

## JALAUKAVACHARANA (HIRUDOTHERAPY)- A BLESSING THROUGH AYURVEDA

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Article Received on  
26 April 2019,

Revised on 16 May 2019,  
Accepted on 06 June 2019,

DOI: 10.20959/wjpr20198-15221

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### ABSTRACT

*Jalaukaavacharana* (Leech therapy) is a para-surgical treatment modality according to *Ayurveda*. It is one of the most effective blood letting therapy in *Ayurveda*. The process of blood letting in which leeches are been used is known as *Jalaukaavacharana*. It is been included under *raktamokshana*, which is considered to be one among the purificatory therapies(*shodhana*). According to *Acharya Sushruta*, the purificatory therapies are divided into a group of 5 which are been named as *Panchakarma*. It is a method in which localised impure blood is let out to heal the tissue. It is considered as the ideal method to

expel out the vitiated blood quickly, effectively and safely. Leeches are used in the medical practice since ancient times to treat many diseases, due to its therapeutic effects, this is successful even today. According to *Ayurveda*, leech only sucks impure blood. The importance of *Jalaukaavacharana* can be assessed by the fact that the Lord *Dhanwantari* (god of *Ayurveda*) was carrying the leeches at the time of his origin in the course of *Kheersagarmanthana*(churning of ocean of milk).

**KEYWORDS:** Jalaukavaacharana, Raktmokshana, Panchkarma, Ayurveda, Shodhana.

### INTRODUCTION

*Jalaukavacharana* = *jalauka* + *avacharana*

*Jalauka*- leech

*Avcharana*--to apply

According to *Acharya Sushruta* The 5 purificatory therapies are *vamana* (emesis), *virecana* (purgation therapy), *vasti*(enema), *nasyam* (nasal drops), *raktamokshana* (bloodletting).

*Acharya Susruta* had given more importance to *Rakta* (blood) as it is considered to be life and its loss from the body can lead to death of a person. As *Acharya Susruta* was well versed in surgical techniques, he had a viewpoint that blood played an important role in the body and its loss can create harm to patient, therefore it should be termed as the 4<sup>th</sup> *dosa* and included *raktamokshana* under the *panchakrama*.

In *Ayurveda*, *Raktmokshana karma* is considered as a regimental therapy. It is essential to adopt this procedure in autumn season for purification of body humors, which are otherwise deranged due to seasonal change.<sup>[1]</sup>

### **RAKTA(Blood)- According to Ayurveda**

*Dehsya rudhiram mulam rudhirenev dharyet, Tasmad yatnen sanraksheym raktam jeeviti isthati: (su. Su 14/45)*

According to *Ayurveda* the main function of blood is *jeevanam* (maintenance of life). *Rakta* is considered to be the root of life and it is the one which sustains the life. Due to this reason, with all the efforts we should protect it.<sup>[2]</sup>

*Rakta* is formed from the first *dhatu* i.e *rasa dhatu* (plasma) and due to action of *ranjaka pitta*, blood is attaining the red colour. The transformation into red colour happens when it goes to liver and spleen.<sup>[3]</sup> Blood is composed of all *panchamahabhuta* (5 elements of universe) and qualities of them are seen in the blood such as :-fishy odour, liquidity, redness, pulsation & lightness.<sup>[4]</sup>

### **CHARACTERISTICS OF NORMAL BLOOD**

Not too concentrated

Not too liquid

Free from discolouration

Stimulates *Indragopaka* (a red coloured insect which come out of earth in rainy season).<sup>[5]</sup>

### **BENEFITS OF RAKTMOKSHANA**

- Increases the lusture.
- Sense organs become clear.
- Person will be able to recognize things in a balanced or ideal manner.
- Improves the function digestive fire (without any obstacles).<sup>[6]</sup>
- Lightness of body

- Cessation of pain
- Decrease in intensity of disorder
- Cheerfulness of mind
- Free from Skin disorders.<sup>[7]</sup>

## TYPES OF BLOOD LETTING THERAPY

### According to materials used

**1. Shastra krita(using sharp instruments)-** Word *shastra* means anything which is sharp in nature. Word **krita** means which is being done. The process in which sharp instruments are being used is known as shastrakrita. The therapies included under it are:

1.1 Prachanam - The process in which series of pricking which is been done using sharp instruments over superficial layers of skin. It is being used when vitiated blood is accumulated over superficial layers of skin which is concentrated to one place.

1.2 Sira vyadhanam - A superior grade of blood letting procedure in which vitiated blood is being taken out from the body using vein puncture. It is been done when the vitiated blood is present all over the body.

### 2. Ashastrakrita (without using sharp instruments)

2.1 Shringa (horn)- horn of animals such as cow are used in this procedure, mainly if twak (layers of skin) are effected with vata dosha.

2.2 Alabu (gourd)- if twak (layers of skin) are effected blood letting with gourd can be done.

2.3 Jalauka (leech) – non poisonous leeches are used for blood letting when blood is vitiated by pitta dosha.<sup>[8]</sup>

## ETMOLOGY OF JALOKA

*Jalamasyuritijalayuka; Jalmasamokiti jalokasa: (su.su 13/9)*

The one which is having their abode is water. Leeches are also named as **jalayukah** as the water is its life. As leeches emerges from water, lives in cold and is sweet due to which it is being used for blood letting when pitta is vitiated.<sup>[9]</sup>

## CLASSIFICATION OF JALOKA

Based on their therapeutic role- according to *Acharya Sushruta Jalauka* are of 12 varieties, which can be subdivided into 2 types i.e. -poisonous and non poisonous. There are 6 poisonous varieties and 6 non poisonous varieties.

1. Savisha (unfit for therapeutic purposes)

## 2. nirvisha (fit for therapeutic purpose)

<i>Nirvisha jaloka</i>	<i>Savisha jaloka</i>
<i>Kapila</i>	<i>Krishna</i>
<i>Pingala</i>	<i>Karbura</i>
<i>Sankumukhi</i>	<i>Algarda</i>
<i>Mushika</i>	<i>Indrayudha</i>
<i>Pundrikmukhi</i>	<i>Samudrika</i>
<i>Savarika</i>	<i>Gochandana</i> <sup>[10]</sup>

Acharya Vagbhata also classified Leeches on the basis of the sex characters. Female leech are delicate, having thin skin, small sized head, and the lower body being large. It is indicated in Alpa Dosha and acute disorder. Male leech are having hard skin, big head along with being semi lunar in look with large front portion. It is indicated in highly vitiated Dosha and chronic diseases.<sup>[11]</sup>

According to modern science, leeches are divided in main 2 types, Marine & fresh water leeches: which are devoid of jaws and have colorless blood. Terrestrial Leeches; which have three jaws and red colored blood.<sup>[12]</sup>

**Savisha Leech Damsha lakshana (symptoms of poisonous leech bite)** - Acharya Sushruta has advised to use only nonpoisonous leech for the treatment purpose, not poisonous leech, besides this he described the list of complications arise due to toxicity of poisonous leech as follows- burning, itching, swelling, drowsiness, fever, delirium, unconsciousness etc.<sup>[13]</sup>

According to Acharya Vagbhata, the symptoms are burning, fever, inflammation, edema, itching, boil, erysisspelas, vitiligo, vertigo etc. Regarding these type of complications, Acharya has advised treatment of poisonous leech bite. The bite of Indrayudha leech leads to the disease Mahagada, which is Asadhya.<sup>[14]</sup>

**HABITAT AND ORIGIN**

**Poisonous** varieties are seen mostly in arab countries (yavana), south india (pandiya), central india (sahya) and region in and around uttarpradesh. poisonous ones are born in water which is rich in urine, faeces, putrified or decaying blood bodies of fish, animals etc.

**Non poisonous** are found in clean water bodies which is devoid of decaying animals and which is rich with flowers like lotus, lilly etc. the one which move round in clean and fragrant water, abstaining from eating unwholesome food are wholesome for therapeutic usage.

Leeches which is having blotting in the middle part of the body, ugly in nature, having large body size, which are slow in movement, sucks only little amount of blood, not holding on the body, are not recommended for therapeutic procedures.

*Generally, these Leeches are grown in pure flowing water, ponds with clean water & the lakes in which there are lotus flowers & greenery.*

**Note: The poisonous Leeches are found in Muddy water, Gutters or in water which is contaminated by urine, stool, fish, frog & other water animals. They are comparatively bigger in size & dark in colour. After the application they produce severe pain, itching or allergic reaction at the site, giddiness, fever, burning sensation, vomiting. Also few patient may develop signs of intoxication & sinking.<sup>[15]</sup>**

#### **BIOMEDICAL ASPECT OF LEECH**

- **Scientific name:** *Hirudo medicinalis*
- **Country:** Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Yugoslavia
- **Continent:** Europe, Asia
- **Diet:** Blood of birds, fish, frogs, mammals
- **Food & feeding:** Carnivore
- **Habitats:** Freshwater
- **Conservation Status:** Near Threatened
- **Relatives:** Earthworm, lugworm
- **Description:** Leeches have segmented bodies like an earthworm, but unlike earthworms they are slightly flattened rather than round. They have a sucker at the head and the tail end and the one at the head surrounds the mouth. The mouth contains three jaws that can break the skin of their hosts to suck their blood. Medicinal leeches are greenish brown on their backs with thin red stripes running along the body and paler below. They grow up to 20 cm in length.
- **Growing up:** After mating, 15-50 eggs are laid in a spongy case or cocoon, above the waterline often under stones. The eggs hatch in 3-5 weeks and the young leeches need two seasons of feeding before they are ready to breed themselves.

## LEECH PHYSIOLOGY

*Hirudo medicinalis* are abundant in the fresh water system. they are segmented worms without exoskeletons and can grow to be 12cm long. Contracting to around a third of that length when resting. They have suckers at both the ends that are used to attach to tissue when feeding. At the anterior end is the mouth, which has over 300 sets of jaws. These latch onto their host leaving a Y-shaped bite. Feeding is stimulated by proximity of mammalian body temperatures and detection of sodium and arginine in blood. When a leech is attached to a host, it will ingest around 5-15ml of blood-upto 10 times its body weight, in approximately 10-60 minutes before detaching itself (4).<sup>[16]</sup>

## INDICATIONS OF JALOKA AYURVEDA

Indications: Only *Acharya Vagbhata* has mentioned diseases where leech therapy is indicated viz. - *Gulma, Arsha, Vidradhi, Kushtha, Vatarakta, Galaroga, Netra Roga, Visha Damshta and Visarpa*.<sup>[17]</sup>

*Acharya Sushruta* has advocated *Raktamokshana* by leech especially to king, rich people, children, old aged, coward, weak, females and delicate people.<sup>[18]</sup>

*Jalaukaavcharana* is indicated in patients suffering from *Rakta-pradoshaj vikaras* (diseases originated in ~blood).

The *Rakta Pradoshaj Vikaras* are mentioned in the table given below.<sup>[19]</sup>

<i>Mukhapaka</i> (erosion in oral cavity)	<i>Akshiraga</i> (redness in eyes)	<i>Puti nasa</i> (foul smell from nose)	<i>Asyagandha</i> (smelling mouth)	<i>Gulma</i> (inflammatory condition of abdomen)	<i>Upkusha</i> (bleeding gums)	<i>Visarpa</i> (inflammatory skin disorders)
<i>Raktipitta</i> (hemorrhagic disorders)	<i>Prameelaka</i> (fatigue)	<i>Vidradhi</i> (abcess)	<i>Raktmeha</i> (blood mixed urine)	<i>Pradara</i> (vaginal discharge)	<i>Vatashonita</i> (gout)	<i>Vaivarnya</i> (discoloration of skin)
<i>Agnisada</i> (loss of appetite)	<i>Pipasa</i> (excessive thirst)	<i>Gurugatrata</i> (heaviness in body)	<i>Santapa</i> (febrile condition)	<i>Atidorbalya</i> (excessive weakness)	<i>Tikta-amla udgara</i> (belching with bitter and acidic test)	<i>Klama</i> (unexplained fatigue)
<i>Krodh prachurya</i> (unexplained excessive anger)	<i>Budhhi samoha</i> (confusion)	<i>Lavan asayta</i> (salty perception of mouth)	<i>Sweda-sharir Dhurgandhya</i> (excessive sweating with or without foul odour)	<i>Mada</i> (unreasonable compulsive behaviour)	<i>Kampa</i> (tremors)	<i>Swara kshaya</i> (decreased vocal intensity)
<i>Tandra</i> (mental fatigue)	<i>Nidra atiyoga</i> (excessive sleepy feeling)	<i>Kandu</i> (itching)	<i>Tamas - atidarshan</i> (frequent blackouts)	<i>Twak vikara</i> (skin disorders)	<i>Kusta</i> (leprosy)	<i>Pidika</i> (boils)

## OTHER INDICATIONS

- It is used effectively in the management of non-healing ulcerative lesions like-diabetic ulcer, leprotic wound. As it helps to improve the local blood circulation.
- It relieves vascular congestion. So can be effectively used in conditions like long standing varicose ulcers, filariasis, post-operation and skin grafting lesions.
- It is used in Arthritis, sprain or spasm to relieve the pain, inflammation, discomfort symptomatically.
- It is effective in abscess, cellulitis, thrombophlebitis and varicose veins.
- Useful in 3<sup>rd</sup> degree thrombosed prolapsed piles.
- Jaloka siddha oil is used locally to treat hyper-pigmentation.
- Periodontosis and other teeth disease.
- Skin disease- neurodermatitis, psoriasis, herpes, eczema.
- Gynecological disorders- female sterility, endometriosis, fibromastopathy.
- Plastic and reconstructive surgery.
- Eye disease, including cataracts, glaucoma, traumatic injuries and inflammation.
- GI tract- hepatitis, cholecystitis, pancreatitis, stomach ulcers.
- Spiratory disorders- Asthma, acute rhinopharyngitis and spasmodic coryza.<sup>[20]</sup>

## CONTRAINDICATION

Leech therapy is contraindicated in patients suffering from *sarwangshopha*(generalised anasarca), *kshina*(emaciated), *shosha*(debilitated), *pandu*(Anaemia), *jalodara*(ascites) and *garbhini*(pregnant women).<sup>[21]</sup>

### Other contraindications may count

Haemorrhagic Disease Absolute haemophilia Pregnancies Severe anaemia Hypotension General fatigue Allergy to leech Mental disorders during acute episode Active tuberculosis High temperature Immuno compromised patients.

**COLLECTION OF LEECHES-** The best time for collecting leeches is *Sharad Ritu* (autumn) is noted by *Dalhana*.<sup>[22]</sup>

## PRESERVATION OF LEECHES

After collecting the leeches, they should be kept in a wide and new earthen pot. The pure water of lake or river with lotus should be filled into that pot. Feed it with leaf of lotus plants

(*Kamala Nala*), *Saivala*, and powder of stem of small plants. The grass and leaves of plants should be kept inside water in the pot as a bed for leech. Water should be changed on every 3<sup>rd</sup> day and fresh feeding should be dropped inside the pot. After 7 days the pot itself should be changed.<sup>[23]</sup>

*Vagbhata* mentioned that the pot should be changed every five days.

### PREPARATION OF LEECHES

Leeches should be taken out of pot and pasted with mustard seed and turmeric. Then about 48 min (*Muhurta*). they should be kept in pot full of turmeric water (*Haridra Jala*) till they regain the natural cheerfulness and freshness (*Vigataklama*) and free from natural urges (*Muktapurisha*). Then leech should be applied to the affected part.

### PRECAUTIONS

In *Jalaukavacharana*, *Sthoula Madhya* (thick in medial part), *Pariklishta*(ugly), *Prithu*(flattened), *manda Vichesta*(have reduced activity), *Agrahi*(non-grasping), *Alpapayi* (least blood sucking), *savisha*(poisonous), *Asmyaka Vamananta*(those leeches in which improper vomiting of ingested blood is been done), *Pratantama*(tired leeches after blood ingestion) and *Nipatanata*(those leeches who are immotile after blood sucking or by getting used for long time) *Jalokas* must be avoided.<sup>[24]</sup>

### MATERIALS REQUIRED FOR JALAUKAVACHARANA

- Leech
- Turmeric
- Cotton piece
- Water
- Vessels
- Jatyadi ghritam / shatadhota ghritam (if needed)

### PREPARATION OF JALAUKA FOR THERAPY

A thick paste of mustard seed and turmeric is applied on jaloka. Then jaloka is suspended in solution of turmeric for a *Muhurta* (approximately 45 minutes) till it regained their motility (leech activation). By this process the leech get activated. after leech get activated, the leech should be transferred from the water containing turmeric into another vessel containing fresh water.

**JALOKAVACHARAN VIDHI**

Snehana & swedna to the patient.

Person on which jalaukavacharana is to be done is made to sit / lie comfortably depending upon site over which leech is to be kept. the site should be cleaned with warm water using a cotton piece. Jaloka is now applied on roughened desired site for bloodletting. if the jaloka is unable to stick on the site, then drop of milk or blood is applied on that site or slight pricking of that site can be done. After all efforts, if jaloka doesnot attach itself at the desired site, it is replaced with other jaloka.<sup>[25]</sup>

Jaloka assumes Aswakhurvata Ananam, Unnabhya Va Skandham(shape of a horse shoe in the raised and arched position) after proper attachment to the affected site. Jaloka must be covered with a piece of wet cotton or cloth and drops of cool water should be dropped frequently on it to provide cooling effect.<sup>[26]</sup>

Jaloka itself detaches after complition of its feed. Leech sucks vitiated blood only just like swan drinks only milk not water. When sensation of itching and pain occurs at the seat of the application, it indicates that, leech started to suck the fresh blood, and then leech should be detached by putting a small pinch of turmeric over its mouth end. As it is irritant towards turmeric, it will detach from the area within few seconds.

**MODE OF ACTION**

Leech has many distinct enzymes in its saliva, though which they act. The enzymes enter the blood through the place the leech sucks the blood. the most important is the Hirudin, which acts as an anti-coagulant. This leech enzymes also has the ability to stay in the blood and do vasodilation and further facilitate the blood supply to the surrounding tissue and prevent necrosis and healing. Some anti allergic factors ensure reduction in the lesions.

It comes to a local effect due to several active leech substances, which the leech emits, into the wound.

- Hirudin restrains the clotting of the blood, works as diuretic & antibiotic. It keeps the wound open for approx. 30 minutes sucking act & keeps the blood fluid.
- calin also restrains the blood clotting. But however, compared with hirudin it has a substantially longer time of period within which it is defecive & takes care of the 12 hours cleansing of the wound by a secondary haemorrhage.

- Hyaluronidase is a spreading factor that ensures that the other active substances which are effective at the bitten areas can spread.
- Eglin restrains digestive proteases. Bdelin is a plasma hindrance. They both have effects on the coagulation hindrance having different effective mechanisms together with a pyrase & collagenasé. Further, some of these substances have antiphlogistic, antibiotic & further characteristics.
- An anaesthetic substance heads to pain insensitivity (analgesy) when sucking.
- Haementin & orgelase which were proven within a related type of leeches (haementeria gheliani) have a hyperaemistic effect.

The active leech substances totally block the enzymic processes activated often exceeding within inflammation & trauma.

The salivary glands of leeches also produce a cornucopia of other pharmacologically active substances, including an antihistaminic proteases & possibly an anaesthetic & an antibiotic.

The therapeutic effect is not only released by loss of blood but also by the secretions, which the leech emits into the wound.

### **CARE OF LEECH**

After detaching the leech, vomiting should be induced. For inducing Vamana, the mouth of leech is massaged with oil and rock salt. Then it should be held by a tail end with the thumb and the forefinger of the left hand and both the surfaces of body should be gently rubbed with the same fingers of the right hand from tail towards the mouth to make them vomit the full quantity of sucked blood. The procedure should be continued until the appearance of proper symptom of the Vamana (disgorging). Leeches that vomited the entire quantity of blood sucked as above would vigorously move in quest of food if placed in water. If the leech is lying dull and immobile, it indicates that the blood is not vomited completely. They should be made to disgorge again. Leeches if not made to emit the entire quantity of the sucked blood stand in danger of being attacked with an incurable disease known as Indramada.<sup>[27]</sup>

### **AFTERCARE OF THE PATIENT**

Subsiding of pain and disease are the signs of proper application. In case of insufficient bleeding honey is rubbed on the lesion. if there is profuse bleeding then cold water can be

sprinkled on the lesion or Shatadhauth Ghritam (ghee prepared by washing off 100 times with cold water) can be applied.<sup>[28]</sup>

### MODE OF APPLICATION

Leeches have many distinct enzymes in its saliva, through which they act. The enzymes enters the blood through the place the leech sucks the blood. The most important is the hirudin which macts as an anti-coagulant. This leech enzymes also has the ability to stay in the blood supply to the surrounding tissuse and prevent necrosis and healing. Some anti allergic factors ensure reduction in the lesions.

### COMPLICATIONS

In Ayurveda text complication of jalaukavcharan are not directly mentioned but complication of raktmokshna(blood-letting) are mentioned, that are Shopha(edema), daha(burning sensation), Raga(redness), Paka(inflammation), and Vedna (pain).

#### Other Complications may be

- ✓ The histamine emited by the leech can lead to an allergic reaction, which may immediately occur, or within four days.
- ✓ Soreness after the bite rarely appears.
- ✓ A small scar at the bitten area may remain for weeks.
- ✓ Prolonged bleeding.
- ✓ Allergic reactions.
- ✓ Bacterial infections.

### FACTS ABOUT LEECH

Leech saliva contains a number of different substances, including hirudin, calin, anaesthetic compounds and antihistamine vasodialators. Hirudin is a potent anticoagulant that inhibits the conversion of fibrinogen to fibrin, preventing blood from clotting. Hirudin works with vasodialator compounds to increase blood flow to an area; at the same time the anaesthetic compounds allow for painless attachment.

When feeding, the leech also injects calin, which binds to collagen and neutralises its capacity to induce clotting. This produces a prolonged anticoagulant effect upto 10 hours.<sup>[29]</sup>

**Components of medicinal leech saliva that exert effects in the host's body are**

<i>Hirudin</i>	Inhibits blood coagulation by binding to thrombin.
<i>Calin</i>	Inhibits blood coagulation by blocking the binding of von Willebrand factor to collagen, Inhibits collagen- mediated platelet aggregation.
<i>Destabilase</i>	Monomerizing activity, Dissolves fibrin, Thrombolytic effects.
<i>Hirustasin</i>	Inhibits kallikrein, trypsin, chymotrypsin, neutropholic, cathepsin G.
<i>Bdellins</i>	Anti-inflammatory, Inhibits trypsin, plasmin, acrosin.
<i>Hyaluronidase</i>	Increases interstitial viscosity, Antibiotic.
<i>Tryptase inhibitor</i>	Inhibits proteolytic enzymes of host mast cells.
<i>Eglins</i>	Anti-inflammatory, Inhibit the activity of alpha-chymotrypsin, chymase, substilisin, elastase, cathepsin G.
<i>Factor Xa inhibitor</i>	Inhibits the activity of coagulation factor xa by forming equimolar complexes
<i>Complement inhibitors</i>	May possibly replace natural complement inhibitors if they are deficient.
<i>Carboxypeptidase A inhibitors</i>	Increases the inflow of blood at the bite site.
<i>Histaminelike substances</i>	Vasodilator, Increases the inflow of blood at the bite site.
<i>Acetylcholine</i>	Vasodilator
<i>Anesthetics substance</i>	Anesthetic

**ACTIONS & MEDICINAL USES OF LEECHES**

Actions & uses of leeches are detailed in the **Indian Materia Medica** worked by **K. M. Nadkarni**. According to him leeches is antiphlogistic, used for the local abstraction of blood are also anticoagulants. Depletion by leeches is comparable to the abstraction of blood by venesection, by lancing or by moist cupping. The antiphlogistic action is slow. They make a limited or gradual local impression. They are used in acute inflammation of the local parts like glands, boils, sprains & blows, in inflammations of the serous membranes & in inflammation affecting the skin or bones. Allergy to leech bite has been reported. Medical opinion should be sought, depending on the severity of the reaction. The presence of trypanosomes (malarial parasites), in the gut of jawless leeches has been noted, but jawed leeches do not appear to be hosts.

A medicinal leech is a small factory" of biologically active substances, Its actions on an alive organism are-

- Normalization & improvement of capillary circulation.
- Expressed anti inflammation effect.
- Anti stressful & adaptogene effects.
- Blood purification effect by expel out the vitiated blood.
- Immuno stimulation & immuno modulating effects.
- Improvement of an endocellular exchange.
- Early wound healing effect
- Reduces the high blood pressure & blood viscosity
- Positive haemopoetic effect
- Anticoagulation
- Anesthesia.
- Anti bacterial effect.<sup>[30]</sup>

#### **BENEFITS OF BLOOD LETTING BY USING LEECH**

- Most delicate therapy
- Can be used for those who are delicate in nature
- Can be used for old, children, women, timid etc. As these persons are physically and mentally tender, no higher grade of therapies can be done on them. In such cases jalaukavacharana is highly effective.
- Acts on deeper layers of body
- Its much easier to do the procedure
- Much faster result
- Greater reduction in the symptoms
- Complications are rare
- Cost effective in nature

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