

Chaturvimshati Upkrama: General Treatment Principles For Poisoning Cases- A Review

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Manuscript Received: Nov 21, 2024; Revised: Nov 28, 2024; Published: Nov 28, 2024

Abstract

Poisoning is a very common cause of death. Intentional poisoning cases account for 68.42% and 31.58% cases due to accidental poisoning. Ancient ayurvedic treatises have mentioned 24 treatment modalities for cases of poisoning termed as “Chaturvimshati Upkrama” i.e. 24 types of treatment principles as a general line of treatment in the cases of poisoning. Acharya Charak mentioned it in his chikitsasthan 23, vishachikitsa adhyay. These 24 treatment modalities include the shodhan, shaman, shastra etc. karma to overcome poison.

Keywords: Chaturvimshati Upkrama, General Treatment Modalities, Poisoning, Toxicology

Introduction

Acharya Charak in chikitsasthan 23 mentioned visha in detail and also the treatment to be given in each case. He mentioned the general line of treatment so as to overcome any effect caused due to poison. Poison is classified broadly into 2 types i.e., sthavara and jangama visha. It is also classified as sthavara, jangama and kratrim visha. Here kratrim visha refers to the artificial poisons and also gara and dushi visha. Poisoning is a very common cause of death. Intentional poisoning cases account for 68.42% and 31.58% cases due to accidental poisoning. [1] The general principle management of poisoning mentioned by acharyas are said as such that they work on all types of poisoning but are mainly mentioned for jangama visha.

The 24 modalities are enlisted below:

Table 1: Chaturvimshati upkrama and its modern correlation [2]

S. no.	Upkrama	Modern correlation
1.	Mantra	Sound therapy/ incantations
2.	Arishtha	Tourniquet application
3.	Utkartan	Incision over bite site
4.	Nishpeedan	Compression
5.	Chushan	Sucking through bite site
6.	Agni	Thermal cauterization
7.	Parishek	Sprinkling water
8.	Avgaha	Water bath
9.	Raktamokshan	Blood letting
10	Vaman	Emesis
11	Virek	Purgation
12	Updhan	Medication on incised scalp
13	Hridyavaran	Cardio protection
14	Anjana	Collyrium
15	Nasya	Nasal insufflations
16	Dhoom	Fumigation/ steam
17	Leha	Linctus
18	Aushadha	Anti- poisonous drugs
19	Prasham	Snuffing
20	Pratisaran	Local applications
21	Prativisha	Antidotes
22	Sangyasansthapan	Resuscitation (CPR)

23	Lepa	Application of pastes
24	Mritsanjeevan	Revival therapy

1. MANTRA (Chanting of Hymns)

Mantras are considered embodiments of truth and penance, bestowed by divine sages (Devarshi and Brahmarshi), specifically to counteract toxins (visha). In the context of Chaturvimshati Upakrama, mantra therapy is regarded as the most effective treatment for poison and is prioritized as the first line of intervention. Vagbhata describes mantras as vishapaharani—remover of poison—and attributes their effectiveness to their divine origin (Daiva Sampat) [2].

Mechanism of Action of Mantra Chanting

Chanting mantras in a specific rhythm instills confidence, reduces anxiety, and has a calming effect on the individual. This practice stimulates the sympathetic nervous system and strengthens peripheral blood vessels, thereby maintaining optimal blood flow to vital organs. The energy field in the surroundings is also said to be influenced during mantra chanting. A properly chanted mantra can often prove more impactful than pharmacological interventions, providing both physical and psychological reassurance to the affected individual. [3].

Inchantation

Inchantations are the special words that have a magical effect when spoken, sung or chanted. This practice is related to use of sacred language such as prayer, invocation, blessing, and cursing. Older theories considered enchantation to be a form of magic, an attempt to control and manipulate the force of nature. Most recent theories suggested that they have the psychological effect of restructuring reality in the minds of people. [3].

Areas of Research [3]

- Exploring the potential connection between protective endocrine secretions and mantra chanting could provide valuable insights into its therapeutic applications.
- The mechanism of action of mantras remains beyond the scope of definitive scientific explanation, often relying on hypothetical reasoning to understand their effects.
- Mastery and practice of mantra require adherence to specific rules and disciplines, shaping the individual's personality to a unique and elevated state.
- Mantra therapy is a non-invasive treatment method recommended in Ayurvedic texts for critical situations, including cases like snake bites.

2. ARISHTA BANDHANA

To restrict the spread of poison, Arishta Bandhana is recommended. This ligature can be made from materials such as silk thread, bamboo, or cloth. Charaka Acharya specifically mentions the term Venika for this practice, referring to ligatures made from hair. Physically, the ligature works by blocking the poison's movement through the lymphatic and venous systems. It should be applied approximately four angula (around 4 inches) above the bite site, immediately after a venomous bite, and loosened briefly after two minutes to prevent tissue damage or gangrene [4].

Ligature

Modern toxicology advises against ligatures due to the risk of gangrene. However, in emergency situations, it may be employed temporarily to save a life. Special care should be taken with bites from species like the Asian cobra and pitted viper, as these can increase the risk of gangrene. Tourniquets in such cases are intended to restrict lymphatic flow, not blood circulation. Venom typically spreads through lymphatic or venous drainage, with lymphatic capillaries operating at about 20 mm/Hg pressure compared to 100 mm/Hg in larger veins and 120 mm/Hg in arteries. Thus, the goal is to slow lymphatic and venous flow without obstructing arterial circulation, limiting the poison's spread [5].

3.UTKARTHANA (Incision)

Utkarthana involves making an incision at the bite site to prevent the poison from entering systemic circulation. According to Vagbhata, the poison remains localized for about 100 matra kaala (the time it takes to blink an eye). If the incision is made within this time frame, the spread of venom can be prevented [2, 3].

A metaphor from the Charaka Samhita compares this practice to cutting a tree at its roots to ensure it dies. Similarly, a properly performed utkarthana can stop the poison from disseminating. However, the incision should be shallow to avoid damaging underlying structures like blood vessels, nerves, or tendons [3].

4.NISHPEEDANA (Compression)

Nishpeedana involves applying pressure to the bite area to expel poison. This technique is contraindicated for bites near marma sthana (vital points) or sandhi sthana (joints). Compression in vital areas could lead to fatal consequences, while applying pressure to joints may result in deformities [4, 5]. This method is justified by the concept of pressure embolism, emphasizing its use for extracting stingers or residual venom from the bite site. However, caution is crucial to avoid causing additional harm while implementing this technique [2].

Compression

Compression therapy uses the technique of controlled pressure to increase blood flow in your legs. It helps to improve blood flow to your heart, decrease swelling in lower extremities. It is an effective treatment for pain and swelling caused by conditions associated with poor circulation. Common conditions treated with compression are edema, deep vein thrombosis, leg ulcers [6].

- a) *Compression bandaging*: This process involves wrapping bandages to apply gentle pressure to relieve swelling. This should only be done by a medical professional or specialist. Compression garments: Compression garments include simple socks and sleeves you can wear to improve circulation and get relief from swelling [6].
- b) *Pneumatic compression devices*: Pneumatic compression devices, such as the Flexitouch Plus System, are worn for short periods of time and can provide rapid relief from swelling and edema symptoms [6].

5.CHUSHANA (Sucking)

The process of extracting poison from the bite site through suction is known as Chushana Karma. According to Acharya Charaka, the mouth should be filled with yava churna (barley powder) before performing suction. This technique helps in removing blood contaminated with venom from the affected area. Acharya Sushruta advises using a cloth in the mouth during the procedure, while other Ayurvedic scholars suggest alternatives like mud, ash, or cow dung for the same purpose [3,6]. This method is typically performed on fleshy regions (mamsala sthana) of the body. However, it is contraindicated for practitioners with mouth ulcers (mukha vrana) to avoid the risk of poison entering their bloodstream, which could result in symptoms similar to those caused by the snakebite itself [7].

6.AGNI KARMA (Cauterization)

Agnikarma is recommended for treating Twak-Mamsagatha Visha (poison localized in the skin and muscles). However, according to Dalhana, it is contraindicated in cases of viper bites as it may aggravate pitta dosha, potentially accelerating the spread of the poison. Traditionally, materials such as metals and cloth are used for the procedure [7]. In modern medicine, this practice is referred to as cauterization. Cauterization involves the application of heat to destroy affected tissues, helping to minimize infection and mitigate damage. [8]

Cauterization in Modern Medicine [6]

Cauterization is a medical technique that involves burning a part of the body to remove tissue, control bleeding, or reduce the risk of infection. It is commonly used to manage abnormal tissue growth or to treat wounds.

Electric Cauterization: This method utilizes heat generated from an electric current to destroy abnormal tissues, such as tumors or lesions. It is also used to control bleeding during surgical procedures or after injuries. The electric current is passed through an electrode placed on or near the targeted tissue, ensuring precise application.

7.PARISHEKA

Parisheka involves sprinkling medicated decoctions over the bite site to counteract the effects of poison. Decoctions made from Chandana (*Santalum album*) and Usheera (*Vetivera zizanioides*) are commonly used due to their cooling properties, which help in mitigating the spread of venom. Cold decoctions are particularly effective in preventing the progression of visha vega (the toxic effect of poison) [6, 8].

After raktamokshana (bloodletting), the residual blood in the area may become concentrated due to the heat-inducing property (ushna guna) of the poison. To address this, cold packs (lepa) and sprinkling therapy (parisheka) are applied to cool the area [2,4].

In cases of viper bites, Panchavalkala kwatha dhara (a decoction made from five barks) is traditionally used, while for cobra bites, Ghrita Saindhava dhara (a mixture of clarified butter and rock salt) is preferred. The cooling effect promotes blood coagulation, which reduces the venom's intensity. Proper irrigation of the bite site decreases venom absorption, while the cooling properties of the medicated decoction aid in contracting blood vessels and minimizing further toxin spread and infection [9].

Irrigation [9]

- Washing The Affected Area With Running Water Or Medicated Water.
- It Helps In Condensation of Blood
- Pacify The Intensity of Poison

8.AVAGAHANA (Immersion bath)

Avagahana refers to immersing the affected body part or the entire body in a medicated decoction. In modern medical practice, this is similar to an immersion bath. Avagahana is primarily employed in cases of severe pain, as it helps to neutralize the toxic effects of poison. [10] This procedure supports proper blood circulation and aids in the removal of toxins from the body. Additionally, it slows down the absorption of the poison, offering relief and minimizing its spread.

Immersion [10]

- Dipping the affected part in medicated decoction
- Speed of absorption can be reduced
- Eliminate toxic matter

9.RAKTHAMOKSHANA (Bloodletting)

Once poison enters the body, Raktamokshana is considered the most effective treatment. In cases of snakebite, the physician should puncture veins in the limbs or forehead to expel venom along with blood, thereby saving the patient's life. If veins are clearly visible, Raktamokshana can be performed using tools like Shrungha (horn) or Jalouka (leeches). If blood does not flow freely from the bite site, the area should be rubbed with substances like Trikatu (a blend of ginger, black pepper, and long pepper), Grihadhooma (soot), or Rajani (turmeric) [5,9].

As the poison spreads, symptoms like intoxication and depression may develop. These can be alleviated using cold therapies to counteract the toxic effects.

10.VAMANA (Therapeutic Emesis)

Vamana is induced in specific conditions, such as during cold seasons, when the patient exhibits cold saliva, predominant Kapha, or has a Shleshma (Kapha-dominant) constitution. It is especially effective for latent (Dushi Visha) or compounded poisons (Gara Visha) [11].

In cases of snakebite (Jangama Visha), emesis is administered as follows:

- ✓ Cobra bite: During the 2nd, 4th, 5th, and 6th venom cycles (Vegas).
- ✓ Viper bite: During the 3rd Vega.
- ✓ Krait bite: During the 2nd, 4th, and 5th Vegas.

11.VIRECHANA (Purgation Therapy)

Virechana is recommended for symptoms like burning sensations, pain, and urinary obstruction, particularly in individuals with a Pitta constitution. According to the Ashtanga Sangraha, this treatment is indicated for snakebites involving Pitta dosha, especially when the bite is located below the navel or localized in the lower abdomen (Pakvashaya) [6,8].

Purgation is induced using preparations like Neelini Choorna (Indigofera tinctoria) with milk or Trivrit Choorna (Operculina turpethum) along with Triphala Kwatha [5].

12.UPADHANA (Topical Application on Incised Scalp)

Upadhana is a specialized treatment where medicated substances are applied to an incised area of the scalp. This procedure is performed in cases without critical symptoms (Asadhya Lakshana). After making an incision resembling cow's feet, a paste made from the meat of goat, cow, buffalo, or cock is applied to the area. [7,8]. According to Vagbhata, if the bite is in the lower part of the body, the incision should be made on the scalp, while for bites in the upper body, the incision is made on the feet.

13.HRIDAYAWARAN (Protecting the Heart)

Since ghee and poison possess opposing properties, administering ghee immediately after poisoning can slow the venom's spread. Poison disrupts the Tridoshas and their reservoirs, eventually targeting the heart. To protect the heart and prevent systemic venom circulation, specific substances are used [10].

This therapy involves first performing emesis and then administering:

- Honey, ghee, and milk.
- Gairika (red ochre).
- Juice of cow dung.
- Ikshu (sugarcane juice).
- Goat's blood.
- Soil or ash mixed with water.

These substances help counteract the poison and protect the vital organs, particularly the heart. [4, 10]

Cardio protection [3]

- Treatment of Hypotension: If the systolic blood pressure falls below 90 mmHg then the physician should immediately arrange for pressure agent.
- Patient should be positioned in head-low by raising the height of bed on the leg side by 15 cms. If poisoning is severe then central venous line should be secured and dextran or purified protein should be infused intravenously. To enhance renal blood flow, if required, dopamine should be used.

- Along with revival or resuscitation of the patient, the traces or remains of poisons in the body should also be attended to.

Cardio protective drugs used in emergency [4]

- Dextran infused in blood
- Dopamine 200 mg injection
- Angiotensin converting enzyme inhibitors -ACEi given in congestive heart failure - 1.Lisinopril-10mg2.Quinapril -10 to 20 mg
- Angiotensin receptor blockers 1.Valsartan - 160 mg2.Losartan -50 mg
- Calcium channel blockers -1.Verapamil-120 mg 2.Manidipine-5 to 20 mg
- Polypill - 100 mg aspirin 10 mg ramipril 200 mg of atorvastatin

14.ANJANA (Collyrium)

Anjana is indicated for conditions such as Shoonakshikuta (swelling around the orbital margin), Nidarta (excessive sleepiness), Vivarna Avila Lochana (discolored and turbid eyes), and Vivarnam Pasyathi (perception of various colors). If there is any obstruction affecting the eyes, Anjana should be prepared using ingredients like Devadaru (Cedrus deodara), Shunthi (Zingiber officinale), Maricha (Piper nigrum), Pippali (Piper longum), Haridra (Curcuma longa), Karaveera (Nerium indicum), Karanja (Pongamia pinnata), neem flowers (Nimba), and Tulasi (Ocimum sanctum), mixed into a paste with goat's urine. Commonly practiced formulations include Bilvadi Gulika with Tulasi Patra Swarasa for all types of poisoning. [5, 7]

15.NASYA (Nasal Therapy)

Nasya, or nasal administration of medication, is the primary treatment when poison affects the head. According to Charaka, it is indicated for obstructions in the nose, eyes, ears, tongue, and throat. Commonly used combinations include Bharngi Mula (Clerodendrum serratum) and Tulasi (Ocimum sanctum). [9]

16.DHOOMA (Fumigation/Steam Therapy)

This procedure uses medicated smoke for fumigation to neutralize the effects of poison. For example, Nrikeshadhi Dhoopana is used for insect poisoning (Keeta Visha). The anti-toxic components in the smoke enter the body, clearing circulation channels and mitigating poison. [10, 11]

- Steam Therapy: Steam inhalation is a widely used home remedy for respiratory issues. It soothes airways and opens nasal passages. Products like Karvol Plus capsules, which contain aromatic ingredients such as menthol, camphor, and eucalyptus, act as decongestants and relieve respiratory discomfort. [3,5]
- Fumigation: A method of gaseous sterilization used to kill microorganisms and prevent their growth in enclosed spaces like hospitals, operation theaters, and pharmaceuticals. Fumigants like formaldehyde, phosphine, and sulfuryl fluoride are commonly employed to sterilize surfaces and eliminate pathogens. [3,5]

17.LEHA (Medicated Confection)

Leha refers to medicine prepared in a linctus form, used to prevent dryness of the throat and palate caused by poison. A preparation using Sharkara (jaggery), Madhu (honey), and Swarna Bhasma is effective as a universal antidote (Sarva Visha Prashamana Leha). [9]

18.AUSHADHA (Medications)

Various internal medicines are described for treating poison, including formulations like Mrithasanjivani Agada, Gandhahasthi Agada, Dhumagada, Kshara Agada, and Pancha Sirisha Agada. [2]



- Cobra Bite: Maha Kalyanaka Ghrit (15 ml) with honey (10 ml), followed by Jeevaraksha Gutika with milk.
- Viper Bite: Patoladhi Gana Kwatha and Vilvadi Gutika.
- Hematuria (in poisoning): Taruna Bhaskara Gutika with tender coconut water.
- Insect Bite: Dasanga Agada is commonly used.

19.PRASHAMANA (Pacification Therapy)

Post-elimination therapies may leave residual doshas in the body, which are managed through Prashamana measures to fully neutralize the poison and restore balance. [7]

20.PRATHISARANA (Topical Rubbing)

Prathisarana involves rubbing medicated powders on the skin, particularly when blood fails to flow during Raktamokshana. Substances like Trikatu (ginger, long pepper, black pepper), Gruhadooma (soot), and Haridra (turmeric) are used. This process enhances blood or fluid flow, absorbs excess moisture, alleviates itching, cools the skin, and dries oozing wounds. [10]

21.PRATIVISHA (Antidotes)

Prativisha refers to substances that counteract poisons. It is effective in managing the 5th to 7th venom cycles (Visha Vega).

- Sthavara Visha (plant-based poison) resembles Kaphaja properties, causing an upward direction of action.
- Jangama Visha (animal-based poison) exhibits Pittaja properties, with a downward action.

Their opposing properties make them antidotes to each other. For instance, patients bitten by snakes are treated with poisonous plant roots, and those who have ingested plant-based poison may benefit from controlled snake venom exposure. [11]

Precautions:

- Avoid during rainy or cloudy days, pregnancy, and in children or elderly patients.
- Not recommended for those experiencing extreme hunger, thirst, anger, or with Pitta disorders.

By balancing the opposing properties of poisons, Prativisha nullifies the toxic effects, restoring health.

Dose

- Snake bite – 4,6,8, yava as minimum, moderate and maximum dose
- Insect bite- 2 yava
- Scorpion bite- 1 tila.

Antidote [3,4]

Antidotes are the substances that counteract or neutralize the effects of poisons.

Types of Antidotes

- Mechanical or physical antidotes (Demulcents)
- Chemical antidotes
- Physiological antidotes
- Universal antidotes

22.SAMJNASTHAPANAM (Regaining consciousness)

If a patient is unconscious, the physician must take immediate measures to restore consciousness. In cases where symptoms such as loss of awareness, upturned eyeballs, and drooping of the neck are observed, venesection should be performed on veins in the forehead or extremities. If blood flow is insufficient, a superficial incision may be made on the patient's scalp. [6]

This process is employed to revive consciousness. During the 6th stage of Visha Vega (toxic progression), Samjnasthapana Chikitsa (consciousness-restoring treatment) is recommended. This is achieved by administering Gopitta (cow's urine) combined with Haridra (turmeric), Manjishta (Rubia cordifolia), Maricha (black pepper), and Pippali Churna (long pepper powder). [11]

Revival/ Resuscitation [7]

The priority for physician, attending a case of poisoning, is to revive or resuscitate the patient. As a physician one should be vigilant towards functioning of various organs or systems of the body.

Maintenance of cardiac activity and blood circulation is extremely important. Artificial dentures of the patient should be removed. Oral and oropharyngeal secretions should be promptly removed through suction.

In case of unconscious patient and when his cough reflexes have ceased a cuffed endotracheal tube should be inserted. If signs of respiratory failure are evident then artificial respiration should be resorted to Ventilation. The crowd around the patient should be dispersed and appropriate ventilation of the room should be done by keeping the windows etc. open.

The clothes on the patient's body should be loosened. Arterial blood gas should be analysed. If Pa CO₂ is more than 65 k Pa then artificial or supportive respiratory measures should be adopted.

23.LEPA (Ointments)

It involves the application of a medicated paste to the bite site. For a Pitta Prakriti individual who experiences thirst or unconsciousness, Sheethala Lepa (cooling paste) should be applied. After performing Raktamokshana (bloodletting) to eliminate residual poison, a paste should be applied to the bite area. Commonly used pastes include Sigru Punarnavadi Lepa for allergies caused by viper bites, and Bilvadigulika and Dasanga Lepa for insect poisoning. [9]

24.MRITASANJIVANI (Resuscitation)

This is one of the ancient therapies used to restore life to an individual. Just as Amrita (elixir) grants life even to the dead, Mritasanjivani is used in cases of poisoning to restore life. Acharya Charaka describes a formulation called Mritasanjivani Agada, which is a gutika (tablet) that cures all types of poison. This remedy is applied in cases where the patient appears to be dead but still has life energy within the body. Today, this therapy is no longer in practice, but it can be compared to the use of broad-spectrum drugs or ventilator support in modern medicine when a patient's condition worsens and vital functions diminish. It works to counteract the effects of poison. [11]

DISCUSSION

The Chaturvimshati Upakrama outlined in classical texts provides comprehensive measures for managing poisonings. These include pacifying treatments such as Anjana, Lepa, Dhupana, Leha, Upadhana, Prashamana, and Prathisarana. Measures that prevent poison from entering systemic circulation include Arishta, Uthkarthana, Nishpidana, Chushana, Agni, Parisheka, and Avagaha. Elimination therapies consist of Raktamokshana, Vamana, Virechana, and Nasya. Supportive treatments include Hrdhayavarana, Sanjasthapana, and Mritasanjivani. Counteracting medications are Mantra, Aushadha, and Prathivisha. The choice of treatment must be based on the patient's condition and the physician's judgment.

CONCLUSION

Although Acharya Charaka dedicates only a single chapter to toxicology, the Chaturvimshati Upakrama constitutes a significant portion of his teachings on the management of poisons. In other Samhitas, there is a more extensive focus on toxicology. However, the Chaturvimshati Upakrama continues to hold relevance as it serves as a guiding framework in cases of poisoning. This set of treatments acts as a general protocol for managing poisoning, which is still valuable today. The general treatment protocol for poisoning in modern medicine can be considered a contemporary version of Acharya Charaka's Chaturvimshati Upakrama, as it offers a structured approach to managing diverse poisoning cases.

References

- [1] Jesslin, J., Adepu, R., & Churi, S. (2010). Assessment of prevalence and mortality incidences due to poisoning in a South Indian tertiary care teaching hospital. *Indian journal of pharmaceutical sciences*, 72(5), 587–591. <https://doi.org/10.4103/0250-474X.78525>
- [2] Pranali Abaji Dudhe, Jaiprakash Surajalal Ukey. Chaturvinshati Upkrama and its role in management of poisoning. *J Ayurveda Integr Med Sci* 2023;05:145-149. <http://dx.doi.org/10.21760/jaimis.8.5.23>
- [3] Sunitha G et al. Chaturvimshathi upakrama and its importance: A review. *J Biol Sci Opin* 2017;5(1): 6-10.
- [4] Dr. Nitin Urmaliya Text book of Agada Tantra, Chaukhamba Orientalia publication Varanasi, First Edition, 2011; p- 1.
- [5] R.K. Sharma, Bhagvan Das, Charaka Samhita, critical exposition based on Cakrapani Datta's Ayurveda Dipika, Vol IV, Chaukhamba Sanskrit series office, Varanasi, Reprint Edition, 2005; p- 323.
- [6] Kasture JP, Takale SM, Upadhyay RS. A Literary Review of Lepa Chikitsa w.s.r. to Chaturvimshati Upakrama. *International Journal of Applied Ayurved Research*, 2016; 2(7): 980-984.
- [7] Mangal K, Rana S, Chauhan P, Tiwari R.C. Charak's Chaturvimshati Upakrama and its Contemporary View. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2018; 7(4): 294-304.
- [8] Ashtanga samgraha with Sarvanga Sundhara Commentary of Arunadatta and Ayurveda Rasayana commentary of Hemandri. Reprint Varanasi (India): Chaukhamba Orientalia, 2005; Uthara stana, P903.
- [9] Sonali chalach Review article of 24 Upakrama of Charaka in modern era, *Journal of Indian system of medicine* 2014 JISMI403H, oaji.net/articles/2016/3020-145
- [10] Pawde uday, general principles of management of poisoning in Ayurveda and modern medicine-A conceptual study, *IAMJ*, ISSN:23205091 <http://iam.in/posts/image/upload/3004-3014.pdf>
- [11] Shreyas S. Joshi, Shashikant D. Wadkar. General Treatment Protocol of Poisoning and Twenty Four Treatment Modalities by Acharya Charak- A Review. *International Journal of Ayurveda and Pharma Research*. 2019;7(8):71-74.