



**IJAPC**

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**Vol. 13 Iss. 1**

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***E ISSN***  
***2350 0204***

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**WWW.IJAPC.COM**

**GGP**



## An Exploratory Review of *Vatsanabha* (*Aconitum ferox* Wall.), the Deadly Plant Poison with Focus on its *Shodhana* (Purification Methods) and its *Pratyoushadha* (Antidotes)

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### ABSTRACT

*Agadatantra* is one among the *Astanga Ayurveda* which deals with the *vishachikitsa* (Clinical toxicology). The *visha* (Poisoning) is dire condition which needs a fast anticipating action, if not leads to the irreversible changes. *Visha* (Poison) is classified into *sthavara* (stable-plant origin) and *jangama* (mobile-animal origin) *visha*. *Sthavara visha* is further classified into *mahavisha* (Potent poison) and *upavisha* (Subpotent poison). *Vatsanabha* is one among the potent *mahavisha*, currently known to mankind, used in the plenty of formulations. If accidentally consumed or used in inappropriate methods, will cause diverse signs and symptoms leading to the life threatening conditions. Literatures of *Ayurveda* explain many methods of *shodhana* for *vatsanabha* (purification methods) which can be adopted following its judicial use. The essential *chikitsa* (therapeutic management) and *pratyoushadha* (counter medicine/antidotes) when poisoned by *vatsanabha* is also well explained. The current paper reports the exploratory review of the drug, its purification methods and antidotes thus screening the poisonous as well as its potential effects.

### KEYWORDS

*Vatsanabha*, Plant Poison, Aconitine, *Shodhana*, *Marana*, *Prathyoushada*, *Vishakalpa*



**Greentree Group Publishers**

Received 20/06/20 Accepted 08/07/2020 Published 10/07/2020



## INTRODUCTION

*Vatsanabha*, cited as a *mahavisha* (potent poison) is a plant found in Himalayan Alpine specially Sikkim in areas ranging from 10000 to 14000 feet in height and in Nepal<sup>1</sup>. Though identified as a most potent cardiac poison, it is used as a therapeutic medicine and also as a *rasayana* (rejuvenator). It is a primary ingredient in plenty of formulations following the accurate *shodhana* (purification methods). Failure to follow the *shodhana* procedure before its utility or in case of errors in purification may lead to the toxic symptoms in the body and thus the knowledge about its *Pratyoushadha* (counter medicine/antidote) is a must for a physician.

*Shodhana* is a term mentioned *Charaka samhitha* as *shauchakarma* or *suddhikarma* (cleansing) referring to the process through which unwanted or toxic properties are removed. It is an essential pharmaceutical process which includes procedures like *Ksalana* (washing), *Mardana / Bhavana* (trituration), heating and dipping etc., carried to purify toxic drugs before preparation of the medicine likely to avoid the untoward effect or adverse effects etc., on consumption. *Shodhana* is of two types *samanaya shodhana* (generalised purification) and *vishesha shodhana*

(specific purification), both focused to remove or reduce the physical, chemical and toxic components from the drugs.

*Pratyoushadha* (counter medicine/antidote) is a concept sited in the traditional textbooks used in *Keraliya vishachikitsa*. The term *Pratyoushadha* is nowhere mentioned in the literatures of *Samhita*. It can be considered as the drug or group of drugs which counteract, reverse or relieve the action of poisonous effect.

### ***Vatsanabha, the mahavisha:***

*Vatsanabha*, a member of Ranunculaceae family, taxonomically identified as *Aconitum ferox* Wall. is placed under Kingdom Plantae and in Ranunculales order. The word *aconitum* refers to monk's hood where the shape of the posterior sepal of the flowers resembles the cowls worn by the monk and the word *ferox* indicates that these species are very poisonous. Derivation of the word *vatsanabha* is from the root word *vatsaannabhyati hinastit*<sup>2</sup>. Referring its different vernacular names<sup>3</sup>, it is found that in Assami the plant is called *vish*, in Bengali *kathvish*, in Bihari *dakara*, in English it is called monks hood, in Gujarati *basing*, in Hindi it is *bachang*, *mithavisha*, *mithateliya*, in Kannada *vasanabhi*, in Malayalam *vatsanbhi*, in Marthi it is termed *bachang*, in Punjabi it is *mohair*, in Tamil *vasanasi* and in Telugu it is *nabhi*.



Focusing the various synonyms in Sanskrit mentioned in the table no. 1, it is found that as it resembles the umbilical cord of calf it is called *Vatsanabha* (*vatsasyanabhirivanabhirasyativa*); as it produces the toxic effects, it is termed *Visha* (*vivishtikaa yam*); as it manifests mental disorder or intoxication in those

who consumed it, it is called *Ksweda* (*Ksweda te mohayati*); as it takes away the life, it is named as *Garala* (*Giratijivam*). The plant is a shrub of 30 to 60 cm height with blue attractive flowers and thorny small fruits. The root or rhizome is the useful part, 9 cm in length, externally brown, internally white, oily and shiny.

**Table 1** Enumeration of the synonyms of *Vatsanabha* according to different authors

SYNONYMS	BP <sup>4</sup>	DN <sup>5</sup>	RN <sup>6</sup>	SN <sup>7</sup>	PN <sup>8</sup>	RT <sup>9</sup>	RJN <sup>10</sup>	SH N <sup>11</sup>
AMRUTHA		+	+				+	
DARADA				+				+
GARALA		+	+	+				+
KALAKUTA				+				
KAKOLA								+
KSHWEDA						+		+
MAHAUSHADA		+	+					
MAHAVISHA					+			
MARANA		+	+					
NAGA		+	+					
NEPALI							+	
PRANAHARAKAM		+						
SHOUKILYA								+
SINDHUVARA	+	+					+	
SAURASTHRAKA								+
STHOKA		+						
TAILAKANDA					+			
UGRAM		+	+					
VATSANABHA	+	+	+	+	+	+	+	
VISHAM	+	+				+	+	+
VISHAMUGRAM		+	+					

B.P. - Bhavaprakasha, R. N. - Raja Nighantu, D. N. - Dhanwantari Nighantu, S.N. - Saraswati Nighantu, P. N. - Priya Nighantu, R.T.- Rasatarangini, RJN- Rasajalanidhi, Sh.N. - Shaligrma Nighantu.

**Table 2** Citation of *Vatsanabha* in various *varga* as per different *Nighantu*:

SL. NO	NIGHANTU	VARGA
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1.	<i>Bhavaprakasha</i>	<i>Dhatvadi varga</i>
2.	<i>Raja Nighantu</i>	<i>Pippalyadi varga</i>
3.	<i>Sodala Nighantu</i> <sup>12</sup>	<i>Candanadi varga</i>
4.	<i>Dhanwanatari Nighantu</i>	<i>Mishrakadi varga</i>
5.	<i>Shaligrama Nighantu</i>	<i>Visa varga</i>
6.	<i>Saraswati Nighantu</i>	<i>Candanadi varga</i>
7.	<i>Priya Nighantu</i>	<i>Shatapusphadi varga</i>
8.	<i>Kaiyyadeva Nighantu</i> <sup>13</sup>	<i>Mishraka varga</i>

**Table 3** Enumeration of the Different procedure of *Shodhana*

Sl. No.	Text	Purifying Media	Method	Process Time
1.	<i>Rasa Tarangini</i> <sup>28</sup>	<i>Gomutra</i> (Cow's urine)	Pieces of <i>vatsanabha</i> in size of <i>chanaka</i> immersed <i>ghatayantra</i> (pot) with media, placed under bright sunlight for 3 days, every replacing with fresh <i>gomutra</i> . 4 <sup>th</sup> day, dried after removing the outer layer and stored. <sup>35</sup>	4 days
2.	<i>Rasa tarangini</i> <sup>28</sup>	<i>Godugdha</i> (cow's milk)	<i>Swedana</i> (Steam cooking) of <i>pottali</i> (pack) with small pieces of <i>vatsanabha</i> in size of <i>chanaka</i> (size of chick pea) in <i>dolayantra</i> (vessel), later collected after it cools on its own, dried and stored.	1 or 2 <i>yama</i> (3 or 6 hours)
3.	<i>Rasa tarangini</i> <sup>28</sup>	<i>Aja dugdha</i> (goats milk)	<i>Swedana</i> of <i>pottali</i> with small pieces of <i>vatsanabha</i> in size of <i>chanaka</i> in <i>dolayantra</i> , collected after it cools on its own, dried, stored.	3 hours
4.	<i>Rasendrasara sangraha</i> <sup>29</sup>	<i>Gomutra</i>	Pieces of <i>vatsanabha</i> in size of <i>chanaka</i> are given <i>bhavana</i> (trituration) in <i>khalwayantra</i> (mortar and pestle)	3 days consistent
5.	<i>Rasendrasara sangraha</i> <sup>30</sup>	<i>Triphala qwatha</i> alone or with <i>Ajadugdha</i>	<i>Swedana</i> of <i>pottali</i> with small pieces of <i>Vatsanabha</i> in size of <i>chanaka</i> in <i>dolayantra</i> , collected after it cools on its own, dried and stored.	
6.	<i>Rasendrasara sangraha</i>	<i>Gomutra</i>	<i>Swedana</i> of <i>pottali</i> with 10 <i>tola</i> of small peices of <i>vatsanabha</i> in <i>dolayantra</i> , collected after it cools on its own, dried, stored.	24 hours
7.	<i>Ayurveda prakasa</i> <sup>31</sup>	<i>Godugdha</i>	<i>Swedana</i> of <i>pottali</i> with small pieces of <i>Vatsanabha</i> in <i>dolayantra</i> , collected after it cools on its own, dried, stored.	5 hours
8.	<i>Ayurveda prakasa</i> <sup>32</sup>	<i>Mahisha shakruth</i> (buffaloes dung)	<i>Vatsanabha</i> pieces placed in the <i>patra</i> tarnished with <i>mahisha shakruth</i> (Buffalo dung) and packed as a ball, burnt with high temperature using <i>karisha</i> . After cooling by its own the pack is broken open to collect the purified <i>vatsanabha</i>	1 <i>prahara</i> (3 hours)
9.	<i>Yogartnakara</i> <sup>33</sup>	<i>Godugda</i>	<i>Swedana</i> of <i>pottali</i> with small pieces with <i>vatsanabhain dolayantra</i> , later collected after it cools on its own, dried , stored	1 <i>prahara</i> (3 hours)
10.	<i>Yogartnakara</i>	<i>Godugdha</i> and <i>Jala</i>	<i>Swedana</i> of <i>pottali</i> with small pieces with <i>Vatsanabhain dolayantra</i> , collected after it cools on its own, dried , stored	1 <i>prahara</i> (3 hours)

### Marana of *Vatsanabha*<sup>34</sup>

*Shodita* (purified) *vatsanabha* and *shodita* (pure) *tankana* (borax) is taken in equal

quantity, subjected for trituration. These will be able to cure the all diseases and will not give rise to any toxicity on intake. Also



*shodita vatsnabha* and *shodita tankana* is taken in equal quantity, mixed with *ushana* (*maricha-Piper nigrum* Linn.), taken in double the quantity. This is subjected to the trituration by which the *vatsanabha* will attain the *mrita* (inactive) property.

#### **Storage of Vatsanabha<sup>35</sup>**

Following the *shodhana* methods, the purified *vatsanabha* is stored in the cloth immersed in the *raktha sarshpa taila*. Otherwise it will lose its potency.

#### **Amayika prayoga in bite cases<sup>36</sup>**

In *musaka visha* (rat bite), *suddha vatsnabha* is triturated with leaves and flowers of *shirisha* (*Albizzia lebeck* (L.) Benth.) and administered daily in appropriate dose. In *sarpa visha* (snake bite), *shudda vatsanabha* is triturated with *kadali* (*Musa sapientum* Linn.) *kanda swarasa* mixed with *ghrita* (ghee), administered orally and same is applied over the bite site. In *vrischika visha* (scorpion bite), *suddha vatsanabha* is triturated with *tila* (*Sesamum indicum* Linn.) *taila* (oil) and applied daily as a *lepa* (anoint) over the bite spot.

#### **Hazardous of Vatsanabha:**

Study on medico-legal aspects<sup>37</sup> denote that aconite is very familiar substance used profusely in Indian medicine. Accidently it may be mistaken as the horse radish root due to similar in nature. Tincture is used for deglutition in overdoses and liniment has

taken internally unknowingly. Sometimes it is supplementary in Indian liquors to intensify the effects of intoxication. Homicidal poisoning is rare. History records that it was used as a poison to destroy troublesome relatives and by husbands to destroy unfaithful wives by administering to victim with the betel leaf to facade the taste. Aconite is extremely unstable and it is destroyed by the putrefactive process and therefore it cannot be detected by the chemical analysis. Aconitum is rarely used as the abortifacient and cattle poison. Aconite is most often used by tribal as the arrow poison.

The literature have identified the fatal dose<sup>38</sup> of *vatsanabha* root as 1-2 grams; of tincture as 2-30ml, of aconitine as 2-5mg, of aconite extract as 250mg and of aconitine nitrate as 4mg. Fatal period<sup>39</sup> is 1 to 6 hours and thus the treatment for the *vatsanabha* poisoning is to be quickly planned through *prathoushadhi*. Route of elimination<sup>40</sup> for aconite mainly is through urine, traces in saliva, sweat and bile and thus the counter medicine should also stimulate the excretory areas to excrete it efficiently as to avoid its accumulation in the body which may lead to further complications in health.

#### **Pratyoushadha:**

For saving the person affected with symptoms and signs related with



*vatsanabha* poisoning, a set of medicines are mentioned in the literatures. These medicines may be used to counteract the

toxic effect and thus its knowledge to a physician practicing *vishakalpa* is inevitable.

**Table 4** Enumeration *Pratyoushadha* according to different texts

Sl. no	Text	<i>Pratyoushadha</i>
1.	<i>Rasendra chintamani</i> <sup>41</sup>	<i>Haridra</i> ( <i>Curcuma longa</i> Linn.) and <i>Meghanada</i> ( <i>Amaraanthus tricolor</i> ) <i>swarasa</i> (juice extract). <i>Sarapakshi</i> ( <i>Ophiorrhiza mungos</i> ) or <i>tankana</i> (borax), <i>Putranjivaka majja</i> (Pulp of fruits of <i>Putranjiva roxburghii</i> . Wall. ) along with <i>nimbu</i> ( <i>Citrus medica</i> Var. <i>acida</i> ) <i>swarasa</i> .
2.	<i>Rasendra sambhava</i> <sup>42</sup>	<i>Patavanavrukshayasa rasa</i> ( <i>Erythrina variegata</i> L.) 1 <i>pala</i> and <i>sharkara</i> (sugar)
3.	<i>Rasa jalanidhi</i> <sup>43</sup>	<i>Jati</i> ( <i>Jasminum officinale</i> L.), <i>neeli</i> ( <i>Indigofera tinctoria</i> Linn.), <i>saindhava</i> (Rock salt), <i>kakamachi</i> ( <i>Solanum nigrum</i> Linn.), <i>aparajita</i> ( <i>Clitoria ternatea</i> Linn.), <i>triphala</i> , <i>kustha</i> ( <i>Saussurea lappa</i> CB Clarke), <i>madhuka</i> ( <i>Yastimadhu- Glyzcerhia glabra</i> Linn.), <i>jiraka</i> ( <i>Cuminum cyminum</i> Linn.), <i>kshiravruksha</i> Powdered Bark of <i>Arjuna</i> ( <i>Terminalia arjuna</i> W. & A.) mixed <i>madhu</i> (honey) and <i>dadhi</i> (curds). <i>Tankana</i> mixed with honey and juice of <i>meghanada</i> ( <i>Amaraanthus tricolor</i> ).
4.	<i>Rasa jalanidhi</i>	<i>Goghrita</i> along with <i>bhargi</i> , <i>Dadhi</i> , <i>Snuhi kshara</i> (Alkali of <i>Euphorbia nerifolia</i> Linn.), <i>Sariva</i> ( <i>Hemidesmus indicus</i> R.Br), <i>Tanduliya</i> , <i>Dhooma</i> , <i>Manjista</i> ( <i>Rubia cordifolia</i> Linn), and <i>Yastimadhu</i> ( <i>Glyzcerhia glabra</i> Linn.)
5.	<i>Prayoga samuchhyaa</i> <sup>44</sup>	<i>Triphala Kwatha</i> <i>Neelimula</i> (roots of <i>Indigofera Tintorica</i> Linn.) <i>Maricha kwatha</i> ( <i>Piper nigrum</i> Linn.) <i>Triphala kwatha</i> , <i>Ghritha</i> and <i>Kshira</i>
6.	<i>Visha vaidya jyotsnika</i> <sup>45</sup>	<i>Nirvisha</i> ( <i>Delphinium Denudatum</i> Wall.) <i>Neelimoola</i> ( <i>Indigofera Tintorica</i> Linn.).
7.	<i>Kriyakoundi</i> <sup>46</sup>	<i>Maricha</i> ( <i>Piper nigrum</i> Linn.) <i>Kashaya</i> , <i>Tandulodaka</i> , <i>Triphala Kashaya</i> . <i>Chitraka swarasa</i> ( <i>Plumbago zyelonica</i> Linn.) <i>Nirvisha</i> ( <i>Delphinium Denudatum</i> Wall.) <i>Gomutra</i> (cow's urine) with <i>Navaneetha</i> (butter)

Use of emetics or stomach wash a solution containing animal charcoal or tannic acid or milk is also advised as treatment<sup>47</sup>. Body heat should be maintained, Atropine is administered. Oxygen and artificial respiration may be restored. IV fluids like saline may be administered.

If poisoned by the *mahavisha*, examination of the body will display following post-mortem appearances<sup>48</sup> which are not very

characteristic. Lungs, kidneys and brain are congested. Fragments of the roots may be found in the stomach. The mucous membrane of the stomach and small intestines may be congested and inflamed. The bronchial tree may show frothy mucus. The alkali present in wood ash meant to preserve the vomit may destroy the aconite therefore acetic acid is added to rectified



spirit in the ratio 1:2 and such acidified spirit is added to preserve the vomit.

## CONCLUSION

*Vatsanabha*, a versatile drug in *Ayurveda literatures*, it has been judiciously used in different minor to challenging ailments but if it is used improperly not following the principles of preparation of its formulations, planning its posology etc. it can lead to severe adverse reactions. The signs and symptoms depicted in both modern and ancient literatures are very similar indicating ultimately the death by cardiac arrest. Thus one should have a proper understanding regarding the methods of *shodhana* and about *prathyaoushada* to tackle the problem. *Shodhana* is tried in different media and most adopted process being the *swedana* (steam cooked) in *dolayantra* (typical vessel) for 3 hours. This method is easy to adopt and comparative analytical study about the different media used can illuminate the toxicity levels tackled in the purification procedure. Media used in the *shodhana* procedures may also condition the useful part so as to protect it from the infestation of the insects, a common problem noticed for aconitum species making them brittle. *Marana* procedure follows the *shodhana* and this includes the

procedure of introducing the borax with *vatsanabha* which can improve the cardio-protective nature of the formulations prepared thereafter. *Pratyoushadha* suggested by the literatures are used for the counteracting the cardio-poisonous affect and most of them are cardio protective natured herbs which can be easily procured and be administered. And thus in this regard, comprehensive information is inevitable to the physician practicing *vishakalpa*.





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