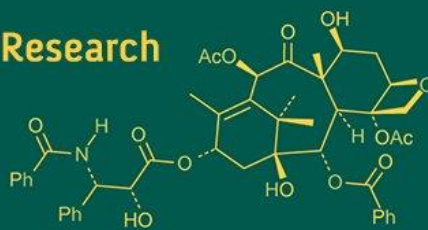


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Hijama therapy in veterinary practice: A review

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Abstract

Hijama therapy, commonly referred to as vacuum cupping, primarily aims to eliminate harmful substances and toxins from the body by creating a vacuum within a cupping vessel. This method has ancient roots and has been employed to address various medical issues over the years. Current research indicates that cupping therapy might be useful in managing common chronic pain conditions. However, the precise mechanisms by which hijama therapy operates remain unclear, with several theories proposed, including the Pain Gate Theory, Diffuse Noxious Inhibitory Control (DNIC), and Reflex Zone Theory. Cupping is generally categorized into two types: dry cupping and wet cupping. Further classification exists based on technical aspects, suction strength, suction technique, additional therapeutic types, and specific areas of treatment. Studies have shown that wet cupping has a positive influence on the complement system in sheep and increases red blood cell (RBC) counts and hematocrit levels in mice over time. Additionally, hijama therapy has been found to alleviate skin stiffness and tensile strength in rats, as well as lower serum cortisol levels in horses. However, this therapy is not recommended for areas with superficial nerves, open wounds, ulcers, muscle dystrophy, abscesses, fractures, or for pregnant individuals. More research is needed to explore the potential applications of cupping techniques within physiotherapy and rehabilitation.

Keywords: Hijama therapy, wet cupping, veterinary medicine, complement system, pain management, animal health, traditional medicine, rehabilitation, alternative therapy, physiotherapy

Introduction

The Arabic name for Cupping Therapy is Al-Hijamah, which means sucking. The primary postulated aim of this therapy is to extract harmful substances or toxins from the body by creating negative pressure in a cup. It has been traditionally used for the treatment of painful conditions but has also been used to treat chronic diseases such as cardiovascular disorders, skin diseases & inflammatory disorders (Shidhani and Mahrezi, 2020).

History of cupping therapy

There is increasing evidence indicating that cupping therapy has been a significant aspect of ancient medical practices across different cultures. Opinions differ on the origins of this therapy; while some attribute its invention to the Chinese, the earliest pictorial documents hint that the technique may have originated with the ancient Egyptians around 1500 B.C. (Romeril, 2019) [18].

The Ebers Papyrus, recognized as one of the oldest medical texts, references the use of cupping by the ancient Egyptians. They employed this practice to address various health issues, including menstrual irregularities, lack of appetite, fevers, dizziness, and pain (Romeril, 2019) [18]. In China, Ge Hong, a notable herbalist and alchemist from the Jin Dynasty, is regarded as one of the first practitioners of this method. He believed that the combination of cupping and acupuncture could effectively treat more than half of health problems (Aesthetics, 2020).



Fig 1: Historical evolution of cupping therapy from ancient civilizations to modern practice

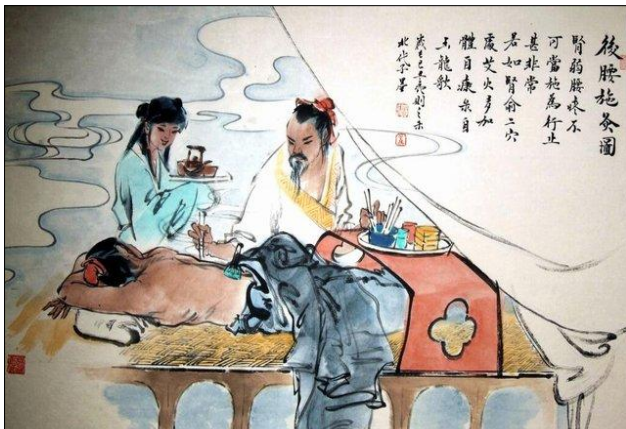


Fig 2: Traditional Chinese cupping therapy illustrating historical therapeutic practices and patient treatment

In the ancient Islamic world, the term used for cupping was “Al-hijamah,” and Prophet Muhammad said to his followers, “Indeed, the best of remedies you have is hijamah (Romeril, 2019) [18].

Description of cupping therapy

Trim the hair or fur coat of the animal, to obtain suction. (Check for areas of skin irritation, scars, etc.) Wet the skin and fur or hair with water or ultrasound gel, followed by applying the cups to the treatment site. Leave the cups in place for 30-90 seconds. You may leave the cups for 2-5 minutes if patients are more tolerant and then remove the cups. If wet cupping is used, then superficial incisions are performed on the skin by a scalpel blade (No. 15 to 21) or by puncturing the skin with a needle before putting the cup (Al-Rubaye, 2012) [17].

Mechanism Of Action

1. Pain-gate theory

When a painful stimulus occurs, pain signals are transmitted by both small-diameter and large-diameter nociceptive nerve fibers, which synapse onto transmission cells in the dorsal horn of the spinal cord (Staud, 2011) [24]. This region is critical for pain modulation, involving a network of interneurons and presynaptic pain gates (Melzack and Wall, 1965) [16]. The small fibers have a blocking effect on inhibitory cells, allowing pain transmission signals to reach the spino-thalamo-cortical pathway and subsequently the brain. In contrast, large fibers activate inhibitory cells, which tend to suppress the transmission of pain signals. As a

result, stimulation of large nerve fibers through touch, pressure, or vibration is anticipated to decrease pain intensity. This theory suggests that cupping therapy simultaneously stimulates both small and large nerve fibers (Michalsen *et al.*, 2009) [17].

This theory explains how the pain is transmitted from the point of its inception to the brain, and how it is processed in the brain, which sends back the efferent, protective signal to the stimulated or injured area (Melzack and Wall, 1965) [16].

2. Diffuse noxious inhibitory control

The concept behind this phenomenon is believed to be the basis for counter-irritation, a method used to alleviate pain. Essentially, it suggests that one type of pain can diminish the perception of another. Cupping therapy, which causes localized damage to the skin and capillary blood vessels, may create a nociceptive stimulus that activates descending nociceptive inhibitory controls (DNICs). For effective pain relief, this mechanism necessitates a robust conditioning stimulus. This response may be influenced by a distraction effect and could work by activating DNICs or by reducing oxidants and lowering oxidative stress levels (Melzack and Wall, 1965) [16].

3. Reflex zone theory

Animal studies clearly demonstrate that somatic stimulation of the skin significantly impacts urinary, cardiovascular, and gastrointestinal functions. These reflexes have a definitive effect, either enhancing or inhibiting organ function. When the cups are applied on the skin, they actively stimulate the skin's receptors. This process undeniably increases blood flow and improves circulation to the underlying organs and skin, a direct result of the intricate connections within the nervous system (Melzack and Wall, 1965; Shaban, 2013) [16, 21].

Types of cupping therapy

1. Dry cupping/ static cupping/ retained cupping

It involves creating a vacuum inside the cups through various suction methods, such as fire, a manual pump, or an electric suction device. The cups will remain on the skin for a duration of about five minutes. When using a manual pump, the vacuum pressure is regulated by the number of times the pump is activated; increasing the number of activations results in a stronger negative pressure within the cup. Alternatively, using fire elevates the negative pressure in the cup, especially with longer exposure to the flame (Cao *et al.*, 2010; Al-Bedah *et al.*, 2016) [6, 11].



Fig 3: Veterinary cupping therapy using silicone suction cups for pain management and rehabilitation



Fig 4: Dry Cupping in dog and horse

2. Flash cupping/ Empty cupping

This technique involves quick, light to medium pressure suction on specific areas of the body. The cups are applied for a brief period, usually under 30 seconds, to enhance stimulation in the targeted region. Practitioners can use either a single cup or multiple medium-sized cups, typically four. (Cao *et al.*, 2010; Al-Bedah *et al.*, 2016) ^[6, 11].

3. Wet cupping/ full cupping/ bloodletting cupping/ bleeding cupping

This method entails using a surgical tool to scrape the skin prior to placing the cups, which then draw out blood. Notable side effects of wet cupping include a heightened risk of infections, potential vasovagal responses, and the formation of scars (Cao *et al.*, 2010; Al-Bedah *et al.*, 2016) ^[6, 11]

4. Massage cupping

Also referred to as moving cupping, dynamic cupping, or gliding cupping, this approach uses oil applied to the skin, allowing the cups to be moved across the area with gentle suction. Various oils can be utilized, such as olive, peppermint, and lavender oil (Tham *et al.*, 2006; Al-Bedah *et al.*, 2016) ^[6, 26]

5. Power of suction

This classification of cupping is determined by the level of negative pressure that is generated within the cups.

Table 1: Classification of cupping therapy according to suction pressure

Properties	Light cupping pressure	Medium cupping pressure	Strong cupping pressure
Pressure level	100 and less than 300 millibar (mb)	300 and less than 500 millibar	Above 500millibar
Generation of pressure	1 to 2 full manual pump suctions	3-4 full manual pump suctions	5 or more full manual pump suctions.
Cupping marks	NO	Yes	Yes

(Tham *et al.*, 2006; Shamma & Razzaqu, 2009; Al-Bedah *et al.*, 2016) ^[6, 26]

6. Pulsatile cupping

Pulsatile cupping involves the application of varying pressure pulses produced by a mechanical device. This system generates a pulse approximately every two seconds. Practitioners often utilize cups made from flexible silicone

or plastic. The pressure levels typically range from 100 to 200 mb (Teut *et al.*, 2012) ^[25].



Fig 5: Pulsatile cupping therapy set

7. Fire cupping

Fire cupping involves using cups made of glass, ceramic, or bamboo that do not have any valves to regulate air flow. In traditional Chinese practice, a stick with a piece of cotton or paper soaked in 95% alcohol is ignited. This flaming stick is then placed inside the cup to heat it up before being taken out (Huang *et al.*, 2011; Al-Bedah *et al.*, 2016) ^[6, 13].



Fig 6: Fire cupping technique creating suction through controlled heat for therapeutic application

8. Electrical vacuum cupping

Electrical vacuum cupping utilizes an electrical suction pump that allows for easy adjustment of negative pressure. This technique allows for multiple cups to be connected simultaneously. It is often used alongside pulsatile cupping due to its capability to create pressure pulses (Duh and Chiu, 2015) ^[12].

9. Manual vacuum cupping/ vacuum cupping

This method involves creating suction using a manual pump, which can be self-suction cups or a rubber squeeze top. Research indicates that manual vacuum cupping is more effective than fire cupping in increasing blood flow to the area being treated (Huang *et al.*, 2011; Duh and Chiu, 2015) ^[12, 13].

10. Laser cupping

Laser cupping represents a modern approach, combining traditional cupping therapy with laser treatment. It involves inserting an acupuncture laser probe into the cups to stimulate specific acupuncture points, enhancing the effects of cupping. This method is noted for providing a dual benefit of both cupping therapy and laser acupuncture (Lin *et al.*, 2012) ^[15].

11. Aquatic cupping

This technique merges cupping therapy with aquatic therapy, conducted underwater. It is believed that being submerged allows for better muscle stretching. Aquatic cupping is often applied in rehabilitation for musculoskeletal issues and is reported to help with conditions like dry coughs, asthma, rheumatism, localized swelling, and pain (International Cupping Therapy Association, 2005) ^[14].

12. Water cupping

In water cupping, warm water is placed inside the cups. To prepare, a third of the cup is filled with warm water, followed by inserting burning cotton wool before positioning the cup on the skin (Al-Rubaye, 2012) ^[7].

Clinical indications

In a study conducted by Shahnaz *et al.* (2012), the researchers investigated how cupping impacts hemodynamic parameters, arrhythmias, and infarct size (IS) in rat subjects. The rats were randomly assigned to either dry or wet cupping treatments. The findings revealed that wet cupping notably influenced the occurrence of arrhythmias induced by ischemia. This research suggests, for the first time in rats, that cupping may have a protective effect on the heart during ischemic reperfusion injury.

Table 2: Effect of cupping therapy on infarct size following ischemia-reperfusion injury

Injury	Infarct size (IS)
Ischemic reperfusion	50 ± 5%,
Dry cupping	28 ± 3%
Single wet cupping	35 ± 3%
Repeated wet cupping	22 ± 2%

Bassiri *et al.* (2019) ^[10] examined the differences in biochemical parameters between venous blood and blood obtained through cupping, as well as the biochemical and hematological characteristics of venous blood 1 week post-wet cupping in lambs. Their findings indicated notable variations in levels of serum total cholesterol, triglycerides, high-density lipoprotein, SGPT, and uric acid between the two blood types. There were no significant differences in biochemical parameters when comparing the control group to the experimental group. Interestingly, the waste content found in the cupping blood was significantly higher than that in the venous blood.

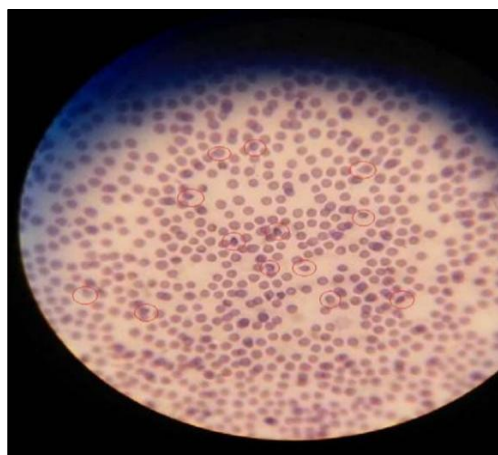


Fig 7: Blood smear after cupping shows Dacrocytes

Table 3: Hematological parameters in control and cupping groups

Parameter	Control group	Cupping group
WBC(N/mm3)	16650	15700
RBC(Mil/cumm)	8.775	8.73
MCV(FL)	69.65	50.90
HCT(%)	60.95	42.42
Hb(g/dl)	9.47	9.50
MCH(pg)	10.75	11.04
MCHC(g/dl)	18.40	23.80
Lymphocyte	60.75	61.51
Monocytes	5.50	4.75
Neutrophils	30.00	30.25
Eosinophils	2.50	1.37
Basophils	1.25	2.12

Roostayi *et al.* (2016) ^[19] applied cupping therapy to either the right or left lower quadrants of the lumbar area in a group of Wistar rats. This procedure was carried out for 10 minutes each day for 12 days. To assess the effects, the researchers measured skin stiffness and ultimate tensile strength using a tensiometer. They concluded that cupping therapy may serve as an effective method for reducing both skin stiffness as well as ultimate tensile strength.



Fig 8: Experimental wet cupping therapy performed in a laboratory mouse for biomedical research

Table 4: Effect of cupping therapy on skin stiffness and ultimate tensile strength

Variable	groups	Sample size	Minimum	Maximum
Skin stiffness	Control	10	3.33	5.36
	Non cupping	10	3.01	5.93
	Cupping	10	1.63	4.33
Ultimate tensile strength	Control	10	2.92	4.32
	Non cupping	10	2.61	5
	Cupping	10	1.55	3.41

Aeeini *et al.* (2013) conducted a study of one and two sessions of wet cupping on various hematological parameters in mice. The results indicated that wet cupping led to an increase in red blood cell (RBC) counts and hematocrit levels over time, suggesting its potential effectiveness for treating anemia associated with chronic kidney disease. The authors proposed that wet cupping could be beneficial due to its influence on the erythropoietin hormone.

Shawaf *et al* 2020 ^[22] conducted a study on 7 healthy Arabian horses, and they concluded that there was no significant difference in most of the hematological and biochemical parameters of horses after cupping, but in a significant decrease in the concentration of serum cortisol recorded on the 3rd and 14th days after cupping.

Afsahi *et al.* (2013) ^[4] explored the impact of wet cupping on immunological and hematological factors in sheep using an animal model. Their findings highlighted a positive effect on the complement system in sheep, with no adverse effects detected on other parameters.

Contraindication

Cupping therapy is contraindicated in areas with superficial nerves, muscle dystrophy, open wounds, incisions, abscesses or ulcers, excessive swelling, fractures, and dislocated joints (Aboushanab & AlSanad, 2018) ^[1], high blood pressure and migraines, rheumatic diseases (arthritis or fibromyalgia), and over the abdominal region during pregnancy (Ahmedi & Siddiqui, 2014) ^[5].

Complication

Complication of cupping therapy includes Pruritus, Burn, Headache, Bullae formation, Nausea, Scar formation, Abscess, skin infection, Tiredness, and Dizziness. Separation of the epidermis in prolonged exposure (Rozenfeld and Kalichman, 2016; Aboushanab and Alsanad, 2018; Shidhani and Mahrezi, 2020) ^[1, 20].

Future direction

Cupping therapy has gained popularity for managing chronic conditions, particularly those related to pain. Future studies should aim to clarify the underlying mechanisms of action and corroborate existing theories through clinical trials. There is growing evidence suggesting potential advantages of cupping therapy for individuals suffering from prevalent chronic pain issues. Nonetheless, despite numerous clinical trials conducted on the subject, the overall evidence remains inconclusive due to significant limitations like smaller participant groups, a need to improve research methodologies and designs, standardized treatment and reporting methods, uniform assessment tools, and extended follow-up durations. Further investigation is necessary for the use of cupping techniques in physiotherapy and rehabilitation.

Conclusions

Cupping therapy is a historical intervention that has been utilized for millennia to address a range of medical conditions. Recent studies indicate that cupping may offer temporary relief for chronic pain syndromes; however, existing research is often compromised by significant methodological limitations. These limitations include small sample sizes, variability in outcome measurement instruments, discrepancies in treatment duration, and differences in therapeutic protocols. Consequently, there is a pressing need for further research to explore the efficacy and application of cupping techniques in the realms of canine and equine physical therapy and rehabilitation.

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