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# Genetic Theory – A Suggested Cupping Therapy Mechanism of action

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**Abstract:**

The Cupping Therapy mechanism of action is not clear. Cupping may increase local blood circulation, and may have an immunomodulation effect. Local and systemic effects of Cupping Therapy were reported. Genetic expression is a physiological process that regulates body functions. Genetic modulation is a reported acupuncture effect. In this article, the authors suggest genetic modulation theory as one of the possible mechanisms of action of cupping therapy.

**Keywords:** Cupping Therapy, Mechanism, Acupuncture, Hijama

## **Introduction:**

Cupping therapy is an ancient technique.[1] Most of ancient civilizations practiced cupping therapy. Ancient Egyptians, Ancient Chinese, Greeks and Arabs are famous practitioners of this practice. [2]Cupping therapy is performed by applying suction inside cups either by manual, electrical or fire suction.[3] Cupping therapy has several types. A recent classification divided cupping types into six main categories. Dry cupping, wet cupping, massage cupping, needle cupping and hot cupping are popular types. [4]

Cupping therapy is used in the treatment of several diseases. [5] It may be used for the treatment of nonspecific lower back pain and nonspecific neck pain.[6] It also is used in the treatment of herpes zoster, and some pain related conditions.[7] There are many suggested mechanisms of action of cupping therapy, but the

actual mechanism of action is not clear.[8]

## **Genetic modulation theory**

Hypoxia or deprivation of Oxygen is recognized as a specific stimulus for gene expression.[9] Transcription factors, growth factors, and glycolytic enzymes are critical genes modulated by hypoxia (low oxygen). The effects of these gene products are: the development of new vasculature to increase oxygenation, and thus attracting glucose transporters and glycolytic enzymes leading to glycolysis state. [9, 10]

Evidently, fibroblasts proliferated in response to biomechanical or local stress signals such as wounds lead to the initiation of the wound healing mechanism.[11] Velasquez et al demonstrated that myocardium-related transcription factor (MRTF-A) is a potent agonist of the myofibroblast phenotype. MRTF-A activates the smooth muscle contractile gene

program, and enhances fibroblast contractility and this plays an important role in healing of the cutaneous tissue.[11]

The authors hypothesize that, when the cup is being applied on the selected skin point, the suction produces mechanical pressure and pain . It also deprived partially the skin and connective tissues inside the cup from O<sub>2</sub> leading to anaerobic metabolism which can be observed from increasing lactate and the lactate/pyruvate ratio.[12] In wet cupping therapy, skin incisions are performed leading to a superficial wounds. Mechanical pressure, pain, anaerobic metabolism plus or minus superficial incisions could produce physiological and mechanotransduction signals. These signals can activate or inhibit gene expression. The result is activation of transcription factors by signaling cascades which lead to activate or inhibit transcription of responsive

target genes.[13] This mechanism of action may underlie some of the local and systemic therapeutic effects of cupping therapy.

Many studies reported that acupuncture may lead to modulation of gene expression.[14] Electric acupuncture may improve insulin sensitivity and modulates adipose tissue gene expression in rats[15] In an analysis of differential gene expression in patients who suffered from allergic rhinitis before and after acupuncture, the research reported genetic modulation in favor of reduction of allergic reactions.[16]

Cupping therapy could achieve an acupuncture effect. It could achieve De Qi sensation. [17]Thus, Cupping therapy could be used as an alternative method to acupuncture in stimulation of acupoints and produce the same effect.

In summary, Genetic modulation and control could be one of the cupping

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therapy mechanisms of action and  
could explain some of its effects.

Clinical trials are recommended to  
confirm this theory.

**Competence of interest:**

None.

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