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Review Article

POISONOUS PLANTS AS MEDICINE AFTER SHODHANA: A REVIEW

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ABSTRACT

Poison itself is life giving, pacifying the three doshas, promoting and rejuvenating if used properly. It is said that after purification treatment, the same poison becomes deprived of its all demerits & only purified 'visha' should be used in the therapeutic formulation. Ayurveda involves the use of drugs obtained from plants, animals and mineral origin. Shodhana process is the only bridge between visha and medicine. Vatsanabha, Bhallataka, kuchala, vacha and Gunja etc are some interesting examples of toxic plants, in which Aconite, Bhilawanols, Strychnine, B-Asarone, abrin etc. which are some of the toxic elements are present. The present article is studied after specific discussion and understand the scientific basis of the alternative use of toxic plants as medicine after Shodhana (purification process).

Keywords: Ayurveda, Poisonous plants, Shodhana, Toxicity, Detoxification.

INTRODUCTION

In Ayurveda, plants are the main sources of medicine. Plants having various phytochemicals are still in use either as crude form or after processing. The poisonous plants categorized in Visha and Upvisha in Many Ayurveda Texts¹ such as Yoga Ratnakar and Rasa Ratna Samuchhaya & in Schedule – E of Drugs and Cosmetics Act (1940)².

“Samskara” i.e. refinement is the most important measure used. “Sodhana” is the detoxification purification process by which the medicine is used for medicinal purposes. It is specially designed for the drugs from mineral origin.

Using proper processing methods, Visha (poison) can be converted into Amrita (nectar) and using inappropriate methods nontoxic materials become toxic³. Active constituents of many plants may exert severe effects at high concentration^{4,5}. The purification processes are basically intended to reduce the toxicity level to a body sustainable limit and to reduce the toxic constituents to some extent or relatively less toxic substances by enhancing their biological efficiency. Ayurvedic Classics have also emphasized various methods of shodhana to overcome the undesired effects¹²⁻¹⁴.

PURIFICATION OF VARIOUS POISONOUS PLANTS

Vatsanabha (*Aconitum Chasmanthum*)

The synonym of the plant is Vatsanaga, Kshveda, Visha & Amrita. The used part is root, which is extremely poisonous, but useful in the treatment of various diseases, such as fever, Rheumatoid Arthritis, Sciatica. Hypertension and also act as

(Immunomodulator) “Rasayana” after the purification. The purification process includes swedana in dola yantra using Godugdha for 3 hrs daily for 3 consecutive days. If there is no tingling sensation and numbness of the tongue means it is free from toxicity. After Shodhana process the total process the total alkaloid content decreases²⁵.

Isolated compound (Aconite) from Vatsanabha at a dose of 2 mg can cause death, while 1 gm is fatal for human beings.

It has been reported that Gomutra converts Aconite to a compound with a cardiac stimulant property, whereas raw Aconite showed cardiac depressant properties^{8,9}. Both type of Shodhana, either by Godugdha or Gomutra makes Aconite devoid of cardiac & neuro muscular toxic effects without affecting its antipyretic activity⁵. *A. chasmanthum* showed toxic effects on kidney and liver. Sodhana with Gomutra reduces the toxic effects significantly¹⁰.

Main dose of Vatsanabha is 10-20 mg twice daily with honey or milk. Precautions for the patient using Aconite should avoid heat producing food as well as drinks and alcohol. Borax and Alum are antidotes of Aconite poisoning.

Vishatinduka (*Strychnos nuxvomica*)

It is also known as Kuchela, Kuchila, Vindu, Tinduka, Karaskara, Ramyaphala, Kupaka, Kalkuta, & Visamushtika. Main part is seed. It contains 2 active alkaloids (Strychnine & Brucine), which are highly poisonous¹¹. It reduces fat including Cholesterol from the body & diuretic also. Extensive use causes nervous disability, paralysis & weakness of limbs. Classical method includes seeds should be tied in a piece of

cloth and made into potali & soaked in Dola Yantra for 3 hrs by adding Cow's milk. Then washed with warm water, the outer covering of seed should be removed by scraping with a knife and after drying in the sun, seed kernels should be cut into pieces and fried in Cow's milk Ghee²⁵. Other method is Shodhana in Gomutra for seven days.

Detoxification of Kupilu might be due to the chemical changes that causes N-oxidation and conversion of Strychnine and brucine into less toxic derivations as isostrychnine, isobrucine, strychnine N-Oxide, brucine N oxide and reduced level of loganic acid content of the seeds^{4,12,13}.

Larger doses of Strychnine are known to be lethal,¹⁵ but lower doses are stimulator. It has been reported that Shodhana processes of Kupilu enhances its hepatoprotective potency¹⁶.

Gunja (*Abrus precatorius*)

Its synonyms are Raktika, Rakta, Tamrika, Shitapaki, Bhilla, Bhusanika, Arund, Chudamani, Sikhandi, Kakanati, kamboj, Krishnachudika etc. Its leaves and roots are non toxic, but seeds are toxic. If used without appropriate purification, it causes vomiting and diarrhea. Since ancient times it been used as fish poison, arrow poison and for criminal purposes of poisoning both humans and cattle.¹⁴ It contains a toxic lectin, Abrin, a fat splitting enzyme, urease, abarnin and steroidal oil. Gunja seeds should be crushed and tied in a piece of cloth in the form of a potali and cooked in Dola Yantra with cow's milk for 3 hours, then washed with warm water and dried. It is useful in treatment of leucoderma, impotency, and urustambha and also used as oral contraceptive.

During the Shodhana process, color of the media changes due to the removal of colored material from the endosperm of the seeds and there is loss in weight¹⁷. A major part of Hypaphorine might have undergone transformation into abrin, by reduction of its tertiary amino group into primary Amino gr % of protein and also reduces after shodhana process¹⁸.

Usually the dose is 50-150mg twice daily on empty stomach with honey or milk. If nausea occurs. It can be used after food also.

Dhatra (*Dhatura metal*)

It is also known as Dhatra, Kitava, Unmatta, Dhurta, Swarna, Kanaka, Satha, Kantakaphala, Shivashekhara etc. The entire plant is used in medicine but its seeds are exceedingly potent as therapeutic agent, but highly toxic due to presence of alkaloids in them. Adverse effects are dryness, excessive thirst, cramps, unconsciousness and giddiness. It is due to anticholinergic property of alkaloids present in this plant. For Shodhana, seeds of Dhatra are tied in a piece of cloth in the form of a Potali, it should be cooked in a Dola Yantra by adding Cow's urine or Cow's milk for 3 hrs. These seeds should be washed with warm water and dried in the sun^{6,9}. After Shodhana, reduction in total alkaloid content and increase in total protein content was found. Complete removal of Scopolamine and partial removal of hyosciamine reflects the importance of shodhana in Dhatra seeds²⁰.

Dhatra is used in the treatment of oedema, Asthma, Kushtha, Krimi, lumbago, Rheumatism, Gout and Colic pain. The common dose is 25-50mg with cow's milk. To protect from its adverse effects, mixture of Sharkara and cows milk should be given.

Bhallataka (*Semicarpus anacardium*)-

Its synonyms are Bhallata, Tapanana, Agni, Vahni, and Arsurkara. It is a potent drug for nervous debility, rheumatism, epilepsy, sciatica, asthma, chronic constipation, colic pain.²¹ Pericarp of the fruit contains, Tarry oil consisting of anacardic acid 90% and cardol 10%. Other isolated chemical constituents are bhillawanols (Urushiols), Semecarpol and anacardol²².

Impure Bhallataka causes blisters, glossitis, diarrhoea, menorrhagia, ulcers, oedema, and burning sensation. For Shodhana process, the seeds of Bhallataka should be soaked in water and rubbed over a piece of brick till the outer coating is removed. The top portion should be removed with knife and then seeds should be washed with warm water and after that cooked in Dola Yantra by adding cow's milk for 3 hrs, then again washed with warm water and dried¹⁹. During the Shodhana process, coconut oil is applied on the exposed body parts of the person involved in this process. Weight loss observed after shodhana may be due to the reduction of the oil content of the fruits. The increase in ash value may be due to addition of brick powder with plant material²³.

Due to the decarboxylation of the oil, anacardic acid gets converted into the less toxic anacardol. It is possible that a greater percentage of oil might get reduced by soaking the fruits in Gomutra or Godugdha. Brick powder has adsorbent property because of which it absorbs irritant oil in the fruit.²⁴ Normal dose is 125-500mg with milk, butter and ghee. Coconut is a good antidote. Its pulp and water can be used to counteract the toxic effects of Bhallataka.

Bhanga (*Cannabis Sativa*) –

Bhanga is also known as Bhangi, Matulani, Madini, Matuli, Vijaya, Bahuvadini etc. Tender leaves including fruits are known as Bhanga and unpollinated inflorescence is called 'Gaanja'. Bhanga leaves should be soaked in water for 24 hours and squeezed out and then dried. Thereafter, it should be fried in Cow's milk ghee on mild fire. It is used for the treatment of convulsions, Otagia, Malarial fever, Dysentery, Diarrhoea, skin diseases, insomnia, depression, headache, dysmenorrhoea. Its excessive use causes Dyspepsia, Cough, Melancholy, Dropsy, Insanity and restlessness.²⁵ If taken without Shodhana, it causes delirium and giddiness. The common dose is 250-500mg with milk and sugar. To counteract the intoxicating effect, lemon or tamarind juice should be given.

Ahiphana (*Papaver Somniferum*)-

Its synonyms are Aaphuc, Nagfen, Ahiphena, Nifena etc. Major constituents of Opium are Morphine and Papavarine. It is triturated with ginger juice to reduce its toxicity.^{6,19} This process is repeated 21 times. Its fruits are used for the treatment of cough, fever, Proctalgia, low back pain, dysentery, diarrhoea, Amenorrhoea, Menorrhagia etc.²⁶ Dose is ¼ to 1 ratti or 32 to 125mg. Toxic effects of opium can be reduced by steeping in cold water for 5-6 hours.

Langali (*Gloriosa superba*)-

Also known as Halini, Kaliharika, Agni Jiwha, Bahni Shikha, Garbhpatini etc. It is a semi-wooden herbaceous climber which is used in inflammation, Gout, Rheumatoid Arthritis, Gonorrhoea and fever²². The detoxification process involves soaking of roots and seeds in Gomutra for 24 hours and

washing with warm water. Colchicine and Gloriosine is present as an Alkaloid in this plant^{27,28}. The level of the Alkaloids reduces significantly after Shodhana.³¹ It is mainly used externally.

Karvira (*Nerium indicum*)-

Its synonyms are Hyamar, Ashwmar, Aswatak, Ashwaghn. It contains a mixture of toxic cardiac glycosides, the cardinolides³⁰ particularly, Oliandrin and Nerilin. Roots are purified by Swedan process in Dola Yantra using Godugd for 3 hours, then washed with water and dried. After Shodhana, Oliandrin decreases. Karvira is used externally only. It has anti-inflammatory, Anti-fungal, Cardiotonic, Neuro-Protective, Anti-Stress and Anti Cancer activities²⁹

Jaipal (*Croton tiglium*)-

It is a strong Purgative. It is known as Rechak, Sarak, Maldravi, Vibhedini etc. Seeds should be soaked in water for one night, then outer covering is removed. From inside the Kernel, leaf like Cotyledons are also removed. These seeds are now tied in a piece of cloth called Potli and this potli should be soaked in Dola Yantra by adding Cow's milk. Now it is washed with water and dried in the sun. To remove the residual oil, the kernels should be pressed through two blotting papers and stored for 24 hours in a new earthen jar. It is used in Ascites, cirrhosis of liver, Kushtha, intestinal parasites etc. Ashodhit jaipal causes excessive purgation leading to dehydration, cramps, burning sensations and excessive thrusts. Dose is 15-25mg with cold water. If excessive purgation occurs, always use warm water. Borax is an antidote for croton seed poisoning.

CONCLUSION

In this time period, Ayurvedic practitioners developed many traditional methods to convert toxic medicinal plants into useful medicines. Acharyas use many toxic natural drugs either in their crude form or after sodhan processes for treating human ailments. As we know that even a strong poison can be converted to an excellent medicine if processed and administered properly but if handled incorrectly, it may become hazardous. It is good to adopt Shodhan processes as described in ancient texts with modern technology to assess its safety and efficacy. Shodhan can also influence the Pharmacological, Phytocological and toxicological profile of the drug plant. Specific media (Bhavna Dravya) also has an important role in making a drug without side effect. So if process of Shodhan is proper it causes the drug to become nectar.

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