

An Ayurvedic Review of Jalaukavacharana (Leech Therapy)

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Abstract: Jalaukavacharana (leech therapy) is initially mentioned in the Sushruta Samhita. Leech therapy, also called Jalaukavacharana, is an ancient Ayurvedic bloodletting technique that can effectively treat a variety of inflammatory, ischemic, and viral illnesses. Because it eliminates vitiated Doshas from the body without the use of cutting instruments, Raktamokshana using "leech" is regarded as the most efficient and unique method within the Ashastra category. The term "Jalaukavacharana" refers to the therapeutic use of leeches.

Keywords: Jalauka, Leech, Raktamokshan, Leech Therapy.

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I. INTRODUCTION

According to Ayurveda, Doshas, Dhatus, and Malas control every physiological function of the body. Dosha Dhatu Mala Mulam Hi Shariram, according to Susruta, but the three most significant doshas are Vata, Pitta, and Kapha. Any ailment manifests when these Doshas are vitiated. In addition, Acharya Susruta regarded Rakta as an essential component of the body. When Rakta is vitiated, various ischemia disorders (infarctions), joint disorders (Sandhigata Vyadhi), and skin disorders (Kustha) develop.

Therefore, the elimination of vitiated rakta—known in Ayurveda as Raktavisravana or Raktamokshana (bloodletting)—is crucial for the full recovery of various illnesses. Acharya Susruta describes three essential phases for Raktamokshana: Shringa for Vata predominance, Jalauka (leech) for Pitta predominance, and Alabu for Kapha predominance.[1] Jalaukavacharana is the gentlest bloodletting procedure available. Ayurvedic texts state that it is a simpler and safer natural way. Therefore, it is advised even for the king, the rich, the aged, the frail, the terrified, women, and those with delicate personalities. Historical accounts show that leeches have been employed medicinally since the beginning of civilization.

Leech saliva contains various pharmacologically and physiologically active compounds that exhibit anticoagulant, antiplatelet, anti-inflammatory, and anti-edema effects in the host's body. Leech therapy is effective in addressing multiple conditions such as ischemic heart disease, vascular issues, abscesses, arthritis, and venous congestion. The anticoagulant properties of leeches enhance blood flow, leading to improved local circulation and sufficient nutrient supply. This review aims to explore the concept of leech therapy from both Ayurvedic and modern viewpoints.

Jala means "water," while Aayu means "life." They are known as Jalayuka because they are used to the water. Jala and Oka, which refer to animals that live in water, make up the compound word Jalauka.

A. Twelve Types of Leeches:

➤ Six Toxic Jalauka

- Krishna: Black and large-headed, Krishna resembles Anjana powder (antimony).
- Karbura: Like Varmimatsya (fish), it has a gray, wide, segmented, and protruding belly.
- Alagarda: hairy, large flanks, black mouth
- Indrayudha: They have back stripes
- Samudraka: a blackish yellow blossom with floral motifs all over it

- Gochandana: The lower part is divided in half like the scrotum of a bull and has a very small mouth.
- *Six Jalauka That are Not Harmful*
- Kapila: dark brown with Manashila-like reddish flanks; back is unctuous (oily) and Mudga-colored (slightly green).
- Pingala: fast-moving, reddish-brown, round-bodied
- Shankumukhi: has a long, pointed mouth, is brown (like liver), and draws blood rapidly.
- Mushika: Brown, mouse-shaped, and smells bad
- Pundarikamukhi: broad-mouthed and greenish (similar to Mudga) (like lotus flower)
- Savarika: used to treat cattle, these 18 angulas (36 cm) long, reddish pink in color (similar to lotus petals), and greasy in nature.

Provinces like Yawana (Arab countries), Pandya (South India), Sahya (Central India), and Pautana (the area surrounding Mathura in Uttar Pradesh) are home to these Nirvisha leeches.

➤ *Leech's Current Perspective*

- Animalia, the Kingdom Annelida is the phylum.
- Clitellate class
- The Hirudinea subclass
- The Hirudinidae family
- Hirudo is the genus
- *H. medicinalis* is the species.

➤ *Morphology*

- There are 33–34 segments on the leech's exterior.
- Adults are green, brown, or greenish-brown, with a darker dorsal side and a brighter ventral side. They can grow up to 20 cm in length.
- The host is cut by the three tripartite jaws of medicinal leeches, which resemble saws and contain roughly 100 sharp edges. The mark left by the incision is an inverted Y inside a circle. They make skin incisions, take blood, and administer blood thinners that mimic Anophelin's anticoagulants (hirudin). The two suckers on either end of these organisms are called the anterior (oral) and posterior suckers.
- Eating takes place in the anterior sucker, which is composed of the jaws and teeth, whereas the posterior is mostly used for leverage. 1.5. Unsuitable Leeches [4] Rejecting leeches with large abdomens, an unattractive look, a thick (wide) body, slow movement, no biting, minimal blood consumption, and toxicity is advised.

➤ *Preservation*

- Leeches should not be exposed to heat exceeding 68°F (20°C) or direct sunshine; instead, they should be kept cool, between 42°F and 45°F (5°C and 7°C).
- Water needs to be changed twice a week on a regular basis.
- Leech should be housed in a container with a label and many holes on top for the best aeration. Leeches should not be exposed to direct sunlight.

- The water in the container needs to be replaced after five to six days.
- Approximately fifty leeches can be maintained in one gallon (4 L) of water; however, it is best to have two leeches every 250 mL of water. 1.7. Leeches don't eat much; every six months, bloodsucking leeches can be fed earthworms, insect larvae, uncooked ground meat, etc.

B. *Biochemical Research Before Leech Use.*

Before administering leeches, a number of metabolic factors need to be evaluated to avoid complications and negative consequences. These measurements include blood urea, serum creatinine, hemoglobin percentage, TLC, DLC, ESR, LFT, bleeding time, clotting time, prothrombin time, blood sugar level, HIV, and hemoglobin S Ag.

C. *The Purva Karma (Before Procedure)*

➤ *Patient Preparation*

- The first step in patient preparation is selecting the patient and evaluating his general health. It is crucial to rule out any conditions that are contraindicated.
- The best time to apply leeches is in the morning. When the patient is seated or in a supine position, the leeches are administered to pleasantly expose the affected area.
- Oleation, also known as snehana, should not be allowed just before leech application. The intended area is thoroughly cleaned using cold water. 1.9.2. Leech preparation
- Before being used, leeches are prepared by rubbing them with a mustard and turmeric paste. This increases the leech's appetite and blood-sucking ability while acting as a disinfectant. • The cleaned leeches are stored in a new jar of water for half an hour before being utilized. Steer clear of disinfectant and soap.

➤ *Main Procedure: Pradhana Karma*

- After using moist gauze to clean the targeted region, take the leech out of its jar and use your fingers to hold it by the neck. It places its mouth precisely over the affected region. Gently release the leech after holding its tail until it begins to draw blood.
- Raise the leech's neck to resemble a horseshoe as soon as it begins sucking blood.
- To keep leeches comfortable when they start sucking blood, they are covered with moist gauze and regularly bathed with cold water from above.
- If a leech refuses to bite on its own, a drop of milk, ghee, or prick-induced bleeding may be required to aid in the sucking process.
- The Jalauka first draws only the vitiated blood. If there is itching or a prickling feeling at the application site, the leech is now sucking the pure blood. When the leech is consuming pure blood, it should be removed. Apply a tiny bit of turmeric powder to the leech's sucking part if it doesn't pull away.
- Typically, leeches absorb 5–10 mL of blood.

➤ *Caution:*

Avoid placing leeches close to big veins like the femoral or jugular veins, or sensitive places like the breast, penis, or eyelids. Used leeches should ideally be kept in separate containers.

➤ *Paschat Karma*

Care for patients After the leech has been removed, the wound should be left open for blood to flow for a few minutes. The site is cleaned with regular saline. Next, use Shatdhauta ghrita, a classic Ayurvedic herbal ghee preparation, or turmeric powder to promote healing.

The lesion is then lightly bandaged for six to twelve hours to halt the bleeding.

➤ *Leech Care*

- After the leeches have fallen off, they should be dusted with rice powder and rubbed with a solution of oil and saindhav lavana.
- To induce vomiting or expel all of the blood that was extracted from the disease's seat, the right hand should then be carefully stroked from the tail upward to the mouth using the same fingers.
- Next, catch them by the tail end with the left thumb and forefinger. Keep doing this until they display every disorganizing symptom.
- Although their drab and passive lying suggests otherwise, leeches that had vomited the whole amount of blood extracted as previously mentioned will vigorously move around in quest of food if submerged in water. These need to be made to disgorge again.
- If the leech is active while immersed in water, the proper vomiting is advised.
- The labels on the individual pots or jars holding the used leeches include the patient's details. • One leech should be reserved for a particular patient and applied once every seven days to avoid cross-infection.

➤ *Ayurvedic Indications :*

Children, the elderly, ladies, those with sensitive constitutions, and those who are fearful or crippled are among those whose blood is tainted with pitta dosha.

➤ *As per Contemporary:*

- Acne, Diabetic ulcers, Vein varicosity, Sciatica
- Persistent skin disorders, including psoriasis and eczema.
- Poison
- Herpes Abscess Gulma
- Hemorrhoids

➤ *Contraindications: In Ayurveda*

The following circumstances warrant avoiding Jalaukavacharana:

- Udar roga (diseases of the abdomen)
- Shosha, who has TB
- Ksheena, or malnutrition
- Pregnancy Garbhini
- Pandu, or anemia , Sarvanga shotha, also known as generalized edema

➤ *Jalauka Therapy's Therapeutic Effect*

- Reduced inflammation • Analgesic (pain-relieving) • Promotes blood flow • A thrombolytic, which breaks up blood clots • Antimicrobial action

➤ *Ingredients in Leech Saliva That Are Bioactive:*

The therapeutic properties of jalauka (leech) stem from the presence of a unique bioactive component in leech saliva. Some of the primary bioactive components of leech saliva are listed below:

- Hirudin: It stops blood coagulation by binding to thrombin.
- Calin: Prevents Von Willebrand factor from attaching to collagen, hence inhibiting blood coagulation. prevents platelet aggregation caused by collagen Destabilase is an activity that monomerizes. breaks down fibrin. Effects of thrombolysis
- Hirustasin: Inhibits chymotrypsin, kallikrein, trypsin, and neutrophil cathepsin G, Anti-inflammatory Bdekins. inhibits acrosin, plasmin, and trypsin.
- Hyaluronidase: Raises the viscosity of the interstitial fluid. Antibiotic.
- Tryptase Inhibitor: Prevents the host mast cells' proteolytic enzymes.
- Eglins: They reduce inflammation. Stop alpha chymotrypsin, chymase, cathepsin G, subtilisin, and elastase from working.

II. DISCUSSION

Anushastras like Jalauka can be utilized in situations where Shastra karma is contraindicated. Humans are the primary users of *Hirudo medicinalis* (Nirvisha Jalauka). Depending on the patient, the ailment, and the Dosha predominance, different bloodletting techniques have been recommended. Jalauka are mainly used in Pitta Dosha Vikriti, which makes them appropriate for Pitta Prakriti people, since they are Madhura Rasa Yukta and can live in both fresh and cold water. Leech saliva contains a variety of chemicals that affect the affected area, including as hirudin, hyaluronidase, carboxypeptidase-A inhibitors, and bdellins (trypsin plasmin inhibitor).

It has been found that bdellins have an anti-inflammatory impact where the wound is. The properties of hyaluronidase resemble those of antibiotics. Inhibitors of carboxypeptidase-A improve blood flow to the wound site. It has been discovered that the substances in Jalauka saliva that resemble acetylcholine and histamine function as vasodilators on the microvasculature over the application site. All of these characteristics—vasodilatation, antimicrobial, and anti-inflammatory—increase blood flow and are very beneficial for wound healing. Increased oxygen supply and the eventual elimination of dangerous materials from the afflicted area are the outcomes of increased blood flow.

III. CONCLUSION

With the above discussion, it can be concluded that the use of leeches has developed over time from a simple bloodletting procedure to a scientifically based physiologic process with logical, well-defined clinical applications. Jalaukavacharana, or leech therapy, is very helpful in many acute and chronic disorders. Leech therapy, also known as jalaukavacharana, is an age-old Ayurvedic bloodletting method that can effectively treat infectious, inflammatory, and ischemic disorders by draining the blood from deep-seated areas. Numerous bioactive components found in leech saliva have anti-inflammatory, anticoagulant, anesthetic, vasodilator, antibacterial, and antioxidant qualities. These compounds work in various disease situations through a variety of methods.

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