *Arsha*. (SeeTable 4

All the above *Ayurvedic Kalpa* mentioned having *Manjishtha* is chief ingredient along with other medicinal herbs. Though these kalpa having different *rogadhikara* and scattered through *Vrahatrayi*, *Laghutrayi* and *Yoga Ratnakara* but common things as that *Visha* is one of indications. (See Table 5)

Discussion

The toxin and toxicity of poison and its antidotes has been found since *Vedic* period. There are so many specific, nonspecific antidotes has described in *Vrahatrayi*, *Laghutrayi*. *Acharya Charaka* has mentioned the *Vishaghna gana* one of the *Mahakashaya* as an antidotes including *Manjishtha*. Almost all the *Nighantus* has

Table 4 . Therapeutic utilization of *Manjishtha* (*Rubia cordifolia* Linn) as per *Ayurveda*

Karma	B.P.N.- Hritakyadi varga/190- 191 ^[34]	M. D.- Vividh- aushadhi varga ^[35]	Raj.N.- Pipalyadi varga: 194 ^[36]	Kaiy.N.- Aushadhi varga/1426- 1427 ^[37]	Grm.- Haritakyadi varga ^[38]	Dha.N.- Guduchyadi varga/ 19 ^[39]	Pri.N.- Pipalyadi varga/ 76 ^[40]
<i>Vrana</i>	+	-	+	+	+	+	+
<i>Prameha</i>	+	-	+	+	+	+	+
<i>Kushtha</i>	+	+	-	+	+	-	+
<i>Visarpa</i>	+	+	-	+	+	-	+
<i>Akshiroga</i>	+	-	+	+	+	+	-
<i>Shoth</i>	+	+	-	+	+	-	-
<i>Raktatisar</i>	+	-	-	+	+	-	-
<i>Karnaroga</i>	+	-	-	+	+	-	-
<i>Yoniroga</i>	+	-	-	+	+	-	-
<i>Jwara</i>	-	-	+	-	-	-	-
<i>Arsha</i>	-	-	-	+	-	-	-

B.P.N. = Bhavprakash Nighantu; M. D. = Madhava Dravyagunah; Raj.N. = Raj Nighantu; Kaiy.N. = Kaiyadeva Nighantuh; Grm. = Gunaratnamala; Dha.N. =Dhanvantari Nighantu; Pri.N. = Priya Nighantu

Table 5. Vishaghna Ayurvedic preparation (Yog) of *Manjishtha* (*Rubia cordifolia* Linn)

S.N.	Ayurvedic preparation (Yog)	Indication in poison	Dose
1.	<i>Kalyanak ghrit</i> ^[41]	Visha chikitsa (General poison)	1 Pala (48 ml)
2.	<i>Siddharthak agad</i> ^[342]	Visha chikitsa (General poison)	2 masha (2 gram)
3.	<i>Rajniadi churna</i> ^[43]	Shashti vish veg chikitsa (inanimate poison)	1 karsha (12 gram)
4.	<i>Mahagandhhasti agad</i> ^[44]	Vish chikitsa (General poison)	2 masha (2 gram)
5.	<i>Pippalyadi pishhti</i> ^[45]	Pakvashyagat vish chikitsa (intestinal poison)	1 karsha (12 gram)
6.	<i>Manjishthadi pan</i> ^[46]	Mandli sarp dashta chikitsa (snake poison)	2 masha (2 gram)
7.	<i>Mahagad</i> ^[47]	Vish vegahar chikitsa (animate poison)	2 masha (2 gram)
8.	<i>Rishabhagad</i> ^[48]	Sarpa-keeta vish chikitsa (snake-insect poison)	2 masha (2 gram)
9.	<i>Ksharagad</i> ^[49]	Vish chikitsa (General poison)	2 masha (2 gram)
10.	<i>Kalyanak sarpi</i> ^[50]	Vish chikitsa (General poison)	1 Pala (48 ml)
11.	<i>Snuka kshiradi lehya</i> ^[51]	Ajit mushak dashta chikitsa (rat poison)	1 Pala (48 ml)
12.	<i>Priyangvadi Lepa</i> ^[52]	Luta visha chikitsa (spider poison)	Tribhaga angula pramana (0.62cm)
13.	<i>Kalyanak ghrit</i> ^[53]	Visha chikitsa (General poison)	1 Pala (48 ml)
14.	<i>Siddharthak ghrit</i> ^[54]	Visha chikitsa (General poison)	1 Pala (48 ml)
15.	<i>Siddharthak agad</i> ^[55]	Vishonmad chikitsa (insanity due to poison)	2 masha (2 gram)
16.	<i>Kalyanak ghrit</i> ^[56]	Visha chikitsa (General poison)	1 Pala (48 ml)
17.	<i>Manjishthadi churnapan</i> ^[57]	Krishna sarpa dashta chikitsa (snake poison)	2 masha (2 gram)
18.	<i>Kashmaryadi pan</i> ^[58]	Mandali sarpa dashta chikitsa (snake poison)	2 masha (2 gram)
19.	<i>Pathyadi lepa</i> ^[59]	Vrashchika dansha chikitsa (scorpion poison)	Tribhaga angula pramana (0.62cm)
20.	<i>Champak agad</i> ^[60]	Luta visha chikitsa (spider poison)	2 masha (2 gram)
21.	<i>Agardhumadi lepa</i> ^[61]	Mushak vish chikitsa (rat poison)	Tribhaga angula pramana (0.62cm)
22.	<i>Paniya Kalyanaka ghrta</i> ^[62]	Visha chikitsa (general poison)	1 Pala (48 ml)
23.	<i>Kasisa ghrta</i> ^[63]	Luta visha chikitsa (spider poison)	1 Pala (48 ml)
24.	<i>Jatyadi taila</i> ^[64]	Vrana chikitsa (poisonous wound)	1 Pala (48 ml)
25.	<i>Mahacaitasa ghrta</i> ^[65]	Visha chikitsa (general poison)	1 Pala (48 ml)
26.	<i>Jatyadi taila</i> ^[66]	Visha vrana chikitsa (poisonous wound)	1 Pala (48 ml)
27.	<i>Mrtiyupasachedi ghrta</i> ^[67]	Visha chikitsa (general poison)	1 Pala (48 ml)
28.	<i>Rajaniyugmadi lepa</i> ^[68]	Luta vish chikitsa (spider poison)	Tribhaga angula pramana (0.62cm)
29.	<i>Siddharthakadi yoga</i> ^[69]	Vishonmada chikitsa (insanity due to poison)	1 karsha (12 gram)
30.	<i>Kalyanaka ghrta</i> ^[70]	Visha chikitsa (general poison)	1 Pala (48 ml)
31.	<i>Jatyadi taila</i> ^[71]	Visha vrana & keet dashta chikitsa (PW & IP)*	1 Pala (48 ml)
32.	<i>Langali ghrta</i> ^[72]	Keet-Luta visha (insec-spider & gen. poison)	1 Pala (48 ml)
33.	<i>Vrahatsinduradhy taila</i> ^[73]	Visha chikitsa (general poison)	1 Pala (48 ml)
34.	<i>Visha taila</i> ^[74]	Keet-Luta visha (insec-spider & general poison)	1 Pala (48 ml)
35.	<i>Grahadhumadi yoga</i> ^[75]	Aakhu visha chikitsa (rat poison)	1 karsha (12 gram)
36.	<i>Rajanidvayadi lepa</i> ^[76]	Luta visha chikitsa (spider poison)	Tribhaga angula pramana (0.62cm)
37.	<i>Mratyucchardi ghrta</i> ^[77]	Visha chikitsa (general poison)	1Pala (48 ml)

* poisonous wound & insect poison (PW & IP)

mentioned the *Vishahar* property of *Manjishtha* except *Madhava Dravyaguna*. *Manjishtha* having guru guna and madhura rasa which will be help to strengthen the dhatus, oja and vital organ (heart) and it alleviates *Vata – Pitta*, arrest the *Vishavegas*. The *Tikta Rasa* of *Manjishtha* also alleviates *Pitta Dosha* and *Kashaya rasa* of *Manjishtha* help to arrest the *Vishavegas*. Acharya Charak has also mention that the Madhura rasa and Tikta rasa has the capacity to counteract the poisons.^[78] There are almost 37 *yogas* of *Manjishtha* has found as an indication of poison (*Visha*) along with other utilization and all there 37 *yogas* having *Manjishtha* is a chief ingredient.

Conclusion

Ayurveda has also known the importance of antidotes to counteract the poisons. *Manjishtha* is most important antidotes as its description as a *Vishaghna* property is found almost all the text book of *Ayurveda* including *Vrahatrayi*, *Laghutrayi*.

Key Message:

Manjishtha is an important herb to prevent or treats the most of the diseases. It is specially described as a *vishaghna* (antitoxic) drug as it having *vishhara* property. *Acharya Charaka* and most of the *Nighantukara* has described about the *vishaghna* property of *Manjishtha*. The acute, sub acute or chronic toxicity are increasing day by day and the antidote for most of poison has not known till. In this condition here is time to known and re evaluate the efficacy of *Manjishtha*.

References

1. Review of Forensic Medicine and Toxicology. Gautam Biswas, 2nd ed. Jaypee brothers medical publishers (p) ltd. New Delhi **2012**; 411
2. Poisoning Statistics, Available from <http://www.poison.org/stats/> Download on 09/07/2014
3. **Charaka Samhita**. Chikitsa Sthana 23/5. Ed. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 746
4. Parikh's Textbook of Medical Jurisprudence Forensic Medicine and Toxicology. Section 8. Dr. C. K. Parikh, 6th ed. Reprint ed. CBC Publishers & Distributors PVT. LTD. New Delhi **2010**; 8.1
5. **Susruta Samhita**. Kalpa Sthana 2/19. Ed. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 24
6. **Charaka Samhita**. Chikitsa Sthana 23/24. Ed. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 752
7. **Sarngadhara Samhita**. Purva khanda, Dipanapachanadikathanama, 4/22. Ed. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2004**; 50
8. **Susruta Samhita**. Kalpa Sthana 2/20-23. Ed. Kaviraj Ambikadutta Shastri, part 1, Chaukhamba Sanskrit sansthan Varanasi **2007**; 24
9. Review of Forensic Medicine and Toxicology. Gautam Biswas, 2nd ed. Jaypee brothers medical publishers (p) ltd. New Delhi **2012**; 413
10. Review of Forensic Medicine and Toxicology. Gautam Biswas, 2nd ed. Jaypee brothers medical publishers (p) ltd. New Delhi **2012**; 412
11. **Atharvaveda Samhita**. Kand- 5, Sukta 14/1043-1044, Shlok no.10-11, <http://www.vedpuran.com/brama.asp?bookid=22&secid=1&pageno=001&Ved=Y> Download on 0 4/07/2014;19
12. **Charaka Samhita**. Elaborated by Charaka and Drdhabala with the Ayurvedadipika, Chikitsa Sthana 9/63-75. Commentary by Sri Cakrapani Datta, Ed. Vaidya Yadavji Trikamji Acharya, Chaukhamba Surbharati Prakashan Varanasi **2013**; 473
13. **Charaka Samhita**. Elaborated by Charaka and Drdhabala with the Ayurvedadipika, Chikitsa Sthana 23/35-37. Commentary by Sri Cakrapani Datta, Ed. Vaidya Yadavji Trikamji Acharya, Chaukhamba Surbharati Prakashan Varanasi **2013**; 573
14. **Susruta Samhita** of Susruta with the Nibhandhasangraha commentary of Sri Dalhanacharya. Sutra Sthana 1/7, Ed. Vaidya Jadavji Trikamji Acharya, Chaukhamba Surbharati Prakashan Varanasi **2012**; 3
15. **Susruta Samhita** of Susruta with the Nibhandhasangraha commentary of Sri Dalhanacharya. Sutra Sthana 46/448, Ed. Vaidya Jadavji Trikamji Acharya, Chaukhamba Surbharati Prakashan Varanasi **2012**; 246
16. Parikh's Textbook of Medical Jurisprudence Forensic Medicine and Toxicology. Section 8. Dr. C. K. Parikh, 6th ed. Reprint ed. CBC Publishers & Distributors PVT. LTD. New Delhi **2010**; 8.14
17. Parikh's Textbook of Medical Jurisprudence Forensic Medicine and Toxicology. Section 8. Dr. C. K. Parikh, 6th ed. Reprint ed. CBC Publishers & Distributors PVT. LTD. New Delhi, **2010**; 8.14-8.15
18. **Rajesh Pal**. Antidotes: Its mechanism and therapeutic uses. **2010**, Download on 3/7/2014

19. **Charaka Samhita.** Sutra Sthana, Atreyabhadrapyiyadhyaya 26/13. Ed. Acharya Vidyadhar Shukla and Prof. Ravi Dutt Tripathi, vol.1, Reprint ed. Chaukhambha Sanskrit Pratishthan Delhi **2006**; 358
20. Text book of Agadatantra. Dr. S.G. Huparikar, Dr.V.P.Joglekar, Section 6- Uttara tantra the codicil, 1st ed. Rashtriya shikshan mandal Pune **2008**; 713
21. **Charaka Samhita.** Sutra Sthana 4: 16. Acharya Vidyadhar Shukla and Prof. Ravi Dutt Tripathi, vol.1, Reprint ed. Chaukhambha Sanskrit Pratishthan Delhi **2006**; 73
22. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 163
23. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 801
24. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 421
25. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 720
26. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 708
27. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 716
28. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 96
29. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 774
30. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 67
31. **Dravyaguna vijñana** vol. 2nd, Prof. P.V.Sharma, Reprint ed. Chaukhambha bharti academy Varanasi **2005**; 136
32. **Indian medicinal plants.** Kirtikar and Basu, vol. 6, 3rd Ed. Sri Satguru publications Delhi, **2000**; 1807
33. Database on Medicinal Plants used in Ayurveda. CCRAS, vol. 5, **2002**; 170-175
34. **Bhavprakash Nighantu.** Haritakyadi varga/190-191. Prof. Krishnachandra Chuneekar, Chaukhambha bharti academy Varanasi **2010**; 107
35. **Madhava Dravyagunah.** Vividhaushadhi varga, Dr. P.V.Sharma, 1st ed. Chowkhamba vidyabhawan Varanasi **1973**; 7
36. **Raj Nighantu.** Pipalyadi varga/194. Dr. Indradeva Tripathi, Chowkhamba krishnadas academy Varanasi **2010**; 174
37. **Kaiyadeva Nighantuh.** Aushadhi varga/1426-1427. Prof. Priyavrata Sharma and Dr. Guru Prasada Sharma, 1st ed. Chaukhambha orientalia Varanasi **1979**; 264
38. **Gunaratnamala.** Haritakyadi varga, Dr. Kailash Pati Pandey and Dr. Anugrah Narain Singh, 1st ed. Chaukhambha Sanskrit bhawan Varanasi **2006**; 74
39. **Dhanvantari Nighantu.** Guduchyadi varga/19. Dr. jharkhande Oujha and Dr. Umapati Mishra, Chaukhambha surbharati prakashana Varanasi **2004**; 19
40. **Priya Nighantu.** Pipalyadi varga/76. Prof. Priyavrata Sharma, Chaukhambha surbharati prakashana Varanasi, **2004**; 71
41. **Charaka Samhita.** Chikitsa Sthana, Unmada chikitsa 9/ 35-42. Dr. Brahmanand Tripathi, vol. 2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 390
42. **Charaka Samhita.** Chikitsa Sthana, Unmada chikitsa 9/69-72. Dr. Brahmanand Tripathi, vol. 2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 397
43. **Charaka Samhita.** Chikitsa Sthana, Visha chikitsa 23/50. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 758
44. **Charaka Samhita.** Chikitsa Sthana, Visha chikitsa 23/77-94. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 764-765
45. **Charaka Samhita.** Chikitsa Sthana, Visha chikitsa 23/185. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 789
46. **Charaka Samhita.** Chikitsa Sthana, Visha chikitsa 23/196. Dr. Brahmanand Tripathi, vol.2, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2005**; 791
47. **Susruta Samhita.** Kalpa Sthana, Sarpadashtavisha chikitsa 5/61-62. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi, **2007**; 51
48. **Susruta Samhita.** Kalpa Sthana, Sarpadashtavisha chikitsa 5/68-72. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi, **2007**; 51-52
49. **Susruta Samhita.** Kalpa Sthana, Dundubhisvaniya kalpa 6/3-7. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 54
50. **Susruta Samhita.** Kalpa Sthana, Dundubhisvaniya kalpa 6/8-10. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 54

51. **Susruta Samhita.** Kalpa Sthana, Mushika kalpa 7/22. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi, **2007**; 58
52. **Susruta Samhita.** Kalpa Sthana, Keeta kalpa 8/131. Kaviraj Ambikadutta Shastri, part 1, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 78
53. **Susruta Samhita.** Uttarantra, Jvara pratishedha 39/230-234. Kaviraj Ambikadutta Shastri, part 2, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 199
54. **Susruta Samhita.** Uttarantra, Apasmara pratishedha 61/31-33. Kaviraj Ambikadutta Shastri, part 2, Reprint ed. Chaukhamba Sanskrit sansthan Varanasi **2007**; 451
55. **Astanga Hrdayam.** Uttara Sthana, Bhutapratishedha 5/10-12. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 914
56. **Astanga Hrdayam.** Uttara Sthana, Unmad pratishedha 6/26-31. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 924
57. **Astanga Hrdayam.** Uttara Sthana, Sarpavisha pratishedha 36/59. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 1160
58. **Astanga Hrdayam.** Uttara Sthana, Sarpavisha pratishedha 36/65. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 1161
59. **Astanga Hrdayam.** Uttara Sthana, Keetalutavisha pratishedha 37/38. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 1170
60. **Astanga Hrdayam.** Uttara Sthana, Keetalutavisha pratishedha 37/71. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 1174
61. **Astanga Hrdayam.** Uttara Sthana, Mushikalarkavisha pratishedha 38/18. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Sanskrit pratishthan Delhi **2009**; 1179
62. **Sarngadhara Samhita.** Madhyama khanda, Ghrta-taila kalpana, 9/38-43. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2004**; 224
63. **Sarngadhara Samhita.** Madhyama khanda, Ghrta-taila kalpana, 9/51-57. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2004**; 225-226
64. **Sarngadhara Samhita.** Madhyama khanda, Ghrta-taila kalpana, 9/168-172. Dr. Brahmanand Tripathi, Reprint ed. Chaukhamba Surbharati Prakashan Varanasi **2004**; 242
65. **Bhavaprakasa.** Madhyama khanda, Dahadhikara 21/52-61. vol. 2, Prof. K.R.Srikantha Murthy, 3rd ed. Chowkhamba Krishnadas Academy Varanasi **2005**; 308-309
66. **Bhavaprakasa.** Madhyama khanda, Vranasothadhikara 47/90-95. vol. 2, Prof. K.R.Srikantha Murthy, 3rd ed. Chowkhamba Krishnadas Academy Varanasi **2005**; 565
67. **Bhavaprakasa.** Madhyama khanda, Visadhikara 67/82-87. vol. 2, Prof. K.R.Srikantha Murthy, 3rd ed. Chowkhamba K. Academy Varanasi **2005**; 771
68. **Bhavaprakasa.** Madhyama khanda, Visadhikara 67/89. vol. 2, Prof. K.R.Srikantha Murthy, 3rd ed. Chowkhamba Krishnadas Academy Varanasi **2005**; 772
69. **Yoga Ratnakar.** Unmada Nidana-Chikitsa Prakarana/33-36. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 390
70. **Yoga Ratnakar.** Unmada Nidana-Chikitsa Prakarana/41-47. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 390-391
71. **Yoga Ratnakar.** Saddhyovrana Prakarana/46-50. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 618
72. **Yoga Ratnakar.** Agnidagdha vrana Prakarana/14-17. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 621
73. **Yoga Ratnakar.** Kushtha Nidana-Chikitsa Prakarana/186-189. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 659
74. **Yoga Ratnakar.** Kushtha Nidana-Chikitsa Prakarana/213-216. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 661-662
75. **Yoga Ratnakar.** Visha Nidana-Chikitsa Prakarana/111. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 866
76. **Yoga Ratnakar.** Visha Nidana-Chikitsa Prakarana/138. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 869
77. **Yoga Ratnakar.** Visha Nidana-Chikitsa Prakarana/164-169. Indradev Tripathi and Dr. Daya Shankar Tripathi, 1st ed. Krishnadas Academy Varanasi **1998**; 872
78. **Charaka Samhita.** Sutra Sthana, Atreyabhadrapyadyadhyaya 26/43(1 & 5). Ed. Acharya Vidyadhar Shukla and Prof. Ravi Dutt Tripathi, vol.1, Reprint ed. Chaukhambha Sanskrit Pratishthan Delhi **2006**; 366