

REVIEW ARTICLE

Concept of Purification w.r.t. *Visha Dravya* (Poisonous Drugs)

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ABSTRACT

Ayurveda deals with herbal, mineral, metallic and animal-origin drugs among which the maximum are of herbal origin. Some herbal drugs are divided into *Visha* and *Upavisha*. These drugs are used as a single drug and as formulations. In Ayurveda all poisonous drugs are used only after *Samskara* called as *Shodhana* (detoxification) mentioned in various text. Some drugs are toxic in nature as no medicine can be prepared without the prior removal of impurities. So *Shodhana* is the first norm to be completed during some drug formulation. As per Ayurveda *Shodhana* process which is considered highly mandatory for *Upavisha Dravya* converting into a suitable form for the preparation of Ayurvedic formulation. When it is used without *Shodhana* process may cause deleterious effects on the body. This may be due to special qualities of *Upavisha Dravya* like *Vyavayi*, *Tikshana Vikasi*, *Ashu*, etc Such toxic qualities can be avoided by using *Shodhana Karma*, after that *Upavish Dravya* in small quantity act as *Amrita*. Proper awareness about *Visha*, its classifications, *Shodhana* methods used for detoxification procedures and researches on impact of *Shodhana* are the tools to bring poisonous medicinal plants into the mainstream and to make them more accountable.

Key Words *Ayurveda, Shodhana, Visha, Upvisha, Detoxification*

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INTRODUCTION

Ayurveda is the science of longevity; it is one of our richest heritages gifted us by ancestors. Through countless transmission from generation to generation it may have lost some of its original lustre, but it is not a dead end. It is still playing a key role for better human health in many incurable, chronic and degenerative diseases by its effectiveness. To achieve this goal Ayurveda

offered *Bhaishajya* (medicine) as a weapon to conquer the untreatable diseases. *Bhaishajya* is further modified in to different formulations to compete with need of all time availability, simple administration, palatability and effectiveness¹. About two-third of the drugs of the modern system of medicine have been developed from natural resources mainly from plants. Thus the medicinal plants belonging to the oldest

REVIEW ARTICLE

known health care products that have been used by mankind all over the world in the form of traditional medicine. Now the world is waking up to the vast pharmacopeia of Ayurveda.

Most of herbal drugs are safe but few are poisonous, producing toxic effects on human health. In Ayurveda such poisonous plants are divided into *Visha* and *Upavisha*². Poisonous plants are used as single drugs or formulation after proper purification. *Visha* when used by properly can be converted to *Bheshaja* (drug). *Shodhana* is a process in which impurities are separated from the substance by different pharmaceutical methods³.

Historically *Shodhana* concept was in existence since the time of *Charak Samhita* as while enumerating the fundamentals of Ayurvedic pharmaceuticals *sauca (Shudhi) Karan* is found enumerated as one of the fundamentals necessary for *Gunantaradhan* (alteration and /or addition of properties in the drugs). This concept has further developed after the development of *Rasashastra* in the field of Ayurvedic medicine. As in *Rasaashastra* generally the metals /minerals /mercury and sometimes a few drugs of poisonous nature are found used which are likely to contain some toxic effects also. Hence with a view to remove or minimise their toxicity or the toxic effects and to make these suitable for further process and for internal use a number of *Shodhana* procedure and technique have been found evolved which proved greatly helpful in reducing or minimising the toxic effects of these drugs.

In *Rasashastra* the *Shodhana* process is purification of drugs as well as involves detoxification and increases the efficacy of drugs. Purification process helps to remove the toxic properties and thus enhances the potency and efficacy of the drug⁴. Various procedures of *Shodhana* are used for purification of drugs like *Swedan, Mardan, Nirvapan, Bharjana, Bhavana* (Levigation), *Nimajjana* (Dipping). *Prakshalan* (washing), *Dhalana*, therefore, using various methods of *Shodhana* processes mentioned in the Ayurvedic text *Visha Dravya* are purified and made useful for their therapeutic uses. Different process including *Mardan, Peshan, and Pruthakakaran* etc. done on the materials with indicated *Dravyas* to remove various impurities is called as *Shodhana*. Concept of *Shodhana* process was in practice since time of *Charaka Samhita*, *Aharya Charak* mentioned that, any poison if proceed or used properly is a potential medicine and any medicine if used improperly, is a poison. *Rasashastra* explains processing of drugs by the name of *Samskara, Shodhan* process is one of such process used for *Samskara* of drugs. So, using above various methods of *Shodhana* process mentioned in Ayurvedic text *Visha Dravya* are purified and made useful for their therapeutic uses. In this review an attempt has been done to gather the information about *Shodhana* procedure mentioned in Ayurveda for Poisonous drugs and advance researches on various poisonous and sub-poisonous drug.

REVIEW ARTICLE

AIMS AND OBJECTIVES

The objective of review is to update information about, *Shodhana* process of various *Visha - Upavisha* Dravya which are used in medicine.

Review of Literature

Literary review is important step before dealing with any kind of study. It is useful for the concept about materials and methods which are used in study. In this review literature regarding the concept of *Shodhana* of *Visha* and *Upavisha* has been studied. According to *Bhavprakash Nighantu* and *Rasatarngini Visha Dravya* mainly classified into two categories called *Mahavisha* and *Upvisha*. There *Shodhana* process mentioned in *Bhavprakash Nighantu* in *Dhatvadvarga Adhyay*. In *Rasatarngini "Vishopvishavijyaniya Adhyay"* also describe about types of *Shodhana* and therapeutic uses of poison. The importance of *Vishdravya* also mentioned in various Ayurvedic texts.

MATERIAL AND METHODS

Some traditional text like *Charaka Samhita*, *Sushruta Samhita* were studied. According to *Rastaragini* and *Bhavprakash* poisonous plants are classified into *Mahavisha & Upavisha* on basis of their potency in the present day, Out of *Mahavisha Vatsnabha & Upavishba* like *Karveer*, *Gunja*, *Snuhi*, *Kuchala*, *Jaypala*, *Dhatura*, *Bhallataka*, *Vijaya*, *Ahiphena*, *Langali* are used for therapeutic purpose.

Shodhan of Visha Dravya (Poisonous Drug)

Vatsnabha Aconitum ferox

The roots of *Vatsnabha* are cut into small pieces and make a *Pottali*. It can be detoxified by placing it in *Gomutra* (cow urine) for three consecutive days, or by *Swedana* in *Godugdh* or goat's milk in *Dolayantra* for three to six hours. After that pieces of *Vatsnabha* washed with warm water and used for therapeutic purpose⁵.

1) *Ahiphen, Papaver somniferum linn*

Dissolved in water then filtered with a cloth after that mixed with *Godughda* (cow's milk) heated in the mild heat, this paste was triturated with Ginger Juice for 7-21 times dried under shade. *Shodhana* /Purification clean the affirm with water & cow milk. Give 7 times *Bhavana* of *Adrak Swarasand* then dried it. It gets purified⁶.

2) *Bhallataka, Semicarpus anacardium Linn* (Seed)

After removing the top part, the seeds are cut into two parts and then placed in a *Pottalli*, *Swedana* was done by filling it with coconut water for 1-2 hours in *Dolayantra*⁷.

3) *Bhanga, Cannabis sativa Linn* (Except Seed)

1st Method: Leaves are tied in a cloth and soaked with water. The procedure is continued when greenish color discharge stop from the leaves. After that, leaves are dried under the shed, then fried in *Gogruth* on Mandagni (slow heat), and then used for medicinal purposes.

2nd Method: *Swedana* (fomentation) - In *Godugdh* for 3 hours with mild fire then wash it with the help of water after getting it dried fried in *Goghrita*.

3rd Method: *Bhanga* leaves to be fomented in Decoction of *Babbul Tvak*(Bark of Acacia
September 10th 2023 Volume 19, Issue 2 Page 108

REVIEW ARTICLE

catechu) for 25 – 30 minutes with heat and then subjected to drying under sunlight further they are triturated with *Godugd* (cow’s milk)⁸.

4) *Dhatura, Dhatura metal* Linn

Seeds of *Dhatura* cleaned of physical impurities and prepared *Pottali* with the help of cotton cloth cooked in *Dolayantra* by adding *Gomutra* or *Godugdha* for three hours⁹.

5) *Gunja, Abrus precatorius* Linn. (Seed)

Purification of *Gunja* seeds are done with the help of *Godugdha* or *Kanji* in *Dolayantra* for 3 hours after that seeds are washed with lukewarm water¹⁰.

6) *Jaipala, Croton tiglium* Linn.

Without seed coat and radical *Jaipala* seeds are taken and mixed with 8th part of *Suhaga* (Borax) after tied in a *Potall* subjected to *Swedana* for 6 hours in *Dolayantra* by using *Godugd* (Cow’s milk)¹¹.

7) *Karveera Nerium indicum* Mill.

Roots of *Karveera* are purified by *Swedana* process In *Dolayantra* using *Godugd* (Cow’s milk) for 3 hours¹².

8) *Langli, Glosiosa superoba* Linn.

1st Method: Fresh roots and seeds are deep in *Gomutra* for 24 hour and wash with lukewarm water by this process it is detoxified¹³.

2nd Method: Cut small pieces of *Langli* should be kept in sour buttermilk for seven days in pot and then dried in sun, after that collected in glass jar and used.¹⁴.

9) *Snuhi, Euphrbia nerrifolia* Linn.

The milk of *Snuhi* is collected and mixed with the juice of *Amlika* (Tamarind) put it in to a vessel and let them dry in direct sunlight, after proper drying it should be used¹⁵.

10) *Kuchala, Strychnus nuxvomica* Linn.

Kuchala seeds are heated in *Godugdha* for 3 hours with the help of *Dolayantra*. Clean the outer thin layer by scratching, removing the embryo and washed with hot water, dry it and powdered¹⁶.**Table**

Table 1 *Visha* drugs and adverse effects¹³

S.N.	Name of Visha drug	Latin Name	Adverse effects of Impure drug
1	<i>Vatsanabh</i>	<i>Aconitum ferox</i> wall.	Burning sensation all over body ,fainting,cardiac arrest and even death
2	<i>Ahiphen,</i>	<i>Papaver somniferum</i> Linn.	cough,vomitting
3	<i>Bhallataka,</i>	<i>Semicarpus anacardium</i> Linn.	Blister, glossitis, diarrhoea , menorrhagia, ulcer, oedema
4	<i>Bhanga</i>	<i>cannabis sativa</i> Linn.	delirium, giddiness and unconsciousness
5	<i>Dhatura,</i>	<i>Dhatura metal</i> Linn.	dryness, excessive thirst ,cramps ,unconsciousness and giddiness
6	<i>Gunja</i>	<i>Abrus Precatorious</i> Linn.	Vomiting and diarrhoea
7	<i>Jaipala,</i>	<i>Croton tiglium</i> Linn	excessive purging leading to dehydration, cramps, burning sensation and excessive thirst
8	<i>Karveer</i>	<i>Nerium indicum</i> mill.	Burning sensation, delirium
9	<i>Langli</i>	<i>Gloriosa superba</i> Linn.	Burning sensation ,delirium ,diarrhoea
10	<i>Snuhi,</i>	<i>Euphrbia nerrifolia</i> Linn.	Blister , burning sensation
11	<i>Kuchala,</i>	<i>Strychnus nuxvomica</i> Linn.	Tetanic convulsion,muscular pain ,excessive Thirst and redness of skin

Table 2 *Drugs with shodhan media and method*⁵⁻¹⁰

S.N.	Drug name	Parts used	Media for Shodhana	Method of Shodhana
1	<i>Vatsanabh</i>	Root	<i>Godugdha,Gomutra</i>	It can be detoxified by placing it in <i>Gomutra</i> (cow urine) for three consecutive days, or by <i>Swedana</i> it in <i>Godugd</i> or goat’s milk in <i>Dolayantra</i> for three to six hours

REVIEW ARTICLE

2	<i>Ahiphen,</i>	Latex	<i>Ardrak Swaras</i>	Give 7 times <i>Bhavana</i> of <i>Ardrak Swaras</i> and then dried it
3	<i>Bhallataka,</i>	seed	coconut water	After removing top part of seeds cuts in two parts are placed in <i>Pottalli, Swedana</i> is done by filling it with coconut water for 1-2 hours in <i>Dolayantra</i> .
4	<i>Bhanga</i>	leaves, Fruits	<i>Godugdha</i>	<i>Swedana</i> (fomentation)- In <i>Godugdha</i> for 3 hours with mild fire then wash with the help of water after getting it dried fried in <i>Goghrita</i> .
5	<i>Dhatura,</i>	seed	<i>Gomutra or Godugdha</i>	Seeds of <i>Dhattura</i> cleaned of physical impurities and prepared <i>Pottali</i> with the help of cotton cloth cooked in <i>Dolayantra</i> by adding <i>Gomutra</i> or <i>Godugdha</i> for three hours.[9]
6	<i>Gunja</i>	seed	<i>Gomutra or Godugdha</i> <i>Kanji</i>	Seeds of <i>Gunja</i> are purified in <i>Godugdha</i> or <i>Kanji</i> with the help of <i>Dolayantra</i> for then <i>Gunja</i> seeds are taken out washed in hot water dried and preserved.
7	<i>Jaipala,</i>	seed	<i>Godugdha</i>	Without seed coat and radical <i>Jaipala</i> seeds are taken and mixed with 8th part of <i>Suhaga</i> (Borax) after tied in a <i>Potalli</i> subjected to <i>Swedana</i> for 6 hours in <i>Dolayantra</i> by using <i>Godugdha</i> (Cow's milk)
8	<i>Karveer</i>	root	<i>Godugdha</i>	Roots of <i>Karveera</i> are purified by <i>Swedana</i> process In <i>Dolayantra</i> using <i>Godugdha</i> (Cow's milk) for 3 hours
9	<i>Langli</i>	Root	<i>Gomutra</i>	Fresh roots and seeds are deep in <i>Gomutra</i> for 24 hour and wash with lukewarm water
10	<i>Snuhi,</i>	Ksheer	juice of	The milk of <i>Snuhi</i> is collected and mixed with the juice of <i>Amlika</i> (Tamarind) put it in to a vessel and let them dry in direct sunlight, after proper drying it should be used
11	<i>Kuchala,</i>	seed	<i>Godugdha</i>	<i>Kuchala</i> seeds are heated in <i>Godugdha</i> for 3 hours with the help of <i>Dolayantra</i> .

DISCUSSION

Poisonous plants are classified into *Mahavisha* and *Upavisha* on the basis of its potency. Out of *Mahavisha Vatsanabh* is used for therapeutic purposes and *Upavisha* like *Jaypala, Dhatura, Bhallataka, Vijaya, Ahiphena, Langali Arka, Karveer, Gunja, Snuhi, Kuchala,* are also used for therapeutic purposes^{17,18}. If they are used without purification they show adverse effects as mentioned in Table no 1. It is a matter of discussion and research that after purification how many dreadful qualities of poison are diminished to make it useful therapeutically. Poisons are highly potent and fast-acting drugs; they can be used as a catalyst to enhance the drug with which it is used. But before using poison they should be purified (mentioned in Table no 2)

to reduce its fatality. *Vatsanabha* (*Aconitum ferox*) According to *Bruhatrayee* it classified under *Sthavar Visha* and under *Mahavish* as per *Rasatarangini* and *Nighantu Ratnakar*. When *Vatsanabha* is used without purification it shows symptoms like tingling followed by numbness in the mouth and pharynx spreading to the whole body, nausea, vomiting, diarrhea, alternate contraction and dilatation of pupils and impaired vision, vertigo, muscle spasm, ataxia irregular pulse, fall of blood pressure labored breathing, cardiorespiratory failure. All parts of the plants are poisonous but least poisonous when the plant is young and most poisonous when it blooms and moderately poisonous when seeds ripen. Active principles present in it are Aconitine, pseudoaconitine, aconin, picroaconitine,

REVIEW ARTICLE

benzoylamine, napelline among which aconitine is most virulent poison. Purification of aconitum ferox Wall. Is mentioned in Ayurvedic text. After purification process, the alkaloid which is present in Aconitum ferox decreases¹⁹. In research study, it has been mentioned that the purified form of A. carmichaeli create cholinergic stimulation which prevents the cold-stress-induced hypothermia and immune-suppression. It has been showed that Cow's urine converts Aconite to a substance which has cardiac stimulant property, and raw aconite has cardiac depressant properties^{20,21}. The opium which is derived from the fruits of *Papaver somniferum* Linn. is a perennial shrub also called as poppy, seeds of these plant is called *Khaskhas* These are harmless as they do not contain the toxic principle of opium morphine. According to *Bhavprakash*, it is mentioned in *Upavish*. Morphine is the active principle and codeine, Papaverine, Narcotine, Heroin, and Pethidene are present in less quantity. Morphine depresses the cortex and the respiratory and cough center in the medulla but stimulates vagus and vomiting centers²². Toxic effects of opium can be reduced by keeping in cold water for 5–6 hr after this process, latex obtained is used in the Ayurvedic medicine²³. The fruit of *Semicarpus anacardium* Linn. is known as the marking nut because its juice is used by washermen as marking on cloth. The juice is brown, oily, and acid. Active principles present in *semicarpus anacardium* are Semicarpol and Bhilwanol.²⁴⁻²⁶ When the juice is applied to the skin it produces irritation and painful blisters.²⁷⁻²⁹ After

purification of *Bhallatak* chemical changes occur in it. These poisonous plants should be used as medicine after purification. The fruit of *Bhallātaka* (*Semecarpus anacardium* Linn. Family: Anacardiaceae) is used in sciatica, asthma, nervous debility, rheumatism, epilepsy, and many more diseases. After purification toxic substances decrease from the plant materials and increase in anacardiol level. Recent research work shows the changes of Rf values of phytoconstituents in purified *Bhallātaka*^{30,31}. *Cannabis sativa* is also known as Indian Hemp according to *Rasatarangini* it is mentioned in *Upavish* and according to *Sushruta* it involves in *Moolvish*. According to modern science it is neurotic cerebral, Delirient, stupifying poison. The active principle present is Tetra-hydroxi –cannabinol, All parts of the plant, contain the active material but its resin contains maximum concentration, then in flowers and then in leaves³². Leaves of *Bhanga* Linn. Are bitter, astringent, stomachic, analgesic, aphrodisiac, alterative, and abortifacient. It is used as medicine in the treatment of hysteria, insomnia, gonorrhea, colic, tetanus, and hydrophobia. Convulsions, nostalgia, abdominal disorders, malarial fever, dysentery, diarrhea, skin diseases. More use causes dyspepsia, cough, impotence, melancholy, dropsy, restlessness, and insanity. In order to reduce toxic effects, *Bhangā* used after purification^{33,34}. *Dhattūra* (*Datura metel* Linn.) belong to Solanaceae family. Among all parts of the plant seeds and fruits are more poisonous.

The active principle contains the alkaloids, laevo
September 10th 2023 Volume 19, Issue 2 Page 111

REVIEW ARTICLE

hyoscyamine, scopolamine and atropine³⁵⁻³⁸. The alkaloid of *Dhatūra* stimulate the higher centers of the brain. They reduce the secretion of sweat and saliva, dilate cutaneous blood vessels, and dilate the pupil and the heat-regulating centre situated in the floor of the third ventricle. The symptoms are described as dry as a bone, red as beet, blind as bat, hot as a hare, and mad as a wet hen³⁹. Due to the purification of *Dhattūra* Complete removal of scopolamine and partial removal of hyoscyamine. *Guñjā* (*Abrus precatorius* Linn.) belong to the family Fabaceae. It is mentioned in *Moolvish* as per *Acharya Sushruta* and as per modern science it is irritant, organic, vegetable poison. It has toxalbumin abrin. Its action like is like viperine snake bite⁴⁰. It is thermo labile poison i.e. abrin is destroyed on boiling. Abrin is an irritant and CNS depressant. It is antigenic in nature and causes agglutination haemolysis and cell destruction. On external application also it produces rash, redness, itching, and burning sensation⁴¹. Roots, seeds, and leaves have been used traditionally for therapeutic purposes after being processed through purification^{42,43}. It is a very important procedure to avoid hazardous effect of the toxic principle present in seed. It is proved that *Shodhana* decreases the percentage of Abrin.^[44] In Ayurveda after *Shodhana* it is used in various formulations⁴⁵. Croton tiglium seeds are well-known by the name of *Kumbhinī* in Ayurveda⁴⁶. For its toxicity (severe purgative action). Yet in Ayurveda, *C. tiglium* seeds are used in the treatment of severe constipation after

its *Śhodhana* with cow's milk. In the research study, the level of phorbol ester and crotonic acid was quantified by HPLC method. During the process of *Śhodhana*, milk removes two constituents from the seeds. Both the constituents are reported to have irritant activity on the gastrointestinal tract⁴⁷⁻⁴⁹ and subsequently responsible for severe purgative action. It may be speculated that reduction in the toxicity of *C. tiglium* seeds is due to the reduction of the level of these two constituents along with the other constituents. That is why *C. tiglium* seeds are used for the treatment of constipation in Ayurveda after its *Śhodhana*. Results obtained from physicochemical parameters before and after purification indicate the significant change in ash value, water and alcohol soluble extractive value, acid value, and saponification value. *Karavīra* (*Nerium indicum*; Family: Apocynaceae) shows anti-stress, neuroprotective, anti-inflammatory, antifungal, cardiotoxic and anticancer activities⁵⁰. Cardenolides is the toxic glycoside affect cardiac system which is present in this plant^{51,52}. Due to purification process the percentage of cardenolide and oleandrin decreases. *Gloriosa superba* Linn. (Family: Liliaceae) is a climber, it is used as in rheumatoid arthritis, gonorrhoea, fever inflammations, gout, and in promoting labor pains. The toxic substance present in these plant is colchicine which is cardio toxic⁵³⁻⁵⁷. The other toxic alkaloids present in these plant is gloriosine^{58,59}. After the *Śhodhana* process the percentage of colchicine decreases⁶⁰. In Ayurveda after

September 10th 2023 Volume 19, Issue 2 Page 112

REVIEW ARTICLE

purification all poisonous drugs are used in various formulation.

CONCLUSION

From the above study it may be concluded that drug contains toxic alkaloids which may be purified by above methods and after *Shodhana* (purification) they are used for various formulations as well as used as single drugs which suggest its importance in medical practice.

REVIEW ARTICLE

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REVIEW ARTICLE

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