

## ***Comparative Analysis of Sthavara Visha and Jangama Visha in Ayurvedic Toxicology***

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### **ABSTRACT**

*Agada Tantra, one of the specialized eight branches (Ashtanga) of Ayurveda, contains an extensive framework for identifying, classifying, and managing toxic substances. Ayurvedic toxicology primarily divides poisons into two major natural groups: Sthavara Visha (inanimate, plant, and mineral-based toxins) and Jangama Visha (animate, animal-based venoms and toxins). While both groups manifest distinct hazardous profiles capable of destabilizing the vital life breath (Prana), they differ fundamentally in their pharmacological qualities (Gunas), toxicological progression over clinical stages (Visha Vega), systemic manifestations, and emergency management. This paper provides a highly comprehensive comparative analysis of Sthavara and Jangama Visha as documented in foundational text corpora like Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya. It examines the ten distinct properties (Dashaguna) of poisons that govern their tissue affinity (Srotovaikalyata), details the differential pathodynamics across their respective clinical stages (Vegas), and analyzes their target organ toxicities. Furthermore, the review presents a comprehensive breakdown of traditional management protocols, contrasting the universal twenty-four therapeutic interventions (Chaturvimshati Upakrama) with contemporary emergency protocols. By establishing a bridge between traditional concepts of Visha and modern toxicokinetic/toxicodynamic frameworks, this paper provides crucial clinical insights essential for integrative toxicology and natural poison management.*

**KEYWORDS:** *Agada Tantra, Sthavara Visha, Jangama Visha, Visha Vega, Chaturvimshati Upakrama, Ayurvedic Toxicology.*

## INTRODUCTION

The systematic study of poisons and toxic mechanisms occupies a highly revered position within the classical hierarchy of Ayurveda. Known as Agada Tantra or Visha-Chikitsa, this discipline represents the ancient analog to contemporary forensic medicine and clinical toxicology. Ancient Indian medical pioneer Acharya Charaka notes that any substance in nature can act as a potent therapeutic agent or a lethal poison depending entirely on the context of dosage, administrative method, formulation, and individual constitution. However, substances that possess an innate capacity to quickly destroy tissue integrity, cloud mental perception, and extinguish vital life breath are categorically classified as Visha (poisons).

The etymology of the word 'Visha' is deeply evocative; it is derived from the root 'Vish', meaning to pervade or encompass completely, reflecting the rapid, unchecked systemic spread of toxins through the physiological channels. According to mythological and historical accounts in Ayurvedic literature, primordial poison emerged as a singular entity during the churning of the cosmic ocean (Samudra Manthana), which subsequently dispersed into various inanimate and animate media. This division formed the basis for the primary binary classification of natural poisons: Sthavara Visha (stationary or inanimate toxins) and Jangama Visha (mobile or animate toxins).

Sthavara Visha predominantly comprises the toxic principles found in plant roots, leaves, fruits, sap, and barks (such as Vatsanabha/Aconitum ferox and Bhallataka/Semecarpus anacardium), alongside inorganic metallic elements and toxic mineral compounds. Conversely, Jangama Visha encompasses the venoms, secretions, and bites of animate vectors, including venomous snakes (Sarpa), scorpions (Vrishchika), spiders (Luta), rabid canines, and toxic insects. Understanding the differential pathodynamics of these two categories is vital for accurate clinical diagnosis and timely intervention. This paper provides a rigorous comparative review of their pharmacological properties, toxicological staging (Visha Vega), target organ affinities, and classical therapeutic management protocols.

## THE PHARMACOLOGICAL BASIS: DASHAGUNA OF VISHA

The exceptional speed & lethality with which poison disrupt human physiology are explained

through ten specific pharmacological attributes (Dashaguna). These qualities are diametrically opposed to the attributes of Ojas (the vital essence of immunity and life energy), allowing poisons to rapidly neutralize bodily defenses. Acharyas Charaka, Sushruta, and Vagbhata agree on these ten core attributes, though they minorly vary in nomenclature. These attributes include: Laghu (lightness), Ruksha (dryness), Ashu (fast-acting), Vishada (non-slime/clear), Vyavayi (swiftly spreading before digestion), Tikshna (sharp/intense), Vikasi (causing tissue necrosis and structural loosening), Sukshma (highly penetrative into minute pores), Ushna (hot/heating), and Anirdeshya Rasa (indistinct or unmanifest taste).

While these ten properties are universally present in all potent toxins, their relative concentrations and dominance vary significantly between Sthavara and Jangama variants. In Sthavara Visha (plant/mineral), the attributes of Ruksha (dryness), Tikshna (sharpness), and Ushna (heat) are highly pronounced, frequently manifesting as immediate irritation of the gastric mucosa, intense internal burning, and widespread cellular dehydration. In contrast, Jangama Visha (animal venom) displays an extreme dominance of Ashu (instantaneous velocity), Vyavayi (pervasive systemic absorption), and Vikasi (rapid destruction of blood and vascular integrity). This explains why animal venoms typically exhibit much faster circulatory absorption and rapid neurological or hematological collapse compared to the slower, more localized metabolic destruction characteristic of plant toxins.

### Attribute Matrix and Comparative Pathological Expression

Table 1 provides a detailed comparison of the ten toxic attributes (Dashaguna) and how they manifest clinically in both groups.

**Table: 1**

| Toxic Property<br>(Guna) | Physiological<br>Mechanism                                   | Sthavara Visha<br>Expression                        | Jangama Visha<br>Expression                                |
|--------------------------|--------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------|
| Vyavayi (Pervasive)      | Spreads across<br>systemic circulation<br>without undergoing | Rapid absorption<br>through the<br>gastrointestinal | Instantaneous<br>systemic absorption<br>from the bite site |

|                       | digestion.                                                             | mucosa into portal circulation.                                     | directly into the bloodstream.                                                |
|-----------------------|------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Vikasi (Necrotizing)  | Loosens tissue bonds, depletes Ojas, and destroys structural proteins. | Causes sloughing of mucosal linings and visceral organ damage.      | Triggers rapid hemolysis, local tissue necrosis, ecchymosis, and gangrene.    |
| Sukshma (Penetrative) | Penetrates the minutest capillaries and cellular membranes.            | Crosses cellular boundaries to disrupt deep metabolic pathways.     | Rapidly crosses the blood-brain barrier, inducing profound neurotoxicity.     |
| Tikshna (Sharp)       | Overpowers brain centers and causes acute sensory vertigo.             | Triggers severe epigastric pain, intense vomiting, and convulsions. | Induces immediate local pain, burning, and rapid paralysis of vital nerves.   |
| Ashu (Fast-acting)    | Spreads with maximum speed, causing instant physiological disruption.  | Progression depends on digestion and metabolic assimilation.        | Triggers acute anaphylaxis, respiratory distress, and rapid collapse.         |
| Ruksha (Dry)          | Vitiates Vata Dosha and triggers widespread neurological tremors.      | Induces profound dryness of mouth, throat constriction, and thirst. | Triggers immediate muscle twitching, localized stiffness, and nerve cramping. |
| Laghu (Light)         | Disrupts psychological balance and resists standard emetic therapies.  | Difficult to purge once absorbed into deeper tissues.               | Quickly ascends to cardiac and cerebral centers, causing shock.               |
| Ushna (Hot)           | Vitiates Pitta and Rakta (blood), causing                              | Causes severe internal burning, hyperpyrexia,                       | Triggers severe burning at bite site,                                         |

|                          |                                                                  |                                                                     |                                                                                  |
|--------------------------|------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                          | acute inflammatory damage.                                       | and hematemesis.                                                    | systemic bleeding, and hemolysis.                                                |
| Vishada (Clear)          | Prevents stagnation, allowing unimpeded spread through channels. | Clears obstructions to accelerate visceral organ poisoning.         | Ensures the venom spreads unhindered through lymphatic and venous pathways.      |
| Avipaki (Non-digestible) | Resists enzymatic breakdown and gastric acid denaturation.       | Remains chronically toxic within the gut, causing recurring damage. | Completely evades digestive enzymes, remaining highly active in the bloodstream. |

## ETIOLOGICAL CLASSIFICATION AND TARGET ORGANS

Acharya Sushruta meticulously classifies Sthavara Visha into ten distinct anatomical parts of vegetation where toxicity concentrates: Mula (roots), Patra (leaves), Phala (fruits), Pushpa (flowers), Tvak (bark), Ksheera (milky latex), Sara (heartwood), Niryasa (exudates/resins), Dhatu (mineral ores like arsenic and lead), and Kanda (toxic tubers). Plant poisons like Kanda-visha (e.g., Vatsanabha) are recognized as exceptionally lethal, as their subterranean roots concentrate highly concentrated alkaloids that directly depress cardiac and respiratory function.

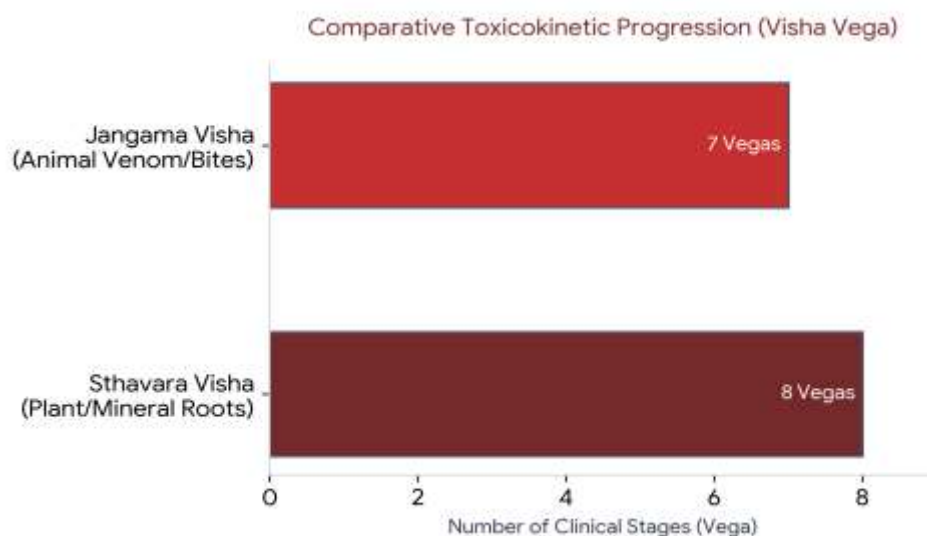
Conversely, Jangama Visha is classified based on sixteen distinct animal vectors and their toxic delivery mechanisms: Drishti (gaze/vision), Nishvasa (breath), Damshttra (fangs/bites), Nakha (claws), Mutra (urine), Purisha (feces), Shukra (semen), Saliva (Lala), Artava (menstrual fluid), Prakisha (stinger/bite), Savasthi (bone dust), Bile (Pitta), Shuka (bristles/hairs), and dead carcass tissue (Shava). Among these, snake envenomation (Damshttra-visha) represents the peak clinical emergency. Ayurveda subdivides venomous snakes into three main clinical groups: Darvikara (elapids like cobras, dominated by Vata, inducing neurotoxicity), Mandala (viperids, dominated by Pitta, causing hemotoxicity), and Rajimanta (hydrophiids/colubrids, dominated by Kapha, causing myotoxicity and thick edema).

## PATHODYNAMICS AND STAGING: THE VISHA VEGA CONSTRUCT

A foundational contribution of Ayurvedic toxicology is the concept of Visha Vega—the progressive chronological velocity of poison as it invades successive tissue layers (Dhatus) and vital organs. As a poison breaches each physiological barrier, it presents a distinct cluster of clinical signs and symptoms. This staging allows clinicians to determine both the exact depth of toxicity and the overall prognosis. Crucially, the pathodynamic staging differs structurally between Sthavara and Jangama variants. Acharya Charaka outlines eight stages (Vegas) for Sthavara Visha and seven stages for Jangama Visha, whereas Acharya Sushruta mandates seven uniform stages for both categories to standardize emergency therapeutic actions.

### Visual Representation of Toxic Staging

Figure 1 contrasts the clinical progression of Sthavara and Jangama Visha, highlighting the additional deep metabolic stage unique to plant-based alkaloid poisonings.



**Figure 1: Comparative Toxicokinetic Progression (Visha Vega)**

According to Charaka, when Sthavara Visha enters the body, it first affects the tongue and plasma (Rasa Dhatu), inducing severe salivation, numbness, and nausea (Vega 1). It then advances to the blood (Rakta Dhatu), causing vertigo, tremors, and profound cyanosis (Vega 2). The third stage breaches the muscular tissue (Mamsa Dhatu), manifesting as severe

abdominal cramps and localized tumor-like swelling. Subsequent stages involve the invasion of deeper tissues (Meda, Asthi, Majja), culminating in cardiac arrest, spinal rigidity, and death in the eighth stage. In contrast, the staging of Jangama Visha progresses with much higher velocity. Because animal venoms frequently enter through direct systemic injection rather than ingestion, they bypass early digestive phases, immediately targeting the bloodstream and cardiac centers. This results in rapid neuro-muscular paralysis, localized gangrene, and early respiratory collapse.

### Comparative Analysis of Visha Vega Staging (According to Charaka Samhita)

Table 2 outlines the distinct tissue layers and clinical presentations across the respective stages of Sthavara and Jangama Visha.

**Table: 2**

| Vega (Stage) | Target Tissue Layer  | Sthavara Visha Symptomatology                                                  | Jangama Visha Symptomatology                                                       |
|--------------|----------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 1st Vega     | Rasa Dhatu (Plasma)  | Dryness of palate, excessive salivation, nausea, vomiting, cardiac oppression. | Profound drowsiness, dark coloration of blood, severe local burning, vertigo.      |
| 2nd Vega     | Rakta Dhatu (Blood)  | Vertigo, body tremors, multi-focal rigidity, loss of consciousness.            | Extreme stiffness of neck, generalized edema, severe sweating, localized gangrene. |
| 3rd Vega     | Mamsa Dhatu (Muscle) | Severe abdominal colic, appearance of localized swellings, blurred vision.     | Intense burning pain in joints, severe muscular biting pain, localized necrosis.   |
| 4th Vega     | Meda Dhatu (Fat)     | Severe vomiting, headache, fever, structural distortion of limbs.              | Dyspnea, cold sweating, heaviness of eyelids, severe vomiting.                     |

|          |                             |                                                                    |                                                                             |
|----------|-----------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 5th Vega | Asthi Dhatu (Bone)          | Frothing at the mouth, blue discoloration of skin, deep bone pain. | Dark blue vision, choking sensation, multi-focal hemorrhages from orifices. |
| 6th Vega | Majja Dhatu (Marrow)        | Profound loss of consciousness, severe diarrhea, opisto-tonus.     | Severe diarrhea, cardiac syncope, respiratory collapse.                     |
| 7th Vega | Shukra Dhatu (Reproductive) | Severe breakdown of spinal reflex arcs, severe body wasting.       | Complete neuro-muscular paralysis, cessation of breath, death.              |
| 8th Vega | Vital Prana (Life Center)   | Asphyxiation, permanent cessation of cardiac function, death.      | Non-existent (Jangama Visha pathodynamics terminate at the 7th Vega).       |

### CLINICAL MANAGEMENT: CHATURVIMSHATI UPAKRAMA

The hallmark of Ayurvedic emergency toxicology is the Chaturvimshati Upakrama—the twenty-four systematic therapeutic interventions designed to neutralize, extract, and eliminate poisons from the body. These twenty-four measures cover the entire spectrum of emergency toxicology, beginning with immediate local field management and extending to deep cellular rejuvenation. These interventions include: Mantra (chanting/vibrational therapy), Arishta-bandhana (tourniquet application), Utkartana (incision), Nishpydana (suction/expressions), Aseka (sprinkling with cold antitoxic liquids), Avagaha (immersion baths), Rakthamokshana (bloodletting), Vamana (emesis), Virechana (purgation), Agada-pana (oral administration of specific antitoxic formulations), Nasya (nasal administration), Anjana (collyrium application), and Mritsanjivana (resuscitation protocols).

The clinical deployment of these twenty-four protocols is determined by whether the patient presents with Sthavara or Jangama poisoning. For Sthavara Visha (ingested plant/mineral toxins), the primary therapeutic focus relies heavily on internal gastrointestinal purification

(Vamana and Virechana) to purge unabsorbed toxins from the stomach and small intestine, preventing portal absorption. This is followed by the frequent oral administration of broad-spectrum herbal antitoxins like Bilvadi Agada and Dooshiivishaari Agada.

In contrast, management for Jangama Visha (animal bites/venoms) prioritize immediate local field interventions to halt circulatory spread. The protocol begins with Arishta-bandhana (applying a precise tourniquet above the bite site) to occlude venous and lymphatic return without disturbing arterial inflow. This is followed by Utkartana (micro-incisions) and Nishpydana to mechanically express unabsorbed venom from the wound site. Rakthamokshana (bloodletting via leeches or venesection) is rapidly deployed to extract localized hemotoxins before they cause systemic damage. For both categories, Hridayavarana (cardiac protection) using large oral doses of cow's ghee mixed with honey is treated as a mandatory, non-negotiable step to shelter the heart muscle from toxic necrosis.

### Comparative Treatment Protocol Matrix

Table 3 summarizes the strategic differences in clinical management between Sthavara and Jangama Visha.

**Table: 3**

| Clinical Dimension                | Sthavara Visha Management Protocol                                                                       | Jangama Visha Management Protocol                                                                                  |
|-----------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Primary Route of Elimination      | Gastrointestinal tract cleansing via prompt induced Vamana (emesis) and extensive Virechana (purgation). | Local extraction via Arishta-bandhana (tourniquet), local incision (Utkartana), and Rakthamokshana (bloodletting). |
| Cardiac Shielding (Hridayavarana) | Oral administration of large quantities of cow's ghee combined with anti-poisonous herbal powders.       | Immediate application of cooling, anti-toxic pastes over the cardiac chest wall and internal ghee decoctions.      |

|                           |                                                                                                                           |                                                                                                              |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Specific Antidotal Choice | Deployment of targeted herbal compounds like Shirisha ( <i>Albizia lebbeck</i> ) and Nimba ( <i>Azadirachta indica</i> ). | Administration of potent multi-herbal formulations like Bilvadi Agada, Sanjivani Vati, and Kalyanaka Ghrita. |
| Symptomatic Support       | Gastric lavage analogues, extensive warm fluid hydration, and anti-inflammatory herbal washes.                            | Artificial respiration supports, neuro-muscular stimulation, and cooling topical applications (Aseka).       |

## DISCUSSION AND MODERN CONVERGENCE

When viewed through the lens of modern clinical pharmacology, the classical division between Sthavara and Jangama Visha exhibits a profound scientific logic. Sthavara Visha maps closely to contemporary plant-alkaloid and heavy-metal toxicology. For instance, the signs of Vatsanabha poisoning—including severe salivation, bradycardia, cardiac arrhythmias, and ascending paralysis—directly correspond with the known mechanism of aconitine, which continuously activates voltage-gated sodium channels. Ayurveda's focus on gastrointestinal cleansing (Vamana) for these plant toxins directly aligns with modern gastric lavage and activated charcoal administration.

Similarly, the description of Jangama Visha corresponds with modern venom pharmacology. The Vata-dominant Darvikara snake venom mirrors the neurotoxic actions of elapids, which block post-synaptic nicotinic acetylcholine receptors to induce rapid flaccid paralysis and ptosis. The Pitta-dominant Mandala snake venom parallels the hemotoxic, phospholipase-A2-driven mechanisms of viperids, which trigger disseminated intravascular coagulation (DIC), severe local swelling, and tissue necrosis. The ancient practice of Arishta-bandhana and local bloodletting functions as a historical precursor to contemporary pressure-immobilization techniques and localized venom extraction.

## CONCLUSION

The comparative analysis of Sthavara and Jangama Visha reveals a highly sophisticated, structurally coherent toxicological framework within Ayurveda. By categorizing poisons based on their animate or inanimate origins, Agada Tantra establishes a precise correlation between a toxin's source, its specific pharmacological attributes (Dashaguna), its chronological staging (Visha Vega), and the required emergency interventions.

While Sthavara Visha presents a slower pathodynamic progression that heavily targets visceral organs through digestion, Jangama Visha acts with high velocity, bypassing digestive stages to directly cause neurological, hematological, or cardiovascular collapse. The Chaturvimshati Upakrama provides a versatile, systematic model for emergency intervention. It effectively balances local extraction methods for animal bites with rapid gastrointestinal purging for ingested plant toxins. Integrating these time-tested protocols with modern supportive critical care offers a promising path forward for developing comprehensive, integrative approaches to natural toxin management.

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Received Date: 14 May 2026

Accepted Date: 27 May 2026

Published Date: 23 June 2026

**Citation:** Savita Kulkarni, Puneet Mishra. Comparative Analysis of Sthavara Visha and Jangama Visha in Ayurvedic Toxicology. Journal of Agad Tantra, Vidhi Vaidhyaya and Vyavahara Ayurveda. 2026; 4(1): 1-12p.