

# Jalaukawacharana (Leech Therapy) A Scientific Review in Ayurveda

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## **ABSTRACT:**

*Jalaukawacharana is the form by which blood is released in the treatment of Conditions of illness such as Psoriasis, Osteoarthritis with the aid of therapeutic leeches. Modern medical science is the most acceptable and completely developed science in the entire world. but there is still not much impact on disorders such as Psoriasis, Osteoarthritis, Rheumatic Gout, Chronic Eczema, Vulgar Acne, Varicose Vein, Sciatica, Alopecia, etc. Leech therapy may be a safe and safer choice for treating such treatment. Leech has been used as Jalaukawacharana for Raktamokshana since ancient days. Reference should be gathered from conventional Ayurvedic texts, physicians, the internet, As well as professional experience. Detailed Jalaukawacharana details can be found in Sushruta Samhita. This illness, according to Ayurveda, is caused by vitiation of three Dosha. to let out the blood that helps to remove vitiated ones in Jalaukawacharana Dosh, particularly Pitta. The mode of action in leech therapy depends on the leech. Bioactive saliva containing Anti-inflammatory, Analgesic, Analgesic, Thrombolytic, antioxidant, vasodilator, anticoagulant, improvement of blood circulation Assets. In this current study, Ayurvedic sculptures and leech therapy have been in the light of modern science, explored.*

**Key Words:** Jalauka, Jalaukawacharana, Leech saliva, Leech therapy

## **INTRODUCTION:-**

Jalaukawacharana is an ancient procedure in which the methods of bloodletting with the aid of leeches are explained as the father of surgery by Acharya Sushruta.[1] Three doshas, vata, pitta & kapha, according to Ayurveda, Three are responsible for (vitiation of) role all over. The manifestation of disease by these three doshas, but according to Sushruta, the fourth dosha is Rakta, this Rakta Dosha is the product of skin condition (kushta), joint condition (sandhigat), there is a need for the removal of vitiated Rakta Dosha, called Raktamokshana or Raktavistravana, to release the blood. There is a reference to Jalauka in Atharvaveda. References to Raktamokshana by Jalaukawacharana are found in Atharvaveda's Koushika Sutra. We get the reference to the term Jalauka in Skanda Purana and Mahabharata.[2] Sushruta, Vagbhata, Harita, concentrated in depth in their literature on the application of Jalauka, Jalauka is the best among Anushastra, Acharya Charaka has claimed, and Jalaukawacharana is one among Shastrakarmas according to him.[3] The treatment of disease conditions in which medicinal leeches are treated. This means that Jalauka is known

as Jalaukavacharana. Globally, due to its therapeutic benefit, Jalaukavacharana (leech therapy) has gained greater popularity. Leech saliva contains various biologically active compounds that have anti-inflammatory, analgesic, anaesthetic and antioxidative properties. In the current age, for researchers all over the world, leeches have become the centre of attraction. It is estimated that more than 100 therapeutic substances are present in leech saliva, of which approximately [4,5] anticoagulants have been isolated and tested. In plastic surgery, complex cuts, abscesses and many other surgical conditions are now widely used for leeches. Latest research has demonstrated its dramatic effect on the relief of osteoarthritis symptoms. In addition to these, there are numerous disorders such as eczema, psoriasis, acne vulgaris, rheumatoid arthritis, osteoarthritis, gout, cellulitis, sciatica, allergic

reactions, purification of the blood, ischemic heart disease, varicose veins, rheumatic diseases, boils and abscesses, hypertension, blood clot thrombosis, alopecia, and zoster herpes.

An attempt has been made in this study to address the idea of leech therapy from an Ayurvedic and modern perspective.

### **AIM & OBJECTIVE**

To test and examine the application therapy of Leech (Jalaukavacharana) according to Ayurveda and modern point of view Along with written articles, from Ayurveda treatises

### **Ayurveda Review :**

#### **Synonyms-**

Jalauka, Jalauka, Jalauka, Jalaragi, Jalayuki, Jalika, Jaliasika, Jalajantuka, Veni, Jalalaka, Jalookasa, Jalookasa, Jalawkasi, RaktaPayani, Rakta Sandamshika, Teekshna, Vamini, Jalahjivani, Raktapata, JalaSarpini, JalaSoochi, Vedine, Jalatanou, Jalauka, Jalapatatmika, Jalika and Jalaluka

Leech Therapy in Ayurveda Leech therapy known as “Jalaukavacharan” in Ayurveda is created by the addition of leech therapy Jalauka and Avacharana are two words. The etymological definitions of the two phrases are accompanied by

### **Zoological classification of Leech (Jalauka)**

Phylum : Annelida  
Class : Hirudinea  
Order : *H. limnodynella*  
Family : *Hirudinidae*  
Genus : *Hirudinaria*  
Species : *H. Medicinalis*

### **Morphology of Leech (Jalauka) –**

There are two species of therapeutic medicinal leeches- *Hirudomedicinalis* & *Hirudomychaelseni* — the Leech term first coined by Linnaeus in 1758. This is a Phylum annelida segmented worm. It is found abundantly in India's freshwater ponds and rivers. Sexually, leeches are hermaphroditic but involve reproduction by a mate. *Hirudomedicinalis* is used without any adverse effect at the bite site due to its optimum blood sucking capacity. [9]

*H. medicinalis* field contains 102 segments. Using a large posterior sucker, the leech crawls.

Subsequently, the leech has three jaws arranged in a triradiate configuration that sticks to human skin and bites through it and a smaller anterior sucker used for feeding.[10,11].  
Leeches leave a Y-shape bite mark on the surface of the skin with the aid of these suckers. A leech will last between 90 minutes and 6 hours. As it fills up with blood, it can suck 5-15 ml during feeding. About blood.

### Length of Jalouka-

Maximum length of Jalouka 18 Anguli has been registered, large Jalouka can only be used in animals such as horses, elephants, etc. for blood letting. Anguli Pramana Jalouka is recommended for humans 4, 5 and 6.[12] Geographical distribution of Jalauka in ancient days. The Nirvisha Jalouka was available in Yavana (Turkasthan, currently taken as Turkish) at the time of the Sushrutas era, Pandya (southern region of the country-Deccan), Sahya (hill station near the bank of the Narmada river), Poutana (Mathura).[13]

### Leech Saliva's Bioactive Constituents -

In Leech saliva, the therapeutic effect of Jalauka (Leech) is attributed to the presence of a different bioactive constituent. Some of Leech Saliva's important bioactive components are given below: [14-16]

1. **Hirudin:** Inhibits blood coagulation by binding to thrombin.
2. **Calin:** Inhibits blood coagulation by blocking the binding of Von Willebrand factor and collagen. Inhibit collagen-mediated platelet aggregation.
3. **Destabilase:** Monomerizing activity. Dissolves Fibrin. Thrombolytic effects.
4. **Hirustasin:** Inhibits Kallikrein, Trypsin, Chymotrypsin, Neutrophil Cathepsin G.
5. **Bdellins:** Anti-Inflammatory. Inhibits Trypsin, Plasmin, Acrosin.
6. **Hyaluronidase:** Increases Interstitial Viscosity. Antibiotic.
7. **Trypsin Inhibitor:** Inhibits Proteolytic Enzymes of Host Mast Cells.
8. **Eglins:** Anti-Inflammatory. Inhibit the Activity of Alpha Chymotrypsin, Chymase, Subtilisin, Elastase, Cathepsin G.
9. **Factor Xa Inhibitor:** Inhibits the Activity of Coagulation factor Xa by forming Equimolar Complexes.
10. **Complement Inhibitors:**  
If they are deficient, they might replace natural complement inhibitors.
11. **Carboxypeptidase A Inhibitors:** Increases At the bite site, the inflow of blood.
12. **Histamine-like Substances:** Vasodilator. Increases the inflow of blood at the bite site.
13. **Acetylcholine:** Vasodilator.
14. **Anaesthetics Substance:** Anaesthetic.

### Classification of Jalauka

Their classification based on nature, *Jalouka* are classified into **Savisha** and **Nirvisha** with six subtypes in each group.

**Table No 1. Classification Of Jalauka**

Savisha Jalauka (Poisonous)	Nirvisha Jalauka (Non-poisonous)
Krishna	Kapila
Karbura	Pingala

Algarda	Shankhumukhi
Indrayudha	Mooshika
Samudrika	Pundareekhamukhi
Gochandana	Savarika

**Table No 2: General features of Jalauka**

<b>SavishaJalauka (Poisonous)</b>	<b>NirvishaJalouka (Nonpoisonous)</b>
<b>Habitat:</b> Originates in the decomposed urine and fecal matter of toads and poisonous fishes, in ponds of stagnant and turbid water.	<b>Habitat:</b> Originates in decomposed vegetable matter, in the putrefied stems of the several aquatic plants known as Padma, Utpala, Nalina, Kumuda, Pundareeka and common zoophytes, which live in clear water.
<b>General Characters</b> Thick in middle portion Lean in both ends. Slow locomotion Ugly in look Less active Unable to catch the host Delayed & small quantity sucking	<b>General Characters</b> Strong and well built Strong suckers Speed in sucking (Mahashana) Vrutta (round) Blue coloured lining in dorsal side of the body, back side Kashaya in color.

**Table No: 3. Specific features of Jalauka**

<i>SavishaJalouka (Poisonous)</i>	1) Krishna: Anjanachoornavarna i.e. Resembles black
<i>NirvishaJalouka (Non-poisonous)</i>	Big head(mahamastaka)
colour like Kajjala	is slimy (Snigdha) and coloured like Mudga pulse.(Greenish shade)
1) Kapila: Colour like Manahshila (real gar) at the sides, Dorsal surface	Ayata like vermy fish (Sarpakara)
2) Karbura	2) Pingala : Colour – Reddish or reddish brown
Over Udara slight elevation or depression are seen.	Locomotion –fast moving.
Shape – Round	Hairy with wrinkles
3) Alagarda	

**Method of Jalauka Application:-**

**Purva Karma (Pre-Procedure Protocols)**

It requires steps to take—

I-The patient's proper snehana (oleation) and swedana (sudation).

II- Leech purification by pouring the leech into a mixture of water with turmeric powder.

III- Component preparation-The washing of the body part on which the leech is to be applied.

**Pradhana Karma (Main Procedure Protocols)**

The skin with a sharp and sterile needle before the application prick, so the drop of blood comes out, then the Leech is applied through its front end and wet cotton covers the leech. If the leech is not prepared to suck the blood from the body portion, madhu, Ghrit, or butter should be applied.

### **Observation of leech during blood sucking**

The leech body appears during the sucking of blood following signs

- a. In the central portion of the body, incremental distension.
- b. The sense of scratching and burning at the bite spot.
- c. Pulsation can be noticeable on the body of the leech.

**Leech Removal** After 30-70 minutes, the leech is extracted by itself or by adding turmeric powder to the leech. Mouth of the leech.

### ***Paschata Karma* (Post Procedure Protocols)**

Wound treatment After leech detachment, there is a triangular wound caused by the mouth of the leech. Blood is flowing out of your cut. Bleeding from the wound is tested with the use of Yastimadhu or turmeric powder by applying tight bandaging.

### **Emesis of suck blood**

Emesis induction The leech applied to the lesion undergoes a Vamana treatment so that the same leech can be applied to the same patient next time. Turmeric powder is added to the mouth of the leech for the leech vama. To get purified, the leech vomits out all the blood sucked by it. For proper emesis, often pressing of Leech from the caudal to the front end is needed. Leech should be placed in fresh water, after proper vama, where it swims quickly and then settles down. Replace the leech in a clean jar.

### **Precaution during Leech Application:**

1. Bleeding and the patient's clotting time should be normal.
2. Gentle leech handling.
3. With wet cotton, cover the leech.

### **Indications: Ayurveda**

Vidradhi (Abscess), Gulma (Abdominal Swelling), Arsha (Piles), Kushtha (Skin Disease), Vatarakta (Gout), Krostrukashirsha (Infective Arthritis), Sandhigataroga (Arthritis), Kantharoga (Goiter), Netraroga (Eye Diseases), Granthi (Nodular Swelling), Arbuda (Cancer), Shlipad (Filaria), Vidarika (Crackle), Vishadamshtra (Insect Bite), Visharp (Insect Bite), Jalaukavacharan can be used in various ayurvedic diseases.

### **Contraindications: Ayurveda**

In the following circumstances, Jalaukavacharan should be avoided:[18]

- Sarvangashotha (Oedema generalised)
- (Abdominal diseases) Udarroga
- Tuberculosis (Shosa) Ksheena (Emaciation)
- Pregnancy (Garbhini)
- Pandu (Anemia)

### **Indication: Modern Medicine**

In order to relieve venous diseases and thrombosis, physicians now use leeches to treat abscess, sore knees, glaucoma, and myasthenia. In plastic surgery, medicinal leeches are used to improve brain circulation & to treat infertility. Excellent findings have been obtained in eczema psoriasis & alopecia from leech therapy. In the following disorders, leech therapy could be very effective:[19-24]

1. Inflammatory pathology
2. An abscess
3. Different accidents
4. Ischemic infections and gangrene
5. Venous / Varicose Vein Diseases
6. In cosmetic / grafting surgery
7. Diseases of the Heart
8. Embolism / Thrombosis
9. Rheumatic disorder
10. Joint pains (arthritis etc.)
11. Skin diseases-herpes, eczema , psoriasis, etc.

### **Contraindication: Modern Medicine**

In the following conditions, leech therapy should be avoided-[25]

1. Refusal by patient
2. Diseases with Arterial Insufficiency
3. Disorder of Bleeding
4. Patient Immunocompromised
5. Patient Anaemic
6. Blood coagulation disorder
7. Patients that take medications such as vitamin E, aspirin, heparin, warfarin, and NSAID in large doses.
8. Garlic, ginger, Ginkgo biloba and Ginseng are taken by patients.
9. Hirudin, Calin, Hyaluronidase, Eglina, Destabilase, Piyavit, Collagenase, Apyrase, Allergic reaction to active leech-like substances

### **Adverse Effects of Leech Therapy –**

Leech therapy is a very safe treatment, but local discomfort, itching, hypotension, vasovagal assault, haemorrhage, infection, allergic reactions, ulcerative necrosis and transmission of infectious diseases are some of the adverse effects recorded by scientists.[26-30]

### **Frequency of Leech application –**

According to disease and severity, the frequency of leech application can vary. Leech can usually be used for up to six sessions once a week. To prevent cross-infection, one Leech should be reserved for a specific patient.

### **Biochemical Investigations prior to Leech application –**

Certain biochemical parameters should be observed prior to leech application in order to prevent any problems and side effects. Hb percent, TLC, DLC, ESR, LFT, blood urea, Sr. creatinine, bleeding duration, coagulation duration, prothrombin time, blood sugar level, HIV, and HbsAg are certain parameters.

### **DISCUSSION:**

Jalukavacharana is one of the oldest methods used to extract deeply rooted contaminants and pacify vitiated dosha to cleanse the body. Diseases are induced due to dosha vitiation, according to Ayurveda. Doshaget vitiated accumulated in srotas (channels) causing srotoavarodha (channel block) and leading to many illnesses. Saliva leech contains a variety of bioactive components that have anti-inflammatory, anticoagulant, anaesthetic, vasodilator, anaesthetic, antibiotic and antioxidant properties that function under various conditions of illness via multiple mechanisms. Jalaukavacharana increases blood flow through its anticoagulant properties, which improves local circulation and also suffices for the nutrient.

Jalaukawa's anticoagulant property was discovered by modern scientists in 1980, but our acharyas had the knowledge since the vedic times. From a scientific perspective and not just a mere intuition, as an effective treatment modality.

### **Probable Mode of Action of Jalaukavacharan (Leech Therapy) –**

Leech saliva includes a number of substances such as hirudin, hyaluronidase, histamine-like vasodilators, collagenase, kallikrein and superoxide development inhibitors, and poorly characterized anaesthetics and analgesic compounds. The observed results can be explained by various mechanisms. First, in addition to the thrombin inhibitor hirudin, various pharmacologically active substances have been identified in leech saliva, such as histamine-like vasodilators, inhibitors of kallikrein and trypsin, various other proteinase and anaesthetic inhibitors. Through the concomitant action of a further element of leech saliva, these substances, hyaluronidase, might enter deeper tissue zones. Second, activation of nociceptives leads to chronic pain. Via antinociceptive impacts and counter discomfort, leech therapy may induce pain relief. However, it is not known to what degree such processes can be caused by leech bites, and it seems unlikely that the observed lasting effect will result in a reduction in nociceptive input on a single occasion.[31] The leech jaws pierce the skin so that these powerful biologically active substances can enter the deeper tissues. The penetration and diffusion of these pharmacologically active substances into the tissues is further facilitated by hyaluronidase (spreading factor), an enzyme in leech saliva. With the additive effect of hyaluronidase, antiphlogistic compounds in leech saliva are highly likely to penetrate deep enough to have major effects on periarticular saliva. Myofascial structures and maybe even intraarticular structures and skin disorders that are inflammatory, such as Psoriasis.[32] A number of related studies with Ayurvedic remedies were reported[33-44].

### **CONCLUSION:**

Leech or Jalaukavacharan therapy is an ancient technique of ayurvedic blood letting that has the enormous ability to treat conditions of inflammatory, ischemic and infectious diseases. Saliva leech contains a variety of bioactive components that have antiinflammatory, anticoagulant,

anaesthetic, vasodilator, anaesthetic, antibiotic and antioxidant properties that function in various conditions of illness via multiple mechanisms. Sadly, most bioactive ingredients are still unexplored and knowledge of the mechanisms of action of bioactive compounds found in Leech Saliva is limited. Extensive studies are therefore needed to find out the precise mechanisms. The operation of a different bioactive factor in order to restore conventional therapeutic ability on a scientific basis.

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