

**A CRITICAL REVIEW OF THE JALAUKAVACHARANA, ITS CLASSICAL
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ABSTRACT

Ayurvedic therapeutic practices are based on two main approaches *Shodhana* and *Shamana Chikitsa*. *Shodhana Chikitsa* includes five major purification procedures called *Panchakarma*. One such procedure, as stated by *Sushruta*, is *Raktamokshana* (bloodletting) which is considered beneficial for *Rakta-Vyadhi*. Leech therapy, includes *Jalaukavacharana* in which medicinal leeches are used for bloodletting purpose. Leech's extracts vitiated *Doshas* from the body without requiring sharp surgical implements. According to historical records, medicinal bloodletting has been practiced since prehistoric times. *Sushruta* has provided a detailed account of the various uses of leeches for therapeutic purposes. *Jalaukavacharana* is considered to be a highly sophisticated form of *Raktamokshana* and therefore falls under the category of *Ashastra* and is rather referred to as *Anushastra*. Leeches are hermaphroditic, segmented, elongated and has flat body, with well-defined anterior (oral) and posterior (abdominal) suckers at each end. With the help of these suckers the leech sucks vitiated blood from the body surface of person receiving therapy. This article highlights pharmacodynamics of *Jalaukavacharana* (leech therapy) and their classical procedural protocol as per Ayurveda.

KEYWORDS: *Ayurveda, Jalaukavacharana, Leech Therapy, Raktamokshana, Bloodletting.***INTRODUCTION**

According to Ayurvedic literatures, all diseases are caused by an imbalance in the *Tridoshas*, which consist of *Vata*, *Pitta* and *Kapha*. In Ayurveda, a person's health is defined by the balance of their three *Doshas*, and by the proper functioning of *Agni*, *Dhatu* and *Mala*. Ayurvedic treatment is split into two major categories; cleansing and palliative therapies. *Shamana Chikitsa* uses herbs, minerals, and/or other materials to bring vitiated *Doshas* back into balance through internal means or oral administration. Conversely, *Shodhana Chikitsa* aims to remove aggravated *Doshas* from the body via *Panchakarma* procedures. *Panchakarma*, as described in the *Sushruta Samhita*, consists of five types of procedures; *Vamana*, *Virechana*, *Basti*, *Nasya* and *Raktamokshana*. *Raktamokshana* is particularly important because it removes all the vitiated *Doshas* simultaneously.^[1-3]

Raktamokshana can be performed using one of three methods; *Siravedha*, using a tool to extract blood through a superficial layer of skin; *Jalaukavacharana*, using leeches; or *Prachchhana Karma*, making multiple incisions in a small area of skin. According to Ayurveda, different procedures are advised for each of the three *Doshas* based on the predominance of the *Dosha*. *Jalaukavacharana* is used to treat *Pitta* and *Alabukara* (the sucking method using cupping) is used to treat *Kapha*.

Jalaukas are broadly classified into two categories *Savisha Jalauka* and *Nirvisha Jalauka*. The poisonous varieties, often referred to as harmful species (e.g., *Hirudo detrimental*), are considered unsuitable for therapeutic use, whereas non-poisonous leeches such as *Hirudo medicinalis* are preferred in clinical practice. In India, *Hirudo medicinalis* is widely used, this species of leech is typically a dark brown color with longitudinal

stripes along their entire body. They are approximately 2 to 3 inches in length and have a body that is somewhat convex, wrinkled in the transverse direction, and tapers to a point at both ends. When sucking, a leech can consume anywhere from 5 to 15 ml of blood.^[4-6]

Procedural Protocol of *Jalaukavacharana* (Leech Therapy)

✓ *Purva Karma*

The starting point is selecting the appropriate patient based on health status and ruling out any contraindications. Morning is the best time of day to apply leeches to the patient. The patient will be placed in either a supine or sitting position based on how easy it is to access the affected area. Treatment options on the day prior to applying leeches include oleation and sudation, but one should avoid giving oleation immediately prior to the leech application. Before applying leeches, mild *Swedana* may be given to the area where therapy to be applied. Cleanse the site thoroughly with cold water prior to applying the leeches.^[5-7]

Prior to applying leeches to the patient, they should be prepared by using a combination of mustard and turmeric paste; this mixture is used as a cleansing agent and will help the leeches suck blood more efficiently. The leeches should then be placed in clean water for approximately thirty (30) minutes, which will prepare them for use on the patient. One should avoid using chemical disinfectants or soaps when handling the leeches, as these products will harm the leeches.

✓ *Pradhana Karma*

Once the site has been cleaned with moist gauze, the leech is carefully removed from the container after the anterior portion of the leech has been identified. To attach a leech, place its mouth onto the target area and hold its posterior end into place until it attaches itself and then begins to suck blood from affected area. After suction has begun, a leech is in its typical horseshoe shape. Depending on the purpose, there may be 5–10 leeches used. While using the leeches, they are covered with moistened gauze and periodically sprinkled with cool water to keep the leeches active and comfortable. If leech not attach properly one may use either a drop of milk or ghee, or also induce slight bleeding by pricking to encourage the leech to bite. When the leech has

received the desired amount of blood, it will detach itself. When the leech starts to suck pure blood it will cause a sensation of tingling and/or itching at the site of attachment. This is the time to remove the leech if it has not detached already.^[6-8]

✓ *Paschat Karma*

On detaching, there may be minor bleeding, the site should be cleaned with normal saline or antiseptic solution and turmeric or another medicine, such as *Shatadhauta Ghrita* should be applied to promote healing. A light bandage will be applied to the wound to control bleeding. If bleeding continues, one can, seal the wound with tincture of benzoin. The patient should be provided light fluids until he/she can have other solid foods.

Following leech therapy, the leech should be made to regurgitate the ingested blood. Mixing turmeric or similar herbs at its mouth and gently rubbing the leech from the back to the front will accomplish this. If the leech is still moving when placed into the clean water, it has appropriately vomited. All leeches should be kept in separate containers and as much as possible should be assigned to one patient to avoid cross-contamination.^[7-9]

Precautions

- ✓ Careful observation during the therapy is essential to avoid any complications. The irritation and mental stress should be taken in consideration on the risk benefit ratio.
- ✓ Applications should not be made directly over large veins e.g., femoral and/or jugular veins.
- ✓ Do not apply to areas that are delicate e.g., breasts, genitalia and eyelid.
- ✓ All used leeches must be separated in order to prevent contamination.

Pharmacodynamics (Mechanism of Action) of *Jalaukavacharana*

Jalaukavacharana used to treat diseases caused by vitiated *Pitta* and *Rakta*. It is indicated for skin disorders such as psoriasis, eczema, chronic ulcers, varicose veins, *Vatarakta* and arthritis, etc. The major therapeutic effects or biological action of *Jalaukavacharana* (leech therapy) is presented in **Figure 1**.

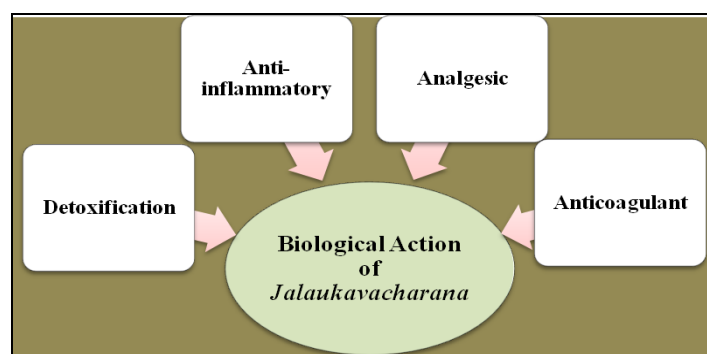


Figure 1: Therapeutic effects or biological action of *Jalaukavacharana* (leech therapy).

The mechanism of action of leech therapy is derived from the numerous bioactive substances that comprise the leeches' saliva. This saliva has many biologically active substances which include: Anticoagulants, Apyrase (antiplatelet), local anaesthetics and others that have antimicrobial properties. The combined action of all these factors makes the procedure painless because the injection site has been anaesthetized and the volume of blood returning to the injected area has increased due to dilation of the blood vessels.^[5-8]

Medicinal leech saliva contains many biochemical components that are considered bio-therapeutic agents. The protein hirudin is one of the most important bioactive components of leech saliva and is a potent anticoagulant because it binds to thrombin and prevents the conversion of fibrinogen to fibrin.

Hyaluronidase is an important bioactive component of leech saliva that contributes to its therapeutic properties by breaking down hyaluronic acid, thereby increasing tissue permeability and having antibacterial properties.

Calin is another important bioactive component of leech saliva and has an anti-platelet effect because it inhibits platelet aggregation and adhesion by blocking the pathway of collagen-mediated aggregation.

Destabilase is an important bioactive component of leech saliva because it has thrombolytic activity due to the dissolution of fibrin. Hirustasin is an important bioactive component of leech saliva because it inhibits several types of proteases including kallikrein, trypsin, chymotrypsin and neutrophil cathepsin G.

Bdellins are bioactive proteins and mediate an anti-inflammatory effect by inhibiting enzymes such as trypsin, plasmin and acrosin, and by suppressing the proteolytic enzyme activity of mast cell degranulation via tryptase inhibitors.

Eglins are bioactive proteins with anti-inflammatory properties that inhibit proteolytic enzymes such as elastase, chymase and cathepsin G. Carboxypeptidase A inhibitors are bioactive proteins that enhance local blood flow at the site of injection. Histamine-like substances are bioactive molecules that act as vasodilators causing increased blood circulation in the affected area.^[8-10]

CONCLUSION

Leech therapy or *Jalaukavacharana*, has shown promise in treating a number of acute and long-term illnesses. The saliva of a leech contains several biologically active compounds which act as an anticoagulants, local anesthetics and vasodilators, etc. The one of the most prominent compound is hirudin, which is a strong anticoagulant; it prevents the change of fibrinogen into fibrin; therefore prevents blood from clotting and allows for continuous circulation throughout the therapy. This therapy offers remarkable health benefits in many

illnesses including inflammatory conditions, skin disorders, and diseases related to *Vata & Rakta* and also helps to remove vitiated blood from body. However precautionary measures are recommended while performing this therapy to avoid possible complications.

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