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SYNTHESIS OF EVIDENCE ON ANALGESIC, ANTI-INFLAMMATORY AND IMMUNOMODULATORY BENEFITS OF CUPPING THERAPY (ḤIJĀ*MAH*)

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ABSTRACT

Initially, practiced for the alleviation of pain, cupping therapy (*Hijamah)* has been used for various chronic conditions such as low back pain, chronic arthralgia, radiculopathy, and respiratory -related disease with variable outcomes. In recent years, scientific research and evidence generation on the effectiveness of cupping in the treatment of various disorders has accelerated. Still cupping therapy needs more empirical evidence accepted as a scientifically established therapeutic procedure for management of various ailments. The objective of this comprehensive review paper is to supplement the claims of Unani physicians in classical literature with clinical studies conducted on the efficacy of *Ḥijamah* with variable modern parameters like biomarkers which objectively measure, evaluate and indicate normal biologic processes, pathogenic processes, or pharmacologic responses. Many studies agree that cupping works best when used in combination to pharmacotherapy and also give effect as anti-inflammatory and immunomodulatory effects. It is suggested that rigorous, well-designed, controlled, randomized and long duration follow up clinical trials on large sample size are to be conducted by trained clinicians or researchers to establish the efficacy of *Ḥijamah* in various medical conditions.

Keywords: Cupping therapy, Hijamah, Anti-inflammatory, Immunomodulatory, Clinical trials

INTRODUCTION

Cupping therapy (*Hijamah*), is an old medical therapy, has been mentioned by Herodotus (a Greek historian, 400 BC) and Hippocrates in their prescriptions and in the Egyptian Papyrus Ebers (1550 BC). *Al Ḥijamah* is an Arabic word which means application of cups and the literary meaning of *Ḥijamah* is sucking **[1-4]**. This procedure includes applying cup-shaped glass containers to the body's surface and using a heat source or specialised suction equipment to create a vacuum in order to remove morbid materials, divert them away from the diseased part, and promote blood flow to the area that is affected **[1, 5, 6]**. *Rāzi* an eminent Unani scholar stated that cupping is a process of releasing the blood (toxic) from superficial small vessels located in muscles **[7]**. *Ḥijamah* can be defined as a minor surgical excretory procedure that creates superficial skin scarification to open skin barrier and creates a pressure gradient and a traction force across the skin and underlying capillaries to drain interstitial fluids and enhances blood clearance and waste excretion through skin **[8]**.

On the basis of scarification *Ḥijamah* has been classified into two main types 1. *Hijamah bish Shart*- (wet cupping /cupping with scarification) 2. *Hijamah bila Shart* - (dry cupping /cupping without scarification) **[9-16]**.

Scientist have tried to explain the mechanism of action through some theories as exact mechanism of *Ḥijamah bish shart* is still unknown. Some theories are **Pain gate theory** (stating there is gate or channel to transfer pain signals from its actual site of origin to the brain and when suction cup is applied, it produces pain which interfere with the actual pain which can't be transmitted in the same gate or channel and in this way, elimination of pain occurs) **[8, 17]**. **Prostaglandin theory** (stating inflammation produces prostaglandins which transmit pain signals to brain, while doing *Ḥijamah bish shart* prostaglandins are excreted out and pain reduces), **Endorphins and Encephalin production theory** (Endorphins are natural components released in our body and these components are called 'endogenous please substances' which reduce the pain and enhance the mode) **[17, 18]**. **Nitric oxide theory** (As a result of any trauma Nitric oxide is released in body and perusing vasodilatation, muscles relaxation, Anti-thrombotic effect in blood vessels and Anti-inflammatory function in body and **Taibah theory** (states that *Ḥijamah bish shart* is a minor surgical excretory procedure and its effect is similar to the mechanism of excretory function via glomerular filtration of the kidney as well as abscess drainage, by which pathological substances are removed from the body **[17]**.

Inflammation plays an integral role in the pathogenesis of several disease. Immune cells like activated neutrophils & macrophages secrete cytokines such as IL-6 and IL-1β which amplify inflammatory condition in joints of body and mediators are secreted **[19-22]** like IL-1β and TNF-α which drive the inflammatory cascade independently or in collaboration with other cytokines and are produced by activated chondrocytes, synoviocytes, in different joints of body and mononuclear cells. biomarkers or surrogate end point are objectively measured and evaluated as an indicator of normal biologic processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention and can easily be assessed in blood serum, urine, or synovial fluid **[23]**.

Cupping therapy has been practiced for the purpose of pain reduction, decrease of inflammation, immunomodulation, to attest these aims, evidence has been gathered for different ailments like headaches, musculoskeletal diseases, lack of appetite, maldigestion, fainting, abscess evacuation, narcolepsy, gynaecological complaints, pharyngitis, ear ailments, and lung diseases **[24]**. This review synthesis from evidence of various clinical trials is suggestive that cupping therapy helps in alleviation of pain, reducing inflammation and has an immunomodulatory role.

Table 1: Analgesic, anti- inflammatory, immunomodulator effects of different types of Cupping

Clinical trial Experiment	Affected region	Intervention group	Control group	Effects	Reference
Human	Lower back	Wet cupping	NA	Pain ↓(NRS)	[25]
Human	Lower back	Wet cupping	Rest + medicines	Pain ↓(VAS)	[26]
Human	Shoulder & neck	Wet cupping	NA	Pain ↓(VAS)	[27]
Human	Migraine	Wet cupping (first14 days before lunar phase)	Wet cupping last 14 days of (Lunar phase)	Pain ↓(VAS)	[28]
Human	Sciatica	Wet cupping	NA	Pain ↓(NRS)	[29]
Human	Cervical spondolysis	Wet cupping	Jiaji acupuncture	Pain ↓ (VAS)	[30]
Human	Lower back	Wet cupping	Conventional therapy	Pain↓ (Mcgill present pain index PPI)	[31]
Human	Knee	Cinesiotherapy	Acupuncture	IL-1, IL-6, TNF-α pain, ↓ joint function↑	[32]
Mice model	Lung	Wet cupping	Budesonide	Anti-inflammatory IL-5 and IL-13,	[33]
Human	Fibromyalgia	Cupping therapy	Acupuncture	Pain ↓(VAS)	[34,35]
Human	Healthy subjects	Wet cupping	Dry cupping	Immunomodulatory effectsCD4+ T cells, anti-inflammatory effect (Th1 and Th17) ↓	[36]
Mice model	Mice model	Wet cupping	NA	Anti-inflammatory TNF alpha IL1 beta	[37]
Human	Rheumatoid Arthritis	Wet cupping	Conventional treatment	Pain ↓(VAS) Anti-inflammatory (Nk cell) ESR, CRP Immunomodulator (soluble interleukin-2 receptor (SIL-2R).	[38]
Human	Martial arts athletes	Wet cupping	Exercise	Anti-inflammatory T-bet/GATA-3 (Th1/Th2)	[39]
Human	Migraine	Wet cupping	(Rizatriptan benzoate)	Pain ↓VAS	[40]
Human	Knee OA	Dry cupping	Massage Cupping	Pain ↓(VAS)	[41]
Human	Knee OA	Dry cupping	Dry cupping	Pain ↓(VAS)	[42]
Human	Knee OA	Pricking cupping	Acupuncture	Pain ↓	[43]

CONCLUSION

Ḥijāmah is one of the therapeutic modalities of *Ilaj bil tadbeer* (Regimenal therapy) described in Unani system of medicine which is practiced aiming as a pain reliever, anti-inflammatory & immunomodulatory actions. It stimulates the body surface and makes changes in microenvironment of stimulated area through external factors, including negative pressure and cuts, internal factors such as endogenous changes in pH, blood flow, oxygen, secreted cytokines and neurotransmitters, and immune cell function in particular mast cell activation level **[44, 45]**. Cupping therapy is seen as an adjuvant therapeutic while reducing the intake of NSAID's and strategy to modulate host microenvironment by reducing pain inflammation and modulating immune system, all actions that could be useful in management of various ailments. This article collates the latest evidence on the relationship between cupping therapy and alleviating pain as well as reducing the inflammatory markers in musculoskeletal disorders and other ailments. It could be concluded that for better understanding of the mechanism of cupping therapy, more scientific and conclusive evidence needs to be generated for substantiating the various claims.

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