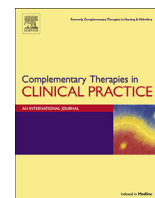




Contents lists available at ScienceDirect

# Complementary Therapies in Clinical Practice

journal homepage: [www.elsevier.com/locate/ctcp](http://www.elsevier.com/locate/ctcp)

## Cupping therapy: An analysis of the effects of suction on skin and the possible influence on human health



Duane T. Lowe\*

Interdisciplinary Pain Management Clinic, Department of Pain Management, Madigan Army Medical Center, Joint Base Lewis-McChord, 9040 Jackson Avenue, Tacoma, WA 98431, USA

### ARTICLE INFO

#### Article history:

Received 5 September 2017

Accepted 12 September 2017

#### Keywords:

Cupping therapy

Negative pressure

Heme oxygenase-1

Ecchymosis

Bilirubin

Carbon monoxide

### ABSTRACT

**Background:** Cupping therapy is a traditional therapy that has been employed worldwide for thousands of years. Despite a lack of quality clinical studies evaluating the efficacy of cupping therapy, its long history and widespread use throughout the world suggests the commonly claimed health benefits should not be completely discounted as without merit.

**Purpose:** The goal of this paper is to present the research detailing what is known concerning the effects of suction on skin and underlying tissue, and the reaction of the body to that stimulus. Understanding the literature on the physiological effects of this mechanical force may help elaborate an explanation for the advertised local and systemic effects of cupping therapy.

**Findings:** Negative pressure causes stretching of the skin and underlying tissue and dilation of the capillaries. This stimulates an increase in tissue blood flow, eventually leading to capillary rupture and ecchymosis. Macrophages phagocytize the erythrocytes in the extravascular space which stimulates the production of Heme Oxygenase-1 (HO-1) to metabolize the heme. Heme catalysis results in the production of carbon monoxide (CO), biliverdin(BV)/bilirubin(BR) and iron. HO-1, BV, BR, and CO has been shown to have antioxidant, anti-inflammatory, antiproliferative, and neuromodulatory effects in animal and human systems. These substances also stimulate a shift of macrophages to the anti-inflammatory M2 phenotype. There is evidence that the effects are both local and systemic.

**Conclusion:** Besides the mechanical effect of cupping increasing the local blood flow and stretching underlying tissue, activation of the HO-1 system could account for many of cupping therapy's claimed local and systemic health benefits.

Published by Elsevier Ltd.

### Contents

1. Introduction .....	163
2. Cupping therapy .....	163
3. Techniques .....	163
4. Traditional indications .....	163
5. Traditional explanations .....	163
6. Superficial suction in healthcare .....	163
7. The effects of localized negative pressure on skin .....	164
8. The healing bruise .....	164
9. Heme Oxygenase-1 system .....	164
10. Products of HO-1: biliverdin/bilirubin .....	164
11. Products of HO-1: carbon monoxide .....	165
12. The local effect .....	165
13. The systemic effect .....	165
14. HO-1 and macrophage phenotype .....	166

\* Corresponding author.

E-mail address: [duane.t.lowe.civ@mail.mil](mailto:duane.t.lowe.civ@mail.mil).

15. Similar therapies; stimulate same physiologic cascade; similar results .....	166
16. Pharmacokinetic aspects of cupping therapy .....	166
17. Summary .....	166
Conflicts of interest .....	167
Acknowledgements .....	167
References .....	167

## 1. Introduction

At the 2016 Summer Olympics, U.S. Athletes in swimming, gymnastics and track and field sports competed with multiple circular marks on their backs and shoulders. These marks were produced by a therapy known as “Cupping”. In interviews, these athletes claimed that this therapy provided effective relief from the muscle and joint soreness that is associated with their respective sports and speedier recovery from injuries. This has led to increased awareness and curiosity about of this therapy. It has also provoked questions concerning the authenticity of this therapy and the claims that are made concerning the benefits.

## 2. Cupping therapy

Cupping therapy is an ancient traditional therapy that has been used throughout the world for thousands of years [1]. The oldest mention of this treatment is in an ancient Egyptian papyrus. It is a technique found in many traditional Asian medicinal systems [2]. It was promoted by ancient physicians, such as Hippocrates, for a variety of conditions [3]. Various forms of cupping were used in western medicine until the early 1900's. In the early twentieth century, August Bier, who developed procedures that are still used in anesthesiology today, was a proponent of cupping in his “Passive Hyperemia Therapy.” [4–6].

Cupping therapy, employed by various folk medicine providers, is a traditional treatment that may be dismissed as ineffective or even harmful because of some of the visually unpleasant marks this therapy leaves on patients and the unconventional explanations presented for this therapy's mechanism of action [7]. Skepticism of cupping therapy, as well as the proposed mechanisms, can be found as far back as 1835 when Charles Alexandre Louis wrote, “and how then can we believe that the effect of a blister is to check an inflammation, when this blister is one inflammation superadded to another?” [8] With the advent of antibiotics and other modern therapies, cupping fell out of fashion with western medicine, but has continued to be popular by traditional practitioners throughout the world.

## 3. Techniques

There are several methods of traditional cupping [9]. Wet cupping involves piercing the skin with needles or small blades before applying the cups. Because it involves piercing the skin and removal of body fluids, the physiological response to wet cupping would be expected to be different than its “dry” counterpart, and is not evaluated in this paper. Moving cupping is a technique in which a lubricant is used and after the cups are applied, they are slid along the skin [10]. This does not normally lead to the hallmark ecchymosis of the underlying skin that is the goal in stationary cupping. Dry Cupping involves the application of a hollow container on the skin with suction. The suction is traditionally created by placing a flame within the cup for a few seconds to heat the air, then removing the flame, and quickly applying the opening of the cup to

the skin. Skin is drawn up into the container due to the negative pressure that is created as the air cools. Glass cups are used for the technique where fire is employed to create the suction, though other materials have been used by traditional cultures such as brass, bamboo, and animal horn [2]. Today the suction can be applied with hand pumps and electric pumps or even with soft silicon cups the suction can be applied by hand [2,11].

## 4. Traditional indications

Though dry cupping in modern times is most often used for conditions involving pain, such as back pain or arthritis, it has been traditionally recommended for systemic inflammatory conditions and to address organs of the body far removed from the area of application [1,12,13]. In ancient writings there was almost no condition for which cupping was not considered appropriate treatment [14]. Sandler and Haynes point out that the 1923 edition of Abt's Pediatrics lists indications for dry cupping in its chapter on Therapeutic Technique as “acute congestion of pneumonias, bronchitis, or pulmonary edema with marked dyspnea and cyanosis... mastoid disease and nephritis.” [15,16].

## 5. Traditional explanations

The traditional explanations given of how cupping benefits a patient's health vary significantly. Anciently, the concept of removing “evil spirits” was a common theme. From Hippocrates time and even until the late 1800's, the redistribution and balance of the four cardinal “humors” was the explanation being promoted by western physicians [14]. In the early 20th century, it was proposed that cupping stimulated the production of antitoxins within the tissue [17]. Traditional Asian medicine describes the benefits of cupping via the movement of “Qi” (pronounced “chee”) energy between 12 basic meridians throughout the body [2]. Even with such vague explanations of how it works, the significant worldwide use by multiple cultures for over 3 thousand years would suggest that this therapy may elicit a beneficial effect on human physiology. There has been some clinical research on the benefits of cupping for various health conditions [9,12]. While there is some evidence for efficacy, higher quality studies still need to be done to objectively evaluate clinical benefit.

## 6. Superficial suction in healthcare

Doctors in the 19th century used suction to produce hyperemia to improve healing [6]. Suction has also been used as a mechanism for studying capillary fragility in patients [6,18–20]. Negative pressure is still commonly used in modern medicine for more effective wound care and healing [21]. Each medical use of suction is based on the specific physiologic response to the negative pressure.

The concept of dry cupping is simple; locally applied negative pressure is applied over an area of skin. It is retained from 5 to 10 min, or more, eliciting an area of petechiae, purpura or

Download English Version:

<https://daneshyari.com/en/article/5565052>

Download Persian Version:

<https://daneshyari.com/article/5565052>

[Daneshyari.com](https://daneshyari.com)