



## UNIQUE JOURNAL OF AYURVEDIC AND HERBAL MEDICINES

Available online: [www.ujconline.net](http://www.ujconline.net)

Review Article

### SNAKE BITE MANAGEMENT ACCORDING TO AYURVEDA- A REVIEW

Patil Akshara A<sup>1\*</sup>, Wadkar Shashikant Dadaso<sup>2</sup>, Patil Ashok Sadashiv<sup>3</sup>, Waghmare Vikas Digambar<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of Agadanttra Avum Vidhivaidyak, Yashwant Ayurved College, P.G.T & R.C, Kodoli, Panhala, Kolhapur, Maharashtra, India

<sup>2</sup>Associate Professor and HOD, Department of Agadanttra Avum Vidhivaidyak, G.J. Patel Institute of Ayurvedic Studies and Research, New V.V. Nagar, (Anand), Gujarat, India

<sup>3</sup>Associate Professor, Department of Rognidan, Yashwant Ayurved College, P.G.T & R.C, Kodoli, Panhala, Kolhapur, Maharashtra, India

<sup>4</sup>Assistant Professor, Department of Agadanttra Avum Vidhivaidyak, Dr. Vedprakash Patil Ayurved College and Research Institute, Jalna, India

Received 12-08-2019; Revised 10-09-2019; Accepted 08-10-2019

\*Corresponding Author: **Dr. Akshara Akash Patil**

M.D. (Ayu), Assistant Professor, Department of Agadanttra Avum Vidhivaidyak, Yashwant Ayurved College, P.G.T & R.C, Kodoli, Tal.- Panhala, Dist. – Kolhapur, Maharashtra, India, E-mail: dr.aksharapatil25@gmail.com, Mob. : 9970040451

### ABSTRACT

Ayurveda has its own way of approach towards the management of visha, *Agadanttra* is a special branch of *Ashtang Ayurveda* having its own importance in *Visha Chikitsa*. The science that deals with toxins including *Dushi Visha* is known as *Agadanttra*. *Agadanttra* is a clinical branch of *Ayurveda* that deals with the bites of snakes, insects, spiders, scorpions, rats etc., their characteristics, the signs and symptoms of accidental or purposeful ingestion of poisons including *KRITRIM VISHA* concocted poisons (*GARA*) and denatured poisons (*DOOSHI VISHA*). Which is unique and is parlance with the concepts of current science. Snakebite remains an underestimated cause of accidental death in India. Estimates of snakebite mortality in India vary from approximately 1,300 to 50,000 annually. Considering this, The World Health Organization added snakebite to their list of neglected tropical diseases and designed an exclusive protocol its management. Acharya charaka advocated 24 upakramas to counter the cases of poisoning, along with certain Agadas and precautions about the prevention of snake bite.

**Keywords:** Ayurveda, Agadanttra, Chikitsa, Poisoning, Upakrama, Sarpa visha, Snakebite.

### INTRODUCTION

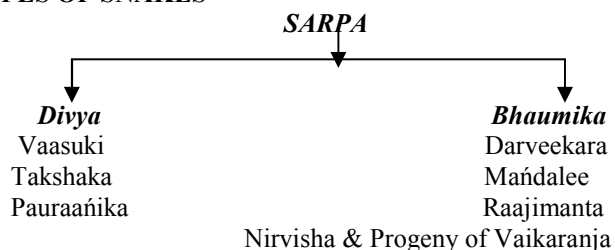
Snake bites are distributed common emergency. India is such a country, where snakebite is very common emergency<sup>1</sup>. It has reported that there are only 52 venomous snakes out of 216 species in India<sup>2</sup>. Yet, every year 50,000 Indians mostly poor villagers, farmers, die in 250,000 incidents of snakebite<sup>3</sup>. In our country Herpetologists, *sarpmitras*, trackers, large number of people who stay in villages, mountains and forests are more exposed to snake bites<sup>4</sup>. In these remote areas due to lack of transport facilities and primary aid more people succumb to death<sup>5</sup>.

With high incidences in the states of Tamil Nadu, West Bengal, Maharashtra, Uttar Pradesh, and Kerala<sup>6-8</sup>. Five families of poisonous snakes viz. Colubride, Elapidae, Hydrophidae, Viperidae and Ataspidae have been identified in India. Commonly the Indian cobra (*Naja naja*), Common krait (*Bungarus caeruleus*), Russell's viper (*Daboia russelii*) and Saw scaled viper (*Echis carinatus*) are the four venomous snakes found in India. Romulus Whitaker called them the "Big Four" which are mainly responsible for Indian snake bite mortality<sup>9-13</sup>.

### DESCRIPTION OF SNAKES

Descriptions on different types of snakes, their respective characters along with nature of poisoning, treatment modalities etc. have been categorically emphasized in Ayurvedic classics<sup>14</sup>.

### TYPES OF SNAKES



According to *Sushruta Samhitaa*:

**Snakes are 80 in number divided into 5 groups**

Darveekara-26

Mandalee-22

Rajimanta-10

Nirvisha-12

Vaikaranja-3

Progeny of Vaikaranja-7

**According to Charaka Samhitaa:**

Charaka describes this snake in addition to above categories. It is a quadruped serpent born by *Godha* is known as 'Gaudheyaka'. This is similar to black <sup>snak15e</sup>.

Black snakes in young age, *Ghoṅasa* in old age and *Raajimanta* in middle age are like *Asivisha*.

**Classification on another basis<sup>16</sup>:**

- a) **Braahmaṅas:** Snakes which have brilliance like that of pearl and silver or with golden hue, brownish and with pleasant aroma should be known as *Braahman*.
- b) **Kshatriyas:** Are of glossy complexion, too wrathful and having marks of the sun, the moon, umbrella and conch-shell.
- c) **Vaiśhya:** Those black, diamond like red in colour, smoky and resembling dove are known as *Vaiśhya*.
- d) **Śhudra:** Those having colour of buffalo and leopard, rough skin and colors different from those mentioned above are defined as *Śhudra*.

**Classification on another basis of gender<sup>17</sup>:**

- A. **Puman:** The snake that makes a round coil, has a huge body, that hisses and looks upward and has large head with all even body is a male.
- B. **Stree:** The snake just possessing the contrary characteristics is a female one. The person bitten by the female serpent has drooping looks, shivers and suffers by loss voice.
- C. **Kleebya (Napunsaka):** The snake that is timid is sexless.

**TYPES OF SNAKE BITE:**

**According to Sushruta Samhitaa<sup>18</sup>:**

**1. Sarpita Bite:**

When marks of bite are one or two or many, deep with little blood which is inflicted by twisting, covered with beak like projections, causing abnormal look, contracted or swollen, it should be known as *Sarpita* (deep) type of bite.

**2. Radita Bite:**

When there are reddish, blue, yellow and white streaks, it should be known as *Radita* (superficial) type of bite which causes mild poisoning.

**3. Nirvisha / Avisha Bite:**

If the mark of marks of bite is free from swelling, has little vitiated blood and the patient is normal, it is known as *Nirvisha/Avisha* bite.

**4. Sarpaangaabhihata:**

Sometimes, by the touch of snakes in timid person, *Vaayu* being vitiated by fear causes swelling, it is known as *Sarpaangaabhihata*.

**According to Asht'aamga Hridaya:**

- 1) **Tuṅḍ'aahata:** No bite marks, only saliva is present at the site.
- 2) **Vyaaleed'ha:** One or two teeth marks present but no bleeding.
- 3) **Vyaalupta:** Two teeth marks & there is active bleeding from bitten site.
- 4) **Damsh'rak :** Three teeth are going up to muscles & there is continuous bleeding.
- 5) **Damsh' ranishpeedita:** Four teeth marks are present & there is active bleeding.

First two are not poisonous but last one is fatal.

**SIGNS AND SYMPTOMS OF SNAKE – BITE<sup>19</sup>:**

**Darveekara:**

- Black, small wound
- No bleeding
- Tortoise like swelling
- Symptoms of *Vaatavyaadhi*

**Maṅdalee:**

- Broad, deep, edematous wound
- Skin color yellowish or yellowish red
- Symptoms like *Pittajavyaadhi*

**Raajimanta:**

- Sticky, non-movable swelling
- Shining yellow colored wound
- Sticky Haemorrhage from bitten area.
- Symptoms like *Kaphajavyaadhi*

**There are seven phases of poisoning by all types of snakes<sup>20</sup>.**

Poison crossing over each of the seven *Kalaas* successively situated in the intermediary region between one and the other *Dhatu* produces different phases of effects.

The interval which takes place while poison driven by *Vaayu* crosses one *Kalaa* to the other is known as *Vegaantara*.

**Signs and Symptoms of sarpa Vishaveg as according to Aayurved**

<i>Vishaveg</i>	<i>Darveekara</i>	<i>Maṅdalee</i>	<i>Raajimanta</i>
<b>First</b>	Poison vitiates blood due to which it becomes black, gives rise to blackness and feeling like crawling of ants on body.	Poison vitiates blood which acquires yellowishness and gives rise to generalised burning sensation and yellowishness on body.	Vitiates blood which becomes pale, causing horripilation and whitish appearance.
<b>Second</b>	It vitiates muscles which gives rise to marked blackness, inflammation and cysts in body.	It vitiates muscles which causes marked yellowishness, generalised burning sensation and swelling at the site of bite.	It vitiates muscles producing severe pallor, stiffness of body and swelling in head.
<b>Third</b>	It vitiates fats which causes moistening at the site of bite. Heaviness of head and stiffness of eyes	It vitiates fats which gives rise to stiffness of eyes.	It vitiates fats causing disorders of vision, moistening at the site of bite, sweating and discharge from nose and eyes.

<b>Fourth</b>	Poison enters into thoraco – abdominal cavity and vitiates doshas prominently kapha which produces drowsiness salivation.	Thirst, moistening at the site of bite and sweating.	Entering into thoraco-abdominal cavity it produces torticollis and heaviness in head.
<b>Fifth</b>	It further penetrates into bones and vitiates prana and agni which leads to pain in joints, hiccough and burning sensation.	Enters into thoraw-abdominal cavity and produces fever.	If causes loss of speech and fever with rigor.
<b>Sixth</b>	If reaches marrow and highly vitiates grahani which gives rise to heaviness in body, diarrhoea, cardiac pain and fainting.	Same as Darvikar.	If causes loss of speech and fever with rigor.
<b>Seventh</b>	It enters into semen highly vitiates Vyan vayu and causes discharge of kapha from minutes channels by which there are appearance of mucous wick, breaking pain in waist back.	Same as Darvikar.	Same as Darvikar.

**TREATMENT OF SNAKE – BITE<sup>21,22</sup>:**

- One should start the treatment after considering well *Dosha*, constitution, suitability, season, velocity of poison and patients strength and otherwise.
- **(C. S. Chi. 23/35-37)** - If bitten in extremity by a snake of any type of bite, tourniquet should applied four fingers above the site of bite. Tourniquet is of soft material like cotton cloth, leather piece or tree barks. Restrained by tourniquet the poison does not spread in body.
- Where binding is not applicable, site should be excised and then cauterized.
- Sucking, excision and cauterization are recommended everywhere. But the bite by *Mañdalee* snake should never be cauterized because the poison being predominant in *Pitta*, the bite spreads out by cauterization.
- *Mantra & Tantra Chikitsaa*:
- *Mantras* of the nature of truth and penance delivered by *Devarshi* and *Brahmarshi* cannot fail and as such destroy even the terrible poison immediately.

- *Mantras* should be acquired by one abstaining from women, meat and wine, taking little food, pure and clean and sleeping on beds of *Kuśha* grass.
- Tourniquet too should be bound, with mantras by the expert in them.
- The expert clinician should puncture veins around the site of bite and in case the poison has spread veins at the end of extremities or in forehead should be punctured.
- After scarifying the site, paste of anti- poisonous formulation should be applied around it. The site should also irrigate with decoction of *Chandana* and *Uśheera*.
- The patient should be given to drink anti poisonous formulations with milk, honey, ghee etc. The patient should not drink oil, soups of horse gram, wine and *Sauveeraka*.
- A poison is stable at bitten area only for 100 *Maatra Kaala* & then goes into *Raktaadidhaatu*. That’s why; in this short period emergency treatment like *Utkartana* etc. should be done to stop the entry of poison in body.

**Sarpa visha vishveganurup chikitsa**

<b>Vega</b>	<b><i>Darveekara</i></b>	<b><i>Mañdalee</i></b>	<b><i>Raajimanta</i></b>
1	Blood – Letting	Same as <i>Darveekara</i>	Blood letting should be performed with gourd and anti poisonous formulation mixed with honey and ghee should be given to drink
2	Anti-poisonous formulation with honey and ghee should be given to drink.	Anti-poisonous formulation should be given to drink with honey and ghee. Then emesis followed by gruel.	Emesis should be applied followed by intake of anti-poisonous formulation
3	Anti-poisonous snuff and collyrium should be applied.	After purgation, he should be given wholesome gruel	Same as <i>Darveekara</i>
4	After emesis, gruel mentioned before should be given	Same as <i>Darveekara</i>	Same as <i>Darveekara</i>
5	Physician should administer drastics evacuation followed by gruel.	Same as <i>Darveekara</i>	Same as <i>Darveekara</i>
6	Physician should administer drastics evacuation followed by gruel.	Intake of <i>kaakolyaadi</i> group and sweet anti-poisonour recipe	Irritant collyrium
7	Head should be evacuated with irritant pressed snuff, irritant collyrium should be applied and making incision Like crows foot with a sharp instrument on scalp	Anti-poisonous formulations should be used as pressed snuff	One pressed snuff should be applied.

Charak amhita - Chaturvimshati Upakramas for snake bite

	Treatment Measure	Probable comparision
1	Mantram	Chanting Mantras
2	Arishta bandhanam	Application of Tourniquet
3	Utkartanam	Incision over the bite excluding the vital points
	Nishpeedanam	Compression
5	Achushanam	Sucking through the site
6	Agni	Thermal cauterization
7	Parishekam	Sprinkling water
8	Avagaham	Water bath
9	Rakta mokshana	Blood letting
10	Vamanam	Emesis
11	Virekam	Purgation
12	Upadhanam	Medication on incised scalp
13	Hrudayavaranam	Protection of heart
14	Anjanam	Medicated collyrium
15	Nasyam	Medicated nasal insufflations
16	Dhumam	Medicated smoking
17	Leham	Medicated linctuses
18	Aushadham	Anti-poisonous drugs
19	Pradhanam	Medicated snuffing
20	Pratisaranam	Local applications
21	Prativisham	Specific antidotes
22	Sajna Samstapanam	Resuscitation
23	Lepam	Application of medicated pastes
24	Mruta Sanjeevanam	Revivation

Purpose	Upakrama	Total Upakramas
The measure that restricts the entry of the poison in to the systemic circulation	2-8, 23	8
Elimination therapy	9,10,11,15,16,19	6
Supportive, Symptomatic treatment	13,22,24	3
Counteracting Medications/ Antidotes, etc	1,17,18,21	4
Topical applications	12,14,20	3
	Total	24

<b>SARP VISH NASHAK YOGAS</b>		
1	Shireeshapushpadi Yoga	C.S.Chi.23/193
2	Takshaka Vishaghna Yoga	C.S.Chi.23 /194
3	Darveekar Vishaghna Yoga	C.S.Chi. 23 /195
4	Mañdalee Sarpa Vishaghna Yoga	C.S.Chi 23/297
5	Sarpa Viśhanaaśhaka Yoga	C.S.Chi 23/198
6	Pancha Shireesha Agada	C.S.Chi 23/218
7	Nagadantyaadi Ghṛuta	C.S.Chi 23/241
8	Mahaagada	S.S.Ka.5/61
9	Ajita Agada	S.S.Ka.5/63
10	Tarkshya Agada	S.S.Ka.5/66
11	Rushabha Agada	S.S.Ka.5/70
12	Samjeevana Agada	S.S.Ka.5/73
13	Śhleshmatakaadi Agada.	S.S.Ka.5/75
14	Draksha Sarpagandhadi Agada	S.S.Ka.5/76
15	Vamshatvagaadi Agada	S.S.Ka.5/80
16	Shireeshanulaadi Agada	S.S.Ka.5/81
17	Kushṭaadi Agada	S.S.Ka.5/83

18	Baakuchi Pushpa	S.S. ka. 5/84
19	Nirgundī	S.S. ka. 5/84
20	Punarnavaa	S.S. ka. 5/85
21	Shireesha Pushpa	S.S. ka. 5/85
22	Arka Pushpa	S.S. ka. 5/86
23	Nishottara	S.S. ka. 5/86
24	Kushṭa	S.S. ka. 5/86
25	Kshaaraagada	S.S.Ka.6/3
26	Kalyaanāka Ghṛta	S.S.Ka.6/8
27	Apamargaadi Agada	S.S.Ka.6/12
28	Mahaasugandhi Agada	S.S.Ka.6/14
29	Himavaana Agada	A.S.Ut. 42/27
30	Ashṭaamga Agada	A.S.Ut. 42/27
31	Shireeshapushpadi Yoga	A.S.Ut. 42/53
32	Gaarudi Amjana	A.S.Ut. 42/40
33	Churnaanjana	A.S.Ut. 42/41
34	Himavaana Agada	A.H.Ut. 42/36
35	Nirgumḍi Kwaatha	A.H.Ut. 36/57
36	Kaakadaanimool Yoga	B.B.R.

37	<i>Neelinimoola Kalka</i>	B.B.R.
38	<i>Punarnavaa Yoga</i>	B.B.R.
39	<i>Pimd'itagaramool Yoga</i>	B.B.R.
40	<i>Sarpavishahara Rasa</i>	B.B.R.
41	<i>Dashaamga Dhoopa</i>	B.B.R.
42	<i>Naktamaalaadya Amjanam</i>	B.B.R.
43	<i>Pind'ita Gaaramjanam</i>	B.B.R.
44	<i>Bilvaadi Yoga</i>	B.B.R.
45	<i>Bhimarudra Rasa</i>	B.B.R.
46	<i>Drakshyaadya Agada</i>	B.B.R.
47	<i>Marichaadi Churñam</i>	B.B.R.
48	<i>Lavamgadi Yoga</i>	B.B.R.
49	<i>Vat'ashrumgadi Yoga</i>	B.B.R.
50	<i>Mśtyupaashchedi Ghrtam</i>	B.B.R.
51	<i>Vishahaari Varti</i>	B.B.R.
52	<i>Vandhyaa Karkot'aki</i>	B.B.R.
53	<i>Mahaamr'utyunjaya Gutika</i>	B.B.R.
54	<i>Vishara jarapato Rasa</i>	B.B.R.
55	<i>Mahaagandhahasti Agada</i>	B.B.R.
56	<i>Lajjalumula Yoga</i>	B.B.R.
57	<i>Mrtasanjeevanee Agada</i>	B.B.R.
58	<i>Śhweta Punarnavaamoola Yoga</i>	B.B.R.
59	<i>Śhikhaari Ghrtam</i>	B.B.R.
60	<i>Śhireshaari Lepa</i>	B.B.R.
61	<i>Śhireshaadi Lepa</i>	B.B.R.
62	<i>Somavalkalaadi Lepa</i>	B.B.R.
63	<i>Samdnya Prabodhan Rasa</i>	B.B.R.
64	<i>Sarpavishahara Amjanam</i>	B.B.R.
65	<i>Samjeevani Vat'i</i>	B.B.R.
66	<i>Kr'shña Sarpa rasa Yoga</i>	Śh.S
67	<i>Lamgaleemoola Nasya</i>	Bh.R.
68	<i>Masurnimba Patra Yoga</i>	Bh.R. 72/9
69	<i>Dhavaalaadi Yoga</i>	Bh.R. 72/10
70	<i>Ghr'uhadhumaadi Yoga</i>	Bh.R. 72/11
71	<i>Kulikamoola Nasya</i>	Bh.R. 72/12
72	<i>Karñagutha Yoga</i>	Bh.R. 72/13
73	<i>Śhireshapushpa Rasa</i>	Bh.R. 72/14
74	<i>Tagaraadi Churña</i>	Bh.R. 72/15
75	<i>Aparajitaa Mulaadi Yoga</i>	Bh.R. 72/43
76	<i>Ghr'taadi Yoga</i>	Bh.R. 72/47
77	<i>Naktamaaladi Yoga</i>	Bh.R. 72/48
78	<i>Ānkana Jala</i>	Bh.R. 72/49
79	<i>Arkamoola Swarasa</i>	Bh.R. 72/49
80	<i>Kulikaadi Vat'ika</i>	Bh.R. 72/50
81	<i>Tanduliyaka Ghrtam</i>	Bh.R. 72/62
82	<i>Vishavajra Pato Rasa</i>	R.S.
83	<i>Tanduliya Root</i>	Y.R.
84	<i>Pippalyadi Churña</i>	Y.R.
85	<i>Śhireshamoola + Tandul Water</i>	Y.R.
86	<i>Naktamaalaphalaadya Amjanam</i>	Y.R.
87	<i>Śhweta moola</i>	Y.R.
88	<i>Śhami moola</i>	Y.R.
89	<i>Ishwaree moola</i>	Y.R.
90	<i>Aadalika</i>	Y.R.
91	<i>Paat'ha</i>	Y.R.
92	<i>Kulikamoola Nasya</i>	Y.R.

93	<i>Jamgalikanda Nasya</i>	Y.R.
94	<i>Kapotadi Dhoopa Agada</i>	Y.R.
95	<i>Saatalaphala Phena Amjana</i>	Y.R.
96	<i>Kaalavajraśhani Rasa</i>	Y.R.

These 96 Ayurvedic formulations are mentioned as antiophidian.

## CONCLUSION

The upakramas have their own significance in neutralizing the poison in different ways. There are 96 Sarp visha nashak yogas described in Ayurveda. Though there is certain ambiguity in the approach as compared to the modern medical science; the treatment modalities emphasized in Ayurveda have a great significance and are valuable particularly in remote areas, where medical facilities are meager. The Ayurvedic management can be used as a first aid measure in such areas to save the life of patient.

## REFERENCES

1. Sushruta, Sushruta samhita, Ayurveda tatwa sandeepika, hindi commentary, edited by kaviraj Ambika dutt shastri, Kalpa sthana , 4/14- 9, Chaukhamba Sanskrit sansthan, Varanasi, edition-II, 1997, P-38.
2. Charaka samhita, Chikitsa sthana, 23/221, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2009.
3. Astanga Hridaya, uttar sthana, 36/18, Chaukhamba Surabharti Prakashan, Reprint:2010.
4. [http://www.emedicinehealth.com/snakebite/article\\_e\\_m.htm](http://www.emedicinehealth.com/snakebite/article_e_m.htm) retrieved on 21.03.2012.
5. Guidelines for the clinical management of snakebites in the southeast asia region, WHO, southeast asia, Delhi-2005.
6. Charaka samhita, Chikitsa sthana,23/35-7, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2009
7. Charaka samhita, Chikitsa sthana,23/179, Chaukhamba Surabharti Prakashan , Varanasi, Reprint: 2009
8. Charaka samhita, Chikitsa sthana,23/40, Chaukhamba Surabharti Prakashan , Varanasi, Reprint:2009
9. Astanga Hridaya, uttar sthana, 36/14, Chaukhamba Surabharti Prakashan, Reprint: 2010.
10. Chakrapani on Charaka samhita, Chikitsa sthana,23/35, Chaukhamba Surabharti Prakashan , Varanasi, Reprint: 2009.
11. Charaka samhita, Chikitsa sthana, 23/61, Chaukhamba Surabharti Prakashan , Varanasi, Reprint:2009.
12. Pratap G. Narayana prakash B.,Suhas Shetty ; Critical Analysis of Mantra Chikitsa , AYU,29(2), 2008, pg.74.
13. Charaka samhita, Chikitsa sthana,23/38, Chaukhamba Surabharti Prakashan , Varanasi, Reprint:2009.
14. Astanga Hridaya, uttar sthana, 36/43, Chaukhamba

- Surabharti Prakashan, Reprint: 2010.
15. Sushruta samhita ,Kalpa sthana , 5/8, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2008.
  16. Sushruta samhita ,Kalpa sthana , 5/3, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2008.
  17. Sushruta samhita ,Kalpa sthana , 5/56, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2008.
  18. Sushruta samhita ,Kalpa sthana , 5/5, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2008.
  19. Sushruta samhita ,Kalpa sthana , 4/36, Chaukhamba Surabharti Prakashan, Varanasi, Reprint: 2008.
  20. Astanga Hridaya, uttar sthana, 36/38-9, Chaukhamba Surabharti Prakashan , Reprint: 2010.
  21. Charaka samhita, Chikitsa sthana,23/38, Chaukhamba Surabharti Prakashan,Varanasi, Reprint: 2009.
  22. Charaka samhita,Chikitsa sthana,23/41, Chaukhamba Surabharti Prakashan,Varanasi, Reprint: 2009.

Source of support: Nil, Conflict of interest: None Declared