

## Toxicological Review on 'Upavisha' in Ayurveda

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## Abstract

In classical Sanskrit literature, *Ayurveda* was called "the science of eight components" (Sanskrit *aṣṭāṅga*) a classification that became canonical for *Ayurveda*. In Ayurvedic literature *Upavisa* are the group of drugs which were less toxic in nature and not so lethal but produce certain toxic symptoms on consumption or administrations. Our ancient *Acharya* suggests that the poison can become a very good medicine if it is administered properly. This review is a sincere attempt to summarize the information concerning about semi poisonous drugs described in Indian system of medicine in respect to their literary, pharmacological activity, their toxicological effect, fatal period, fatal dose, treatment, postmortem appearance and medicolegal aspect.

## Keywords

*Ayurveda, Agadatantra, Upavisha, poison*

## INTRODUCTION

*Ayurveda* is the science of health and healing. It deals with positive health and describes the ways of life pertaining to its existence, maintenance, protection from diseases and cure when it is victimized by them. It also teaches how to expand the span of life<sup>1</sup>. In classical Sanskrit literature, *Ayurveda* was called "the science of eight components" (Sanskrit *aṣṭāṅga*), a classification that became canonical for *Ayurveda*<sup>2</sup>.

1. *Kāya-chikitsā* (Internal medicine)
2. *Kaumāra-bhṛtya* (Pediatrics)
3. *Śhalya-chikitsā* (Surgery)
4. *Śālākya-tantra*  
(Ophthalmology / ENT)

5. *Bhūta-vidyā*  
(Demonology / exorcism / psychiatry)
6. *Agada-tantra* (Toxicology)
7. *Rasayana-tantra* (Elixirs)
8. *Vājīkaraṇa tantra* (Aphrodisiacs)

*Agadatantra* is one of the incredible branch of indigenous branches derived from the ancient science of *Ashtanga Ayurveda*. It is still practiced extensively, especially in rural and tribal areas. It is use for diagnosis of poisons and there treatment and also use medicolegal cases in the court of law for the justice.

It has been stated categorically that strong poisons could be the best medicine, if it is used after proper detoxification (*shodhana*), in proper therapeutic dose and formulation.

On the contrary, a good medicine may affect adversely unless it is used for proper person in proper dose<sup>3</sup>.

### **Upavisha**

Ayurveda has been described eleven number of *Upavisha* are as follows<sup>4</sup>-

*Vishatindikabeejamcha twahiphenascha rechakam |*

*Dhatturbeejam vijaya gunja bhallatakahyah ||*

*Arkaksheeram snuhiksheeram langali karavirakam |*

*Samakhyato ganooyam tu budhairupavisharbhidh: ||*

*Vishatindikabeeja, ahiphena, rechaka, dhatturbeeja, vijaya, gunja, bhallataka, Arkaksheera, snuhiksheera, langali, karavirakam* are the *Upavisa*

described in the literature which can become a very good medicine if it is administered properly. It is a sincere attempt to summarize the information concerning about *Upavisa* drugs described in Indian system of medicine in respect to their Ayurvedic literature, pharmacological activity and their toxicological effect, fatal period, fatal dose, treatment and postmortem appearance and medico legal aspect one by one.

### **1. Kupeelu**

It consists of dried seed of *Strychnos nux-vomica* Linn. of family Fabaceae.

**Vernacular names**<sup>5, 24, 25</sup>

Sanskrit: *Karaskara,*

*Visatinduka, Kakatinduka*

Hindi: *Kuchala, Kuchila,*

*Vishtenduka*

English: *Poison-nut tree, Nux vomica*

**Description**<sup>5</sup>

*Macroscopic*

**Occurrence:** Hard, silky to touch with a satiny sheen.

**Shape:** Disc-shaped, almost flat

**Colour:** Greenish-grey to grey

**Odour:** Odourless

**Taste:** Bitter

**Extra features:** Seeds are umbonate but a few seeds somewhat irregularly bent, 10 to 30 mm in diameter, 4 to 6 mm thick, margin rounded or depressed; when cut open, endosperm found to be horny, having a central cavity in which the embryo is situated with two small, thin, cordate, leafy cotyledons with 5 to 7 veins and a terete radical.

**Pharmacology:** Antimicrobial activity<sup>6</sup>, antibacterial activity<sup>7</sup>, anticancer, antimicrobial, anti-inflammatory,

antioxidant, and anti  
feederent activity<sup>8</sup>

**Ayurvedic pharmacology<sup>5,9, 24, 25</sup>:**

*Guna:* Laghu, Ruksha,

*Tiksna*

*Rasa:* Katu, Tikta

*Vipika:* Katu

*Virya:* Ushna

**Classification<sup>10</sup>:**

**Ayurveda:** Sthavara visha,

*Upavisha, phala visha (beeja visha)*

**Modern medicine:** Neurotoxic spinal  
excitant poison

**Active principle<sup>11</sup>:** Strychnine, Brucine,  
Loganin

**Signs and Symptoms<sup>12</sup>:**

Bitter taste, twitching  
and stiffness of  
muscles of face and  
neck, convulsions  
initially clonic and  
then tonic,  
opisthotonus  
posture,  
emprosthotonus  
posture,  
pleurosthotonus  
posture, chest  
becomes fixed,  
breathing difficult,  
cyanosis, blood  
stained froth at nose  
and mouth, dilated  
pupils, painful death.

**Fatal period:** 1-2 crushed seed (15-  
30 mg of strychnine)

**Fatal dose:** 1-2 hrs

**Treatment:** Shift patient to dark  
quite room,  
anaesthetize the

patient, gastric lavage  
with KMnO<sub>4</sub> antidote  
phenobarbitone  
sodium IV,  
mephanesin as muscle  
relaxants, artificial  
respiration.

**PM Appearance:** Features of asphyxia,  
rigor mortis appears early

**Medico legal Aspect:** Death is usually  
accidental, rarely used  
as suicidal and  
homicidal. Used as  
aphrodisiac, cattle and  
arrow poison and to  
kill dogs and rats.

**Important formulations:**

*Maha Vishagarbha  
Taila, Ekanggavira  
Rasa, Vishatinduka  
Vati, Krimimudgara  
Rasa,  
Navajeevanrasa,  
Agnitundirasa,  
Laxmivilasarasa,  
Shulnirmulanarasa,  
Suptivaatarirasa,  
Vishatinduka Tail<sup>13, 24,  
25</sup>.*

**2. Ahiphena**

It is dried juice of *Papaver somniferum*  
Linn. of family Papaveraceae.

**Vernacular names<sup>24, 25</sup>**

Sanskrit: Ahiphena, Aphuka.  
*Tilabheda*

Hindi: Afim

English: Opium, Poppy plant

**Description<sup>14</sup>**

*Macroscopic*

**Occurrence:** Dried juice

**Colour:** White  
**Odour:** Opium  
**Taste:** Bitter  
**Pharmacology<sup>15</sup>:** Narcotic, sedative, hypnotic, analgesic, sudorific, anodyne, antispasmodic  
**Ayurvedic pharmacology<sup>9, 24, 25</sup>:**  
*Guna:* Ruksha, Suksma  
*Rasa:* Tikta, Kashaya  
*Vipika:* Katu  
*Virya:* Ushna  
**Classification<sup>10</sup>:**  
**Ayurveda :** Sthavara visha, Upavisha  
**Modern Medicine:** Neurotoxic Cerebral Somniferous vegetable poison  
**Active Principle<sup>11</sup>:**  
Morphine ,Codeine, Papaverine, Thebaine, Noscapine, Narcine  
Semi synthetic derivatives – Heroin (brown sugar)  
Synthetic derivatives – Pethidine.  
**Signs and Symptoms<sup>12</sup>:**  
Coma, typical opium smell, cyanosis. Froath at nose and mouth, pin point pupils, cheyne stroke breathing, slow pulse, moist cold skin, hypothermia.  
**Fatal dose:** 200 mg as a morphine. 2 gm as an opium. 10 ml of tincture of opium. Codeine – 500 mg

Heroin – 50 mg.  
Pethidine – 1 gm.  
**Fatal Period :** 6 to 12 hours  
**Treatment:** Gastric lavage, enema and purgatives , high tension oxygen and Coramine, Naloxone 0.4- 2mg IV every 5 min as antidote.  
**PM Appearance:** Smell of opium, face deeply cyanosed, black PM lividity, froth at nose and mouth, viscera congested, signs of coma or comato-asphyxia.

**Medicolegal Aspects:** Opium is the ideal suicidal poison, commonly used for suicidal, homicidal and accidental poisoning is common in infants and children. Morphine is a drug of addiction, it considered an aphrodisiac.

**Important formulations:** *Vedanantakrasa, Nidrodayarasa, Ahiphenasava, Harsodayavati, Mangalodayavati*<sup>13, 24, 25</sup>.

### 3. *Jayapala*

It consists of dried seed of *Croton tiglium* Linn. of family Euphorbiaceae.

#### **Vernacular names<sup>16</sup>**

Classical Name:

Sanskrit: *Jayapal, Dravanti, Mukula, Tintidiphala*

Hindi: Jamalgota

English: Croton

**Description<sup>16</sup>**

*Macroscopic*

**Occurrence:** Seed albuminous, ovate, oblong, slightly quadrangular, convex on dorsal and somewhat flattened on ventral surface

**Colour:** Brown

**Odour:** Odourless

**Taste:** Sweet

**Extra features:** Seeds are about 12 mm in length and resemble castor seed in shape, dull cinnamon-brown, often mottled with black due to abrasion in testa, caruncle easily detached and usually absent, hilum on ventral side less distinct than that of castor seed, raphe runs along ventral surface of seed, terminating in a dark chalaza at opposite extremity, kernel yellowish and oily, consisting of a large endosperm, enclosing papery cotyledons and a small radicle, no marked odour; kernel gives at first oily taste

followed by an unpleasant acidity.

**Pharmacology:** Cathartic, rubefacient, irritant, purgative, analgesic, antimicrobial, antileukemic action, Antinociceptive and Smooth Muscle relaxant action<sup>15, 17-20</sup>.

**Ayurvedic pharmacology<sup>9, 16, 24, 25</sup>:**

*Guna:* *Guru, Snigdha*

*Rasa:* *Madhura*

*Vipaka:* *Madhura*

*Virya:* *Shita*

**Classification<sup>10</sup>:**

**Ayurveda:** *Sthavar visha, beejvisha, upavisha*

**Modern science:** Irritant vegetable poison

**Active principle<sup>11</sup>:** Fixed oil, Resins & Phorbol esters, Croton, Crotonocide

**Signs and Symptoms<sup>12</sup>:**

GIT irritation, salivation, bloody stools, tachycardia, vertigo, collapse and death, locally vesication, burning and redness of skin

**Fatal dose:** 4-5 crushed seeds, 20 drops of oil

**Fatal period:** Variable

**Treatment:** Warm water for drink, general lines of treatment.

**PM Appearance:** Signs of gastroenteritis.

**Medicolegal Aspects:** Poisoning is commonly accidental and rarely suicidal or

homicidal,  
sometimes used as  
abortifacient.

**Important formulations:** *Ichhabhedhi Rasa*,  
*Avakancuk Rasa*, *Jalodari Rasa*<sup>13,24,25</sup>.

#### 4. Dhatura

It consists of dried seeds of *Datura metel*  
Linn. syn. *D. fastuosa* L., *D. alba* Ramph;  
*D. cornucopaea* Hort. of family Solanaceae.

#### Vernacular names<sup>21</sup>

Sanskrit: *Kanaka*, *Dhustura*,  
*Ummatta*

Hindi: Dhatura

English: White Thorn Apple

#### Description<sup>21</sup>

Macroscopic

**Occurrence:** Seed reniform,  
compressed, flattened, surface finely pitted

**Colour:** Light brown

**Odour:** Odourless

**Taste:** Bitter

**Extra features:** Seeds are about 0.6  
cm long, 0.4 cm wide;  
light brown to  
yellowish-brown in  
colour; thicker  
towards the curved  
edge, which is rugose;  
large, pale strophiole  
near micropyle.

**Pharmacology:** Anticatarrhal,  
febrifuge,  
antidiarrhoeal,  
antidermatosis,  
narcotic, analgesic  
and CNS depressant  
action<sup>15, 22, 23</sup>

**Ayurvedic pharmacology**<sup>9, 21, 24,25</sup>:

**Guna:** *Tikta*, *Ruksha*, *Guru*  
**Rasa:** *Madhura*, *Katu*,  
*Kashaya*, *Tikta*

**Vipika:** *Katu*

**Virya:** *Ushna*

#### Classification<sup>10</sup>:

**Ayurveda:** *Sthavar* *visha*,  
*Beejvisha*, *upavisha*

**Modern science:** Neurotoxic, Cerebral,  
Deliriant, Stupefying poison

#### Active principles<sup>11</sup>:

Alkaloids - Tropane  
Alkaloids –  
Hyoscyamine,  
Hyosine, Atropine  
etc. and Fixed Oil

**Sign and Symptoms<sup>12</sup>:** The feature  
are classically  
described as dry as  
bone, red as a beet,  
blind as a bat, hot as a  
hare and mad as a wet  
hen. Dryness of  
mouth, dysphagia,  
unquenchable thirst,  
dilated pupils, skin  
dry and hot, delirium,  
Carphologia,  
drowsiness, death.

**Fatal dose:** 100-125 seeds

**Fatal period:** 24 hrs

**Treatment:** Stomach wash,  
pilocarpine 15mg or  
prostigmine 1mg  
S.C., Barbiturates or  
ether inhalation,  
purgatives and  
systematic.

**PM Appearance:** Congestion of  
stomach and all other viscera.

**Medicolegal Aspects:** It commonly known as road side poison, since it is used for road side crimes like robbery, theft, kidnapping and rape. Sometime used for suicide or homicide, accidental poisoning is common.

**Important formulations:** *Kanakasava, Kanakasundara Rasa, Umadgajankush rasa, Prataplankeshwara rasa*<sup>13, 24, 25</sup>.

### 5. *Bhanga* ( *Vijaya* )

It consists of dried leaves of cultivated or wild plants of *Cannabis sativa* Linn. of family Cannabinaceae.

#### Vernacular names<sup>26</sup>

Sanskrit: *Bhanga, Madani*  
Hindi: Bhaang, Bhanga  
English: Indian Hemp

#### Description<sup>26</sup>

Macroscopic

**Occurrence:** Leaves palmately compound, leaflets linear, lanceolate with serrate margins

**Colour:** Dark green

**Odour:** Strong odour

**Taste:** Bitter

**Extra features:** Leaves are about 5-20 cm long, pointed, narrow at base, upper green and rough, lower pale, downy, leaves of female plants longer

than the male, odour, strong and characteristic, taste, slightly acid.

**Pharmacology:** Hallucinogenic, hypnotic, sedative, analgesic, antiinflammatory<sup>15</sup>

#### Ayurvedic pharmacology<sup>9, 24-26</sup> :

*Guna:* *Laghu, Tikta*

*Rasa:* *Tikta*

*Vipaka:* *Katu*

*Virya:* *Ushna*

#### Classification<sup>10</sup> :

**Ayurveda:** *Stavara visha,*

*Upavish, Mulavish*

**Modern Science:** Neurotoxic, Cerebral, Deliriant, Stupefying poison

**Active principles<sup>11</sup>:** Resin (Cannabinols, particularly tetrahydrocannabinol)

**Signs and symptoms<sup>12</sup>:** 1. Stage of Excitement- person is pleased, cheerful, well talkative though rarely running amok, increased appetite, loss of perception of time and space, hallucinations, smell is like burnt rope. 2. Stage of Narcosis- giddiness, confusion, drowsiness, dilated pupils, tingling and numbness, coma.

**Fatal Dose:** 1) Bhang - 10 gm/kg body wt.

2) Ganja - 8 gm/kg body wt.



3) Charas - 2  
gm/kg Abody wt.

**Fatal Period:** Approximately 12 hours.

**Treatment:** Stomach wash, symptomatic treatment.

**PM Appearance:** Features of asphyxia.

**Medicolegal Aspects:** Is a drug of addiction, rarely used for homicide, commonly used as stupefying poison, accidental poisoning is common, may be running amoke.

**Important formulations:** *Tryalokyavijaya vati, Madanodaya Modaka*<sup>13, 24-25</sup>

## 6. Gunja

It consists of seeds of *Abrus precatorius* Linn. of family Leguminosae

**Vernacular names**<sup>24,25</sup>

Sanskrit: *Raktika, Kakananti*  
Hindi: *Ratti, Ghungchi*  
English: Indian liquorice, Jequirity, gunchi, rati, Rosary Pea

### Description<sup>5</sup>

Macroscopic

**Occurrence:** Characterised by smooth, glossy surface and bright scarlet.

**Colour:** Black

**Taste:** Sweet

**Odour:** Odourless

**Extra features:** Patch hilum, ovoid or sub-globular, 5-8 mm long, 4-5 mm broad.

**Pharmacology:** Uterine stimulant, abortifacient, toxic, teratogenic<sup>15</sup>

**Ayurvedic pharmacology**<sup>9, 24, 25</sup>:

*Rasa :* *Tikta, Kashaya*

*Guna :* *Ruksha, Laghu, Tikta*

*Vipika :* *Katu*

*Virya :* *Ushna*

**Classification**<sup>10</sup> :

*Ayurveda:* *Sthavara visha, Upavish, mulavisha, beejvisha*

**Modern science:** Irritant organic vegetable poison.

**Active principle**<sup>11</sup>: An albuminous substance (abrine and abralin).

**Signs and Symptoms**<sup>12</sup>: On ingestion GIT irritation, nausea, vomiting, abdominal pain and diarrhoea, on injection painful swelling, necrosis, vertigo, arrhythmias, convulsions, death. Symptoms resemble viper snake bite.

**Fatal Dose:** 1 – 2 seeds if ingested. Tinture by parental root 90 to 120 mg.

Abrin – 0.0001 mg – 0.0002 mg/kg body wt.

**Fatal Period:** 3 – 5 days.

**Treatment:** Injection of Antiabrin and symptomatic treatment.

**PM Appearance:** Petechial haemorrhages under skin, pleura, pericardium and peritoneum, internal organ congested, local necrosis.

**Medicolegal Aspects:** Commonly used as cattle poison, used as homicidal, used as arrow poison.

**Important formulations:**  
*Mritsanjeevani gutika, Gunjabhadra Rasa*<sup>13, 24, 25</sup>

## 7. Bhallataka

It consists of mature fruit of *Semecarpus anacardium* Linn. of family Anacardiaceae.

**Vernacular names**<sup>24,25</sup>

Sanskrit: *Aruskara, Bhallata*  
Hindi: Bhilawa  
English: Marking Nut

**Description**<sup>5</sup>:

Macroscopic

**Occurrence:** Fruit laterally flattened, drupaceous.

**Colour :** Dark brown/black

**Taste:** -

**Odour:** Odourless

**Extra features:** Nut 2.5-3 cm long, obliquely ovoid, smooth, shining with residual receptacle.

**Pharmacology:** anti-inflammatory, antitumour<sup>15</sup>, antiarthritic, anthelmintic, antioxidative and anticancer activity<sup>27,28</sup>

**Ayurvedic pharmacology**<sup>9</sup>:

*Guna :* *Laghu, Tikta, Snigdha*

*Rasa :* *Madhura, Katu, Tikta,*

*Kashaya*

*Vipaka :* *Madhura*

*Virya :* *Ushna*

**Classification**<sup>10</sup>:

**Ayurveda:** *Sthavar visha, Beejvisha, upavisha*

**Modern science:** Irritant organic vegetable poison

**Active principle**<sup>11</sup>: Semicarbol, bhilawanol.

**Signs and symptoms**<sup>12</sup>: Black vesicles on skin and itching, blisters in throat, GIT irritation, dyspnoea, tachycardia, hypotension,

areflexia, delirium, coma, cyanosis, death.

**Fatal dose:** 5-10gm

**Fatal period:** 12-24 hrs

**Treatment:** General line of treatment.

**PM Appearances:** Blisters seen in the mouth, throat and stomach, features of gastroenteritis.

**Medicolegal Aspects:** Used for vitriolage, used as abortifacient, applied on skin to put an allegation of assault.

**Important formulations:** *Bhallataka Rasayana, Bhallatakadi Modaka, Amrita Bhallataka Leha, Sanjeevani vati*<sup>13,24,25</sup>.

**8. Arka**

It consists of dried roots of *Calotropis procera* (Ait.) R. Br. of family Asclepiadaceae.

**Vernacular names**<sup>24,25</sup>

Sanskrit : *Ravi, Bhanu, Tapana*  
Hindi : Aak, Madar, Akavana  
English : Madar Tree

**Description**<sup>5</sup>

Macroscopic

**Occurrence:** Root:- rough, fissured longitudinally and soft

**Colour :** yellowish-grey

**Taste:** bitter and acrid

**Odour:** acrid

**Extra Features:** Roots externally yellowish-grey while internally white, central core cream coloured, bark easily

**Pharmacology:** separated from xylem, odour, characteristic: .  
 Ascaricidal, schizonticidal, nematocidal, anti-microbial, antihelmintic, molluscicidal, insecticidal, anti-inflammatory, anti-diarrhoeal, larvicidal, anticancer<sup>29-39</sup>

**Ayurvedic pharmacology<sup>9,24,25</sup>:**

*Guna* : *Laghu*  
*Rasa* : *Katu, Tikta*  
*Vipika* : *Katu*  
*Virya* : *Ushna*

**Classification<sup>10</sup> :**

**Ayurveda:** *Sthavara visha, Upvisha*

**Modern science:** Irritant, Organic Vegetative poison.

**Active Principles<sup>11</sup>:** Calotropin. Calotoxin, Uscharin, Calactin.

**Signs and symptoms<sup>12</sup>:** External vesication and redness, in eyes conjunctivitis, internally act as GIT and cerebrospinal poison, bitter taste, burning pain in GIT, stomatitis, vomiting, diarrhoea, dilated pupils, convulsions, collapse and death.

**Fatal dose:** uncertain.

**Fatal Period:** About 12 hours.

**Treatment:** Stomach wash, demulcents and symptomatic treatment.

**PM Appearances:** Dilated pupils, froth at the nostrils, stomatitis and inflammation of GIT, viscera and brain are congested.

**Medicolegal Aspects:** Used as infanticide, cattle poison, arrow poison, used for criminal abortion, rarely used for suicide.

**Important formulations:**

*Mahavishagarbha Taila, Dhanvantara Ghrita<sup>13,24,25</sup>*

**9.Snuhi**

It consists of stem of *Euphorbia neriifolia* Linn. of family Euphorbiaceae.

**Vernacular names<sup>24,25</sup>**

**Sanskrit :** *Sudha Vajradruma, Snuh*

**English :** Milkhedge

**Hindi :** Thuhar, Sehunda

**Description<sup>5</sup>:**

Macroscopic

**Occurrence:** Stem cylindrical, showing, spiral ridge portion only

**Colour :** Green

**Taste:** Acrid

**Odour:** Odourless

**Extra Features:** Dried stem, tough with pairs of sharp stipular thorns, with hollow space in centre containing white

reticulate mass, taste, acrid.

**Pharmacology:**

Hepatoprotective<sup>40</sup>, anti-inflammatory, analgesic<sup>41</sup>, antioxidant<sup>42</sup>, immunomodulatory activity<sup>43</sup>

**Ayurvedic pharmacology<sup>9</sup>:**

*Guna* : *Guru, Tikshna*

*Rasa* : *Katu, Tikta*

*Vipaka* : *Katu*

*Virya* : *Ushna*

**Classification<sup>10</sup>:**

*Ayurveda*: *Sthavara, Upavish*

**Modern Science:** Irritant Organic vegetable poison

**Active Principle<sup>5,10</sup>:** Euphorbine, Euphol, Euphorbol, taraxerol. Resin, gum and triterpenes

**Signs and symptoms<sup>12</sup>:**

Ingestion of latex could be fatal, burning of skin, inflammation of the eyes and may be temporally blindness resulting from contact.

**Fatal Dose:** Uncertain (25 to 30 ml of latex).

**Fatal Period:** Uncertain (3 days).

**Treatment:** Wash contact part with running water and symptomatic treatment.

**PM Appearances:** Signs of inflammation of contact part.

**Medicolegal Aspects:** commonly accidental poisoning.

**Important formulations:** *Citrakadi Taila, Abhaya Lavana, Avittoladi Bhasma, Vajrakshara<sup>13, 24,25</sup>*

**10.Langali**

It consists of dried tuberous root of *Gloriosa superba* Linn. of family Liliaceae.

**Vernacular names<sup>24,25</sup>**

Sanskrit : *Kalihari, Garbhanut, Halini, Agnisikha*

Hindi : *Kalihari*

English : *Glory Lily*

**Description<sup>5</sup>**

Macroscopic

**Occurrence:**

Tuberous roots thick, almost cylindrical or slightly laterally flattened brownish

**Colour :**

**Taste:** acrid and bitter

**Odour:-** acrid

**Extra Features:**

Roots occurring in pieces of 15-30 cm long and 2.5 - 3.8 cm thick, often bifurcated with tapering ends, resembling a plough-share, one arm generally more than double the length of the other.

**Pharmacology:**

Antiinflammatory, alterative, anthelmintic, antileprotic<sup>15</sup>, antifungal activity, antitumor/cytogenic

activity, antipoxviral activity, anticoagulant activity<sup>44-48</sup>

### Ayurvedic pharmacology<sup>9</sup>:

**Guna :** Sara, Tikta  
**Rasa :** Tikta, Kashaya, Katu  
**Vipaka :** Katu  
**Virya :** Ushna

### Classification<sup>10</sup> :

**Ayurveda:** Sthavara visha, Kandavisha, Upavish

**Modern science :** Irritant organic Vegetable poison.

**Active Principle<sup>5,10</sup>:** Superbine, Gloriosine, Colchinine, Alkaloids and Resins.

**Signs and symptoms<sup>12</sup>:** burning pain in mouth, throat and stomach, nousea, vomiting, diarrhea, sweating and death.

**Fatal Dose:** Uncertain (more than 750 mg)

**Fatal period:** uncertain.

**Treatment:** Stomach wash, demulcent and symptomatic treatment.

**PM Appearances:** May be inflammation of GIT.

**Medicolegal Aspects:** Commonly used as abortifacient, suicidal and homicidal are rare, mostly accidental poisoning.

**Important formulations:** Nirgudi Taila, Kasisadi Taila, Mahavishagarbha Taila<sup>13,24</sup>

## 11. Karavira

It consists of dried leaves of *Nerium indicum* Mill. Syn. *Nerium odorum* Soland of family Apocynaceae.

### Vernacular names<sup>24-26</sup>

**Sanskrit:** Hayamaraka, Harapriya, Asvamara  
**Hindi:** Kaner  
**English:** Indian Oleander

### Description<sup>24</sup>

Macroscopic

**Occurrence:** Leaves exstipulate, linear, lanceolate, 10-20 cm long and upto 2.5 cm wide, thick, dark green and shining above and dotted beneath

**Colour :** Dark green

**Taste:** Bitter

**Odour:** Odourless

**Extra Features:** Leaves venation uncostate, reticulate with midrib being stout and the secondary veins arising in very large number, running parallel, stomata anamocytic.

### Pharmacology:

Cardioactive (digitalis-like effect) and diuretic, anti-inflammatory, antifungal, insecticidal<sup>15</sup>, antioxidant Activity, analgesic activity, antiulcer activity, antimicrobial activity, anti diabetic activity<sup>49-53</sup>

**Ayurvedic pharmacology<sup>24-26</sup>:**

<i>Guna:</i>	<i>Tikta, Laghu, Ruksa</i>
<i>Rasa:</i>	<i>Katu, Tikta, Kashaya</i>
<i>Vipaka:</i>	<i>Katu</i>
<i>Virya:</i>	<i>Ushna</i>

**Classification<sup>10</sup> :**

**Ayurveda:** *Sthavar visha, Mulavisha, Upavisha*

**Modern science:** Cardiac Poison

**Active Principle<sup>11</sup>:** It contains a glycoside named Nerin, oleandrin

**Signs and symptoms<sup>12</sup>:**

GIT irritation, contact dermatitis, dilated pupils, cardiac failure, weak pulse, decreased B.P., twitching of muscles, titanic spasm and lock jaw, on spinal cord action like strychnine.

**Fatal Dose:** Root - 15 gms, Leaves- 5 – 15 in number.

**Fatal period:** About 24 hours.

**Treatment:** Stomach wash, use of anaesthetic agents, inj. Morphine and symptomatic treatment.

**PM Appearances:** Petechial haemorrhages on heart, congestion of viscera.

**Medicolegal Aspects:** Commonly used for suicide and abortion, used as cattle poison, rarely used for homicide, sometimes accidental poisoning.

**Important formulations:** *Karviradi*

*Taila*<sup>13, 24,25</sup>

**CONCLUSION**

*Ayurveda* has considered the mental and physical diseases as two separate specialized subjects. *Agadatantra* is one of the incredible branch of indigenous branches derived from the ancient sciences of *Ashtanga Ayurveda*. *Upavisha* are described in *Agadatantra* and *Rasashastra* being used as medicine. All *Upavisha* are reviewed briefly with its macroscopic characters, medico legal aspects and toxicological effects. All the drugs are showed their significant pharmacological activities even they are semi poisonous drugs. Toxicological effect, fatal period, fatal dose, treatment, postmortem appearance and medico legal aspect are the main features of this review. The information available in this review could be helpful to scientist, drug designers, forensic experts, and other scientific bodies related to Ayurvedic research. More research is needed in on these medicinal plants to establish their claimed therapeutic potential.

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