

CONCEPTUAL STUDY ON *JALAUKAVACHARANA* AND ITS MODE OF ACTION

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ABSTRACT

Jalaukavacharna or Hirudotherapy or Leech therapy is a form of *Raktmokshan* by use of Leeches. Leeches are segmented worms that belong to phylum Annelida and comprise the subclass Hirudinea. *Raktamokshan* is a *Shodhna* procedure in which vitiated *doshas* in *Rakta* are eliminated. *Jalaukavacharna* is described by *Acharya Sushruta* and *Vagbhata* in Classical *Ayurveda* Texts. Leech sucks impure blood and removes toxins and vitiated *doshas* from the body, especially in *Pitta* vitiated *Rakta*. Saliva of Leech contains various bioactive substances which have anti-coagulating, thrombolytic, anti-inflammatory and vasodilator effects. *Jalaukavacharna* is used

effectively in management of non-healing ulcerative lesions like diabetic ulcers and leprotic wounds, Skin disorders like eczema, acne and psoriasis, cellulites, abscess, varicose veins, thrombophlebitis, atherosclerosis etc.

KEYWORDS: *Jalauka*, *Raktamokshana*, saliva.

INTRODUCTION

Jalaukavacharana or Leech application is also known as Hirudo-therapy or Leech Therapy (*Jalauka* means Leech and *Avcharna* means application). *Jalaukaavacharna* is a type of *Raktamokshana* practiced in India since ancient times. *Raktamokshan* is considered as *ardh chikitsa* in *Ayurveda* classical texts. *Jalauka* is also described as an *Anushashtra*^[1] and *Jalaukavacharana* is a type of *Ashastrakrita Raktamokshana*. Word *Jalauka*(*Jal+okas*) indicates that it an aquatic animal. *Jalaukavacharna* is safer and less complicated natural

process, so indicated even for child, old, fearful, weak, women and people of tender nature.^[2] Leech therapy is also practiced in countries like China, Germany, England, America, Russia, Africa etc. Leech suck impure blood from human body and removes some toxins and vitiated *doshas* from body. Saliva of Leech contains many bio- active compounds which are beneficial to human beings in many diseases. These compounds have Anti- coagulant, anti-inflammatory, anaesthetic and vasodilator properties and so are used to cure many diseases.

JALAUKA (LEECH)

Jalauka or *Jalooka* is the Sanskrit word for Leech, which means which lives in water and water is life for them. About 700 species of Leeches are currently recognised, of which about 100 are marine, 90 are terrestrial and remainder freshwater. Generally freshwater Leeches are used for Hirudotherapy. Commonly used Leeches are *Hirudo medicinalis*, *H. manilensis*, *H. orientalis*.^[3]

Basically these are divided in two types- (1) Aquatic (2) Terrestrial.

Taxonomic classification: *Hirudo medicinalis*:

Kingdom: Animalia
Phylum: Annelida
Class: Clitellata
Order: Hirudinida
Family: Hirudinidae
Genus: Hirudo
Species: *H. medicinalis*.

Leech is about 10-15 cm in length, but a fully grown or mature leech may be 30-35 cm in length. Leech is a segmented animal. Body surface of animal can be divided into 102 annuli; whereas its internal structures are divided into 33 segments. It has two suckers: a small oval anterior sucker and a large, circular posterior sucker. Mouth is surrounded by anterior sucker. Anus lies on the dorsal side just in front of the posterior sucker. Hirudinaria is sanguivorous, i.e., feeds on vertebrate blood and invertebrate hemolymph. Posterior sucker is used mainly for leverage, whereas anterior sucker, consisting of jaw and teeth is used for feeding. Leeches are hermaphrodites, meaning each has both male and female reproductive organs. Male genital aperture lies on the segment 10 and a female genital aperture on the segment 11, both on ventral side.^[4]

Jalauka lives in cold places and reproduce in water. It is *Madhur* in *Rasa*. So it is used to suck *Pitta dusht Rakta*. *Acharya Sushruta* and *Vagbhata* classified *Jalauka* into two groups namely *Savisha* and *Nirvisha*.^[5, 6] *Savish Jalauka* is of 6 types and *Nirvish Jalauka* is of 6 types according to *Acharya Sushruta*.

Savisha Jalauka: *Krishna, Karbura, Algarda, Indrayudha, Samudrika, Gochandana*.

Nirvish Jalauka: *Kapila, Pingala, Shankumukhi, Mushika, Pundarikmukhi, Saavrika*.

Nirvish Jalauka is used for *Raktamokshan* purposes. They live in freshwater sources.

JALAUKAVACHARNA KARMA: It is the procedure of bloodletting of *dusht Rakta* by use of Leech. It is done in following steps.

(1) Purva Karma: Pre operative Procedures

(a) Collection, preservation and feeding of Leeches: Best leeches for the procedure are collected during *Sharad* and *Varsha Ritu*.

Qualities of Jalauka used for Jalaukavacharan: medium sized *Nirvish Jalauka* obtained from deep and freshwater is used for the Therapy. According to *Acharya Vagbhata*, 4-6 *Angula* long *Jalauka* should be used for human beings.^[7] It should not be flat from sides and raise from mid, sluggish in nature & indifferent towards blood sucking. *Hirudia medicinalis* and other leeches having above mentioned qualities should be used in *Hirudotherapy*.

Collected *Jalauka* should be kept in wide mouth earthen pots having fresh water containing mud, aquatic plants like lotus stem, tubers, and algae to feel like natural pond. Water and other grass, petals should be changes in every third day so that water should remain fresh. After every seven days, earthen pot should be changed so that temperature is maintained by capillary action of earthen pot.^[8]

(b) Examination of patient: Patient must be examined thoroughly by *Astavidh* and *Dshvidh Pariksha* as given by classical texts, to decide whether the *dosha* and disease is suitable for leech therapy or not.

Complete blood profile and other necessary investigations should be done before the therapy. *Jalaukavacharna* is indicated in *Gulm*(Lump), *Arsh*(Piles), *Vidradhi* (Abscess), *Kushth* (Skin disorders), *Vatrakt* (Gout) etc.^[9]

Before applying *Jalauka* for the process, it should be put in Mustard and Turmeric paste (*Kalka*) and put it in a water pot for some time. It activates the leech physically and stimulates it to suck blood. Then it can be applied to the desired site. Do not apply any spirit or disinfectant on desired site.

(2) *Pradhan Krma*: Operative Procedure

The patient having disorder to be treated with Leech should be asked to sit or lie down. Then the *shodhit* Leech should be applied on affected part of body of patient to suck blood. Then cover the Leech with smooth white cloth or cotton swab. Do not cover the mouth of the Leech; otherwise it will not suck blood. If the leech does not suck blood, then put some drops of blood or milk in the affected area. If Leech does not start sucking blood by doing so, slight incision should be made over the affected area. Anterior sucker of Leech assumes the shape of Horse shoe during blood sucking. When sensation of itching and pain occurs at the affected area, it indicates that Leech started to suck the fresh blood, and then Leech should be removed. If Leech does not detach, then it should be removed by sprinkling the *Saindhav* powder (rock salt) over the mouth of Leech.



Figure 1: (a) *Jalauka/Leech* (b) *Jalaukavacharna*(Leech application).

(3) *Paschat Karma*

Post Operative Procedures

(a) **Treatment of Leech:** As soon as the Leech is removed, keep the body of the Leech over rice and mouth should be massaged with oil and rock salt and vomiting should be induced. The Leech should be gently squeezed to enable it to emit out the sucked blood. Properly vomited Leech moves around the pot with a desire to eat. Used Leech should not be reuse for at least seven days.

(b) Treatment of Patient: *Samyak Yog* of *Raktamokshan* (proper bloodletting) includes lightness in body, loss of pain, loss of symptoms of disease and mental calmness. After *Smayak Yog* Leech has to be detached from the affected area, wound should be washed with spray of cold water and apply *Shatdhaut grita* or honey over the wound and dressing of wound should be done with *Kashay*, *Madhur*, *Snigdha*, *Sheet dravya*. Exercise, sexual intercourse, cold bath, day sleep, exposure to breeze, food having *Kshara*, *Amla*, *Katu rasa* and *shoka* should be avoided till body gets original strength.

CONSTITUENTS OF LEECH SALIVA AND PROBABLE MODE OF ACTION OF JALAUKAVACHARANA^[10, 11, 12]

Jalauka lives in cold places and is of *Madhur rasa*. So it is useful in vitiated *Pittaj* and *Raktaj* disorders. The use of Leech for medicinal purposes is due to the chemical contents present in Leech saliva. The saliva of Leech contains chemicals which act as anaesthetic, which makes the bite of Leech painless to the host, anti-inflammatory, anti-coagulant and vasodilators which increase the blood flow to the feeding areas by increasing the diameter of blood vessels and enhance wound healing, promotes circulation and have chemical substance which cause increase absorption of fluids in body. *Jalauka* sucks impure blood from capillaries of affected site and prevents inflammation, oedema, promotes circulation and helps in healing. Saliva of Leech contains following bioactive substances

(1) Hirudin: It has anti-thrombotic activity and inhibits blood coagulation. This improves blood flow to compromised tissue areas and prevent blockage in blood vessels. So Leech Therapy is useful in prevention and treatment of thromboembolic diseases like angina pectoris, atherosclerosis.

(2) Calin: It inhibits blood coagulation by blocking the binding of von Billebrand factor to collagen. It inhibits collagen mediated platelet aggregation and is responsible of slow cleansing of wound by maintaining secondary bleeding for some hours.

(3) Hyaluronidase: It is a protein enzyme. It is called "spreading factor". It facilitates degradation of connective tissues around the bite site and acts to clear the path for active and healing substances to penetrate.

(4) Destabilise: Monomerizing activity. It dissolves fibrin and has thrombolytic effect. It completely blocks the spontaneous aggregation of human platelet.

(5) **Bdellins:** Anti-inflammatory and inhibits trypsin, plasmin, acrosin.

(6) **Tryptase inhibitor:** Inhibits proteolytic enzymes of host mast cells.

(7) **Eglins:** Anti-inflammatory. Inhibits the activity of alpha-chymotrypsin, chymase, elastase.

(8) **Carboxypeptidase A inhibitors:** Increase the blood flow at the bite site.

(9) **Acetylcholine:** It acts as vasodilator.

INDICATIONS OF *JALAUKA VACHARANA*^[13, 14]

(1) Ulcerative lesions e.g. diabetic ulcers, leprotic wounds, gangrenous wounds, malignant ulcers (2) Skin disorders e.g. acne, psoriasis, eczema, ringworm and post operative skin grafting lesions (3) Boils, abscess, Haematoma (4) Phlebitis and thrombotic conditions (5) Varicose veins (6) Osteoarthritis, Gout (7) Alopecia (8) Dental disorders like Odontalgia, periodontitis and alveolar abscess (9) Elephantiasis, Lymphadenitis. (10) Preventing Post surgical blood clotting.

CONTRAINDICATIONS OF *JALAUKA VACHARANA*

(1) Anaemia (2) Bleeding disorders like Haemophilia (3) Pregnancy (4) Hypotonia (5) Generalised oedema (6) Leukaemia (7) Bed ridden patients.

DISCUSSION AND CONCLUSION

Rakta is an important constituent of body. *Acharya Sushruta* mentioned *Rakta* as Fourth dosha. *Raktamokshan* or controlled bloodletting is a useful *Panchkarma* procedure for vitiated *Pittaj* and *Raktaj* disorders. Vitiated *doshas* can get accumulated in *srotas* which causes blockages and may lead to diseases. *Raktamokshan* by *Jalauka* is useful in *Pitta dusht Raktaj* disorders. *Jalaukavacharna* removes not only impure blood from the body but also injects biologically active substances which help to manage the various disorders. Probably, the enzymes and other active compounds present in Leech saliva play a major role in its medical use. Nowadays Leeches are widely used successfully for many cardiac thromboembolic conditions, skin disorders and ulcerative lesions, dental and eye disorders. It is not much painful procedure and can be used in children, women and old age people also. Care should be taken when applying leeches to prevent complications like bacterial infection that resides in the gut of Leech and allergic reactions like itching.

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