



Available online through

www.jbsoweb.com

ISSN 2321 - 6328

## Review Article

### A REVIEW ON LEECH THERAPY (*TA'LIQ AL-'ALAQ*): HISTORICAL PERSPECTIVE AND POTENTIAL APPLICATIONS IN MODERN MEDICINE

Ashfaque Ahmad <sup>1\*</sup>, Abrar Mohd Khan <sup>2</sup>, Mohd Safdar <sup>3</sup>

<sup>1</sup> Reader, Dept. of Moalajat, Saifia Hamidia Unani Tibbiya College, Burhanpur Madhya Pradesh, India

<sup>2</sup> Research Associate (U), Clinical Research Unit, Bhopal, under CCRUM Ministry of Ayush, Govt. of India, New Delhi, India

<sup>3</sup> Assistant Professor, Dept. of Tahaffuzi wa Samaji Tib, Al-Farooq Unani Medical College & Hospital Indore, Madhya Pradesh, India

\*Corresponding Author Email: drashfaque6@gmail.com

Article Received on: 10/05/23 Accepted on: 27/06/23

DOI: 10.7897/2321-6328.113177

#### ABSTRACT

The Unani system of medicine, rooted in the principle of balancing the body's humours, has long believed that imbalances in these humours lead to various illnesses. Restoring the equilibrium of humours is considered vital for promoting good health. Classical texts on Unani medicine delineate three distinct methods for treating diseases: pharmacotherapy, regimenal therapy, and surgery. Among regimenal therapies, leech therapy (*Ta'liq al-'Alaq*) has emerged as an exceptionally effective and distinctive method of bloodletting. By utilizing this traditional technique, leech therapy facilitates the evacuation of morbid humours from the body, addressing the underlying cause of ailments. Over time, leech therapy has transitioned from a traditional practice to gaining recognition as a valuable treatment modality in evidence-based medicine. The safety and efficacy of leech therapy have been supported by clinical reports and pharmacological experiments, demonstrating its potential in healing chronic wounds and managing various ailments. This study explores the historical perspective and potential applications of leech therapy in modern medicine.

**Keywords:** Leech therapy, Hirudotherapy, *Ta'liq al-'Alaq*, Unani Medicine

#### INTRODUCTION

Over the centuries, leech therapy (*Ta'liq al-'Alaq*) has established itself as a natural healing method and remains a widely recognized and effective treatment option with a broad range of applications. It has demonstrated a remarkable level of safety in its use. Throughout history, leeches have been employed to treat various ailments such as haematoma and venous congestion. Today, leech therapy stands out as an exceptional and highly effective approach to bloodletting.<sup>1</sup> It is one of the most important and widely practiced methods of regimenal therapy used for local evacuation of morbid humours.<sup>2</sup>

The use of leech therapy as a complementary medicine practice has a long-standing history dating back to ancient times, but only recently has modern medicine begun to pay attention to its potential mechanisms of action.<sup>3</sup>

During the mid-20th century, leeches made resurgence in the medical field under the term "hirudotherapy." With the advancements in microsurgery, particularly in plastic and reconstructive procedures, medical professionals recognized the value of leeches in modern medicine. They were primarily utilized in the reattachment of digits, limbs, ears, noses, and even in breast reconstructions.<sup>4</sup> In July 2004, the U.S. Food and Drug Administration (FDA) granted approval for the use of leeches as a medical device specifically in the field of plastic and reconstructive surgery. This regulatory approval recognized the therapeutic value and safety of leeches in assisting with various surgical procedures in this specialized domain.<sup>5</sup>

#### HISTORICAL BACKGROUND

Leech therapy has been in use for more than 2,500 years, dating back to ancient times, and continues to be practiced today.<sup>2</sup> It is mentioned in ancient Indian medical encyclopaedias written in Sanskrit, which were completed between 500 BC and 200 AD. Hirudotherapy, referred to as Jalaukavacharan in Ayurveda, involves the therapeutic application of leeches (Jalauka). This time-honoured practice has been documented in Ayurvedic texts dating back to 500 BC to 200 AD.<sup>6</sup>

The earliest clearly documented record of leeches being used for medicinal purposes emerges from a painting found in an Egyptian tomb dating back to around 1500 BC. During the Roman era, Galen (129-189 AD) advocated for the practice of leeching based on his belief that bloodletting could eliminate harmful substances produced by diseases in the body. Avicenna (978-1037 AD), the renowned Arab physician, held the belief that leeches had the ability to draw blood from deeper sources in the body compared to wet cupping.<sup>7</sup>

In his work "The Canon of Medicine" (*Al-Qanun fi al-Tibb*), Avicenna dedicated several pages to providing instructions on leeching and describing the types of leeches to be used for medicinal purposes.<sup>8</sup>

Rufus, a Unani physician, (1st century AD) was the first to write about leech therapy (*Ta'liq al-'Alaq*) in his manuscript "*Risala-e-Taleeq*". Zakariya Razi (Rhazes), (865-925 AD) wrote about using leeches to treat conditions like ringworm, alopecia, and non-healing ulcers.<sup>9</sup>

Ali Ibn Abbas Majusi, (930-944 AD) recommended using leeches to treat sciatica at the hip joint.<sup>10</sup> Abu al-Qasim Zahrawi (936-1036) suggested using leeches in areas where cupping was not feasible, such as the lips, gums, fingers, and nose.<sup>11</sup> Ibn Sina (Avicenna), (980-1034 AD) wrote extensively about leech therapy and its application procedure. He also provided details on the types of leeches that can be used for medicinal purposes.<sup>12</sup> Ibn Hubal Baghdadi (1122-1213 AD) advocated the use of leeches following the therapeutic procedures of *Tanqiya* (Evacuation of morbid matter).<sup>13</sup>

Jurjani (1136 AD) observed that leeching is most effective for skin-related diseases.<sup>14</sup> Ibnul Quf (1233-1256 AD) asserts that leech therapy is more effective in removing pathological substances compared to Hijama (Cupping) but less potent than Fasd (Venesection).<sup>15</sup> Hakeem Mohammad Akbar Arzani (16th century) suggested that leeching can be used as an alternative to Fasd in children.<sup>16</sup>

### LEECH THERAPY IN CONTEMPORARY HEALTHCARE

Leeches became a popular method of bloodletting in the 18th and 19th centuries. In his 1822 book on domestic medicine, Thomas recommended two methods of topical bleeding: leeching or cupping. Their use reached its peak in France in 1830, when a physician named Brousius - who believed that every disease could be attributed to excessive accumulation of blood in a particular body part - gained notoriety as one of the most sanguinary physicians in history.<sup>17</sup>

In the 1970s, hirudotherapy re-emerged as a complementary treatment for plastic surgery, reconstructive surgery, and trauma surgery. This was made possible by the advancement of microsurgery, which allowed surgeons to reattach severed blood vessels after amputation and transplant skin flaps.<sup>18</sup> Despite the advances in microsurgery, venous congestion and inadequate drainage of blood from tissues continued to be a significant problem, often leading to the failure of surgical procedures. This occurs because the congestion can cause blood clots to form, obstructing blood flow to the reattached tissue and resulting in tissue death. To prevent venous congestion, leeches were used to remove blood from the tissue before it could clot, thus improving blood flow and preventing tissue damage.<sup>19</sup> Recent studies worldwide have evaluated the safety and effectiveness of leech therapy for various diseases, using standardized outcome measures. Leech extract has shown efficacy in treating conditions such as asthma, acute rhinopharyngitis, and spasmodic coryza.<sup>20</sup>

A study tested hirudin's ability to inhibit thrombin in synovial inflammation during Antigen Induced Arthritis (AIA). The results showed a significant reduction in synovial inflammation with the use of hirudin.<sup>21</sup> Leech therapy has demonstrated efficacy in alleviating symptoms in patients with venous diseases, particularly in reducing pain and swelling associated with varicose veins. Additionally, it has shown potential in facilitating the dissolution of blood clots. However, it is important to note that leech therapy may not be effective in treating conditions resulting from inadequate valve function or vessel dilation.<sup>22</sup>

According to Hyson JM, leech therapy has made a comeback in Russia as a treatment for various ailments including hypertension, migraine, haemorrhoids, phlebitis, varicose veins, ovarian cysts, and arthritis.<sup>23</sup> A study conducted in Germany has provided evidence supporting the effectiveness of leech therapy in the treatment of osteoarthritis in the knee. The findings of this study indicate that leech therapy has demonstrated positive outcomes in addressing the symptoms and managing the condition. This suggests that leech therapy could be a viable therapeutic approach for individuals suffering from knee osteoarthritis.<sup>7</sup>

Pharmacological experiments and clinical reports provide compelling evidence that medicinal leech therapy (MLT) holds significant potential in the healing of diverse types of chronic wounds. The therapy exerts its effects through venous decongestion, thrombolysis, enhancement of blood and lymph flow, and the modulation of inflammatory processes.<sup>24</sup> Similarly, in India, several studies have been conducted to scientifically evaluate the safety and efficacy of leech therapy. Ravi Shankar *et al* concluded that leech therapy was effective in treating thrombosed hemorrhoids, resulting in immediate reduction in swelling, pain, and tenderness.<sup>25</sup> According to Rajesh Gupta *et al*, leech therapy effectively treats thrombosed hemorrhoids by providing analgesic and thrombolytic activity.<sup>26</sup> Zarnigar *et al* demonstrated the efficacy of leech therapy in managing varicose vein symptoms and preventing complications associated with varicose veins.<sup>27</sup> Zaidi SMA *et al* study revealed the effectiveness and safety of leech therapy in providing symptomatic treatment for knee osteoarthritis.<sup>28</sup>

In their study conducted at NIUM Bengaluru, Mohammad Shahid Khan *et al* found leech therapy to be a promising treatment procedure for varicose veins.<sup>29</sup> K.M. Pratap Shankar *et al* proposed leech application as a potentially effective treatment for chronic eczema, as well as other inflammatory disorders.<sup>30</sup> The case study on leech therapy in Alopecia barbae demonstrated promising results, with the research patient experiencing a remarkable 100% improvement in their condition. This highlights the potential of leech therapy as an effective treatment approach for Alopecia barbae.<sup>31</sup> In a study, the therapeutic potential of hirudotherapy in glaucoma treatment was highlighted, showcasing the diverse bioactive properties of leeches. These properties include anti-inflammatory, anticoagulant, anaesthetic, vasodilator, antibiotic, and antioxidant effects. Further research is warranted to fully comprehend and harness the benefits of hirudotherapy in the management of glaucoma.<sup>32</sup>

### CONCLUSION

In conclusion, leech therapy, a time-honoured healing method with a remarkable historical background, holds significant potential for diverse applications in modern medicine. The bioactive constituents present in leech saliva, with their multifaceted properties such as anti-inflammatory, anticoagulant, anaesthetic, vasodilator, antibiotic, and antioxidant effects, offer promising avenues for therapeutic interventions. Clinical reports and pharmacological experiments have demonstrated the efficacy of leech therapy in treating various conditions including chronic wounds, glaucoma, varicose veins, osteoarthritis, and Alopecia barbae. However, further research is essential to fully comprehend the mechanisms of action and optimize the use of leech therapy in modern medical practice. The integration of this ancient therapy into contemporary healthcare opens up new possibilities for improved patient outcomes and underscores the value of exploring traditional healing methods in the pursuit of innovative medical approaches.

### REFERENCES

1. Ingole AR, Dhabarde DM, Kamble MA, Potnis VV. Modern touch to traditional leech therapy: a review. *Res J Pharmaceut Biol Chem Sci.* 2013;4(3):557-63.
2. Tanzeel A, Mohd A. Clinical importance of leech therapy. *Indian Journal of Traditional Knowledge.* 2009;8(3):443-5.
3. Sig AK, Guney M, Guclu AU, Ozmen E. Medicinal leech therapy—an overall perspective. *Integrative medicine research.* 2017 Dec 1;6(4):337-43.
4. Kraemer BA, Korber KE, Aquino TI, Engleman A. Use of leeches in plastic and reconstructive surgery: a review.

- Journal of reconstructive microsurgery. 1988 Oct;4(05):381-6.
5. Mumcuoglu KY. Recommendations for the use of leeches in reconstructive plastic surgery. Evidence-Based Complementary and Alternative Medicine. 2014 Jan 1;2014.
  6. Itrat M, Zarnigar HN, Hague N. Historical aspects of leech therapy: a critical review. Int J Health Sci Res. 2013;3(7):78-83.
  7. Younis Munshi IA, Rafique H, Ahmad Z. Leeching in the history-a review. Pakistan journal of biological sciences. 2008;11(13):1650-3.
  8. Stephenson J. A Treatise on the Canon of Medicine of Avicenna incorporating a Translation of the first Book. By O. Cameron Gruner MD, (Lond.), London: Luzac & Co., 1930.pp:513-514
  9. Razi AMBZ. Kitabul Mansoori Urdu Translation. 1st ed. New Dehli: CCRUM; 1991; 284,382-384,254.
  10. Majusi AIA. Kamilus Sana'a Urdu Translation. New Dehli;vol II part II: CCRUM; 2010;p268.
  11. Al Zahrawi AQ. Jarahiyat-I Zahrawi Urdu Translation. New Dehli: CCRUM; 2012;23- 24,140,187.
  12. Uddeen MK. Tarjuma wa Sharah Kulliyat-e Qanoon Urdu Translation. New Dehli: Aijaz Publishing House;2006;p 350-352.
  13. Baghdadi IH. Kitabul Mukhtarat Fit Tib Urdu Translation. 1st ed. New Dehli;vol I: CCRUM; 2005; p 279.
  14. Jurjani I. Zakheera Kahwarzam Shahi Urdu Translation. New Dehli;vol 6,3: Idara Kitab-Ush-Shifa; 2010;461-472,225-226.
  15. Almasihi IaQ. Kitabul Umda Fil Jarahat Urdu Translation. New Dehli vol I: CCRUM; p 200-201.
  16. Arzani MA. Mizaan Ut Tib Urdu Translation. 1st ed. New Dehli: Idara Kitab Ush Shifa; 2002; p31.
  17. Adams SL. The medicinal leech: a page from the annelids of internal medicine. Annals of internal medicine. 1988 Sep 1;109(5):399-405.
  18. Marsden MB, Ng A. Hirudotherapy: a guide to using leeches to drain blood from tissue. Clin Pharm. 2014 Apr; 6:69.
  19. Whitaker IS, Izadi D, Oliver DW, Monteath G, Butler PE. Hirudo medicinalis and the plastic surgeon. British journal of plastic surgery. 2004 Jun 1;57(4):348-53.
  20. Anonymous. The Wealth of India. New Dehli;vol 6 L-M: National Institute of Science Communication and Information Resources Council of Scientific & Industrial Research; 1962;57-59.
  21. Varisco PA, Péclat V, van Ness K, Bischof-Delaloye A, So A, Busso N. Effect of thrombin inhibition on synovial inflammation in antigen induced arthritis. Annals of the rheumatic diseases. 2000 Oct 1;59(10):781-7.
  22. Abdullah S, Dar LM, Rashid A, Tewari A. Hirudotherapy /Leech therapy: Applications and Indications in Surgery. Archives of Clinical Experimental Surgery. 2012; 1(3).
  23. Hyson JM. Leech Therapy: A History. Journal of the History of Dentistry. 2005 March; 53(1).
  24. Koeppen D, Aurich M, Pasalar M, Rampp T. Medicinal leech therapy in venous congestion and various ulcer forms: Perspectives of Western, Persian and Indian medicine. Journal of Traditional and complementary medicine. 2020 Mar 1;10(2):104-9.
  25. Ravishankar AG, Rao R, Mahesh TS, Subrahmanya P, Krishnamurthy MS. Leech on External Thrombosed Hemorrhoids. International Research Journal of Pharmacy. 2013; 4(11).
  26. Gupta R, Meenakshi. Leech Therapy in Thrombosed Piles. International Ayurvedic Medical Journal. 2015 April; 3(4).
  27. Zarnigar , Aalam MA. Effect of Taleeq (Leech Therapy) in Dawali (Varicose Vein). Ancient Science of Life. 2011 Jan-Mar; 30(3).
  28. Zaidi SMA, Jamil SS, Sultana A, Fuzail M. Safety and Efficacy of Leech Therapy for Symptomatic Knee Osteoarthritis Using Indian Medicinal Leech. Indian J Traditional Knowledge. 2009 July; 8(3).
  29. Khan MS, Ansari AN. Effect of Leech Therapy (Irsal-e AlaQ) and Unani Formulation (Itrifal Sagheer with Zanjabeel) in the Management of Varicose Veins (Dawali): An open, randomized, standard controlled, three groups clinical trial. Spatula DD. 2015;5(1):41-50.
  30. Shankar KP, Rao SD, Umar SN, Gopalakrishnaiah V. A clinical trial for evaluation of leech application in the management of Vicarcikā (Eczema). Ancient science of life. 2014 Apr;33(4):236.
  31. Iqbal A, Huma, shah A, Nayeem, Zahoor, Jan A, et al. Role Of Leech Therapy in Alopecia Barbae A Single Case Study. International Journal of Latest Research in Science and Technology. 2015;142-145 January-February; 4(1).
  32. Shifra AS, Ayshah Fazeenah AH. Irsal e alaQ (Hirudo therapy) on Maa e Aksar (glaucoma): a scientific review. World Journal of Pharmaceutical and Medical Research.2021,7(4):05-08

**Cite this article as:**

Ashfaque Ahmed, Abrar Mohd Khan and Mohd Safdar. A review on leech therapy (Ta'liq al-'alaq): Historical perspective and potential applications in modern medicine. J Biol Sci Opin 2023;11(3):30-32.  
<http://dx.doi.org/10.7897/2321-6328.113177>

Source of support: Nil; Conflict of interest: None Declared

Disclaimer: JBSO is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publishing quality research, while every effort has been taken to verify the accuracy of the contents published in our Journal. JBSO cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of JBSO editor or editorial board members.