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Review Article

LEECH THERAPY IN AYURVEDA - A PRAGMATIC REVIEW

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ABSTRACT

Leeches removes blood from the body and also injects biologically active substances which help to manage various ailments. This is also recognized as bloodletting therapy. According to *Ayurveda*, *Jalukavacharana* is one of the oldest methods used in purification of the body by removing deeply seated toxins in the blood and pacifying vitiated *dosha*. *Jalaukavacharana* increases blood flow by their anti-coagulant properties which enhance the local circulation and also suffices the nutrient. Leeches and their use had been practiced over the past in almost every region of the world. Different species of medicinal leeches are popular, among which the most commonly known is the *Hirudo medicinalis*, a fresh water hermaphrodite, also known as the European Medical Leech. It is also approved from FDA department of US for use of medical therapeutics purpose. So, *Jalaukavacharana* can be considered as an important treatment modality from scientific background and not just a mere assumption.

Keywords: Leeches, *Jalukavacharana*, *Hirudo medicinalis*, bloodletting.

INTRODUCTION

Leeches and their use had been practiced over the past in almost every region of the world. Different species of medicinal leeches are popular, among which the most commonly known is the *Hirudo medicinalis*, a fresh water hermaphrodite, also known as the European Medical Leech. Other *Hirudo* species sometimes used as medicinal leeches are *H. orientalis*, *H. troctina*, *H. verbana*, *H. manillensis* or the Asian Medical Leech, and *Macrobdella decora* or the North American Medical Leech. These annelids have a unique ability to remove blood pooled in various tissues. They use their proboscis to puncture through the skin and simultaneously release an enzyme to eliminate pain of the bite inflicted. Further, few more products are released which prevent the blood from clotting and allow maintenance of the bloodletting procedure. In Ayurveda leeches are called as *Jalauka*. *Jalamasyuritijalayuka*. This word has two components *jala* and *ayuka* which means 'one which dwells only in water'¹.

Leech Morphology^{2,3}:

- Kingdom -Animalia
- Phylum -Annelida
- Class -Hirudinea
- Order -Gnathobdellida
- Family -*Hirudinadae*

- Genus-*Hirudo*
- Species-*H.Medicinallis*, *H.Manillensis*
- Leeches are hermaphrodite having both male and female parts
- The leech is an aquatic worm with a flattened body, tapering end terminating in circular flattened disc, the hinder one being larger of two.
- The mouth is placed in the centre of the anterior disc and furnished with 3 cartilaginous lens shaped jaws.
- Leech can ingest an amount of blood close to that of eight times of their own weight.
- Leeches can be primarily found in freshwater lakes, ponds or rivers ranging from 5cm to nearly 25 cm.
- It swims with a vertical undulating motion and moves, when out of water by means of these discs.

Complications of Leech Therapy^{4,5}

- Prolonged Bleeding
- Allergic Reactions
- Itching
- Blister Formation
- Burning
- Bacterial Infections,
- Septicemia
- Gastroenteritis
- Pneumonia

Leech Therapy Application images



Composition of Leech saliva: 6

- The near or total painlessness of leech's bite is due to the leech saliva, which contains a number of different chemical compounds.
- The saliva of leech contains anesthetic, which makes the bite of the leech painless to its host;
- A histamine like vasodilator which increases the blood flow to the fetching areas by increasing the diameter of the blood vessels;
- And a chemical enzyme called hyaluronidase, which facilitates the degradation of the connective tissues around the bite site allowing the vasodilator substance, gives wider access to the area
- There is also an anticoagulant Hirudin, which is responsible for inhibiting blood coagulation and is employed as an anticoagulant in surgical operations and has been recommended for the prevention of phlebitis and post operative pulmonary inflammation.
- Leech saliva also contains several other bioactive substances are as mentioned below
- Hirudin- Inhibits blood coagulation by binding to thrombin.
- Calin -Inhibits blood coagulation by blocking the binding of von will be brand factor to collagen-mediated platelet aggregation.
- Destabilase -Monomerizing activity. Dissolves fibrin. Thrombolytic effects. Hirustasin-Inhibits Kallikerin, Trypsin, Chymotrypsin, Neutrophilic Cathepsin G.
- Bdelins -Anti inflammatory, Inhibits trypsin, plasmin, and acrosin.
- Tryptase inhibitor -Inhibits proteolytic enzymes of host mast cells.
- Eglins -Anti- inflammatory. Inhibits activity of alpha-chymotrypsin.
- Complement inhibitors -May possibly replace natural complement inhibitors, if they are deficient.

Indications and Contraindications of Leech Therapy⁷⁻¹⁰:

| No. | Indications | Contraindications |
|-----|--------------------------|------------------------------------------------------------------------------|
| 1 | Skin disorders | Anaemia ,Diabetics |
| 2 | Erysipelas | Pregnancy |
| 3 | Abscess | Lactating Mothers |
| 4 | Eczema | Children |
| 5 | Pigmentation in the face | Immuno-compromised Status like HIV |
| 6 | Pruritus | Patient having IHD and on treatment |
| 7 | Leucoderma | Patient having bleeding disorders such as haemophilia Arterial Insufficiency |
| 8 | Hemorrhoids | Allergy to leeches |
| 9 | Gout | |

Therapeutic Uses of Leech Therapy:

Acharya Sushruta considers raktamokshana as one among pancha karma because of its importance in treatment methodologies. Sushruta considered rakta (blood) as chaturthadosha when it gets dhushita (vitiated) treatment of which becomes a prime importance as rakta and pitta are having similar qualities many Skin disorders.¹¹ Skin disorders are the main clinical condition where in the utility of leeches are seen where there is involvement of both pitta and rakta¹². Although the use of medicinal leeches had declined towards the end of the 19th century, recently their use has returned in the field of microsurgery. They provide an effective means to reduce blood coagulation, relieve venous pressure from pooling blood (venous insufficiency)^{13,14}. In reconstructive surgery it is used to stimulate circulation in reattachment operations for organs with critical blood flow, such as eye lids, fingers, and ears. In the 1990s researchers in Russia were finding new uses for leeches in hypertension, migraines, phlebitis, varicose veins, arthritis, hemorrhoids and ovarian cysts. In the United States, plastic surgeons use them to drain blood from wounds after limb or tissue reattachment¹⁵.

DISCUSSION

Application of leeches removes blood from the body and also injects biologically active substances which help to manage various ailments. According to Ayurveda diseases are caused due to vitiation of dosha¹⁶. Vitiating dosha get accumulated in srotas(channels) causing srotavarodha(blocking of channels) and lead to many diseases. Jalukavacharana is one of the oldest methods used in purification of the body by removing deeply seated toxins and pacifying vitiated dosha^{17,18}. A healthy cell gets sick when it is deprived of needed oxygen and nutrition, and is unable to remove toxins accumulated during metabolism. Jalukavacharana increases blood flow by their anti-coagulant properties which enhance the local circulation and also suffices the nutrient.¹⁹The anti-coagulant property of jalauka was discovered in 1980 by modern scientist but our acharyas had the knowledge since the vedic periods. So, jalukavacharana can be considered as an important treatment modality from scientific background and not just a mere assumption.

SUMMARY

Leech Therapy is a proven therapy in various diseases like skin diseases, sciatica, and musculoskeletal pains etc. leeches have been found to secrete saliva containing about 60 different proteins. Several of these secreted proteins serve as anticoagulants (such as hirudin), platelet aggregation inhibitors (most notably apyrase, collagenase, and calin), vasodilators, and proteinase inhibitors. It is also thought that the saliva contains an anesthetic, as leech bites are generally not painful and enzymes containing analgesic and anti-inflammatory properties. Medicinal leeches are any of several species of leeches, but most commonly *Hirudo medicinalis*, the European medicinal leech. Hence Leech Therapy has been established as one of the most efficacious therapies in the management of various skin conditions like Psoriasis, Eczema, Cysts, Abscess, Cellulitis etc. In Sushruta Samhita, the procedure of Raktamokshana has been hailed as one of the most effective therapies of Vranashopha^{20,21}. Among various methods for Blood Letting, Jalloukavacharana is described as the supreme therapy because of its safety and high efficacy. So Leech Therapy should be done with all the probable outcomes in mind.

CONCLUSION

Now days, leech therapy has gained a lot more importance than earlier. Its clinical use is vast from cosmetic conditions like acne vulgaris, psoriasis, non-healing ulcers, reconstructive or micro surgeries, to salvage surgeries of tissue flaps and skin grafts whose viability is threatened by venous congestion. The anticoagulant properties of hirudin, contained in leech saliva, may lead to wider therapeutic applications in the prevention and treatment of thrombo-embolic diseases. Hence, the leech therapy which was used long back during ancient periods had a scientific approach which is now coming to light. Indian systems of treatments have an ethical, scientific, validated approach for various diseases.

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