

## Effect of Cupping Therapy on Hematological Parameters and Inflammatory Proteins in Elderly

MUHAMMED A. AL-TARZI, M.Sc.<sup>1</sup>; AZZA ABDALAZIZ ABDELHADY, Ph.D.<sup>2</sup>;  
KARIM A. FATHY, Ph.D.<sup>3</sup> and AHMED Y. ALI, M.D.<sup>4</sup>

*The Department of Cardiopulmonary Disorders & Geriatrics<sup>1</sup>, Faculty of Physical Therapy, Cairo University and Dessouk General Hospital, Kafr El-Sheikh, Department of Cardiopulmonary Disorders & Geriatric, Faculty of Physical Therapy, Cairo<sup>3</sup> & 6th of October Universities and Department of Internal Medicine<sup>4</sup>, Faculty of Medicine, Cairo University*

### Abstract

**Background:** In this study we wanted to evaluate the effect of blood cupping on liver function tests (also known as a liver panel) are blood tests that measure different enzymes, proteins, and other substances made by liver. These tests check the overall health of our liver. Also showing how hijamah can help in treating some liver diseases.

**Aim of Study:** The aim of this study was to determine the effect of cupping therapy on hematological parameters and inflammatory proteins in elderly.

**Patients and Methods:** Thirty volunteer patients have been selected from outpatients at Desouk General Hospital. Their age ranged from 60-70 years. They were assigned into one group to attend a program of cupping therapy once per month for three months.

**Results:** The results of inflammatory proteins, showed that there were significant differences ( $p=0.0001$ ;  $p<0.05$ ) in total protein, albumin, high sensitive C reactive protein, and interleukin-10 in addition to hematological factors of blood, in erythrocyte sedimentation rate, hemoglobin, total white blood cells, neutrophils, lymphocytes, monocytes, eosinophils, and basophils among pre-treatment, after 1-month, 2-month, and 3-month of cupping. No change in hemoglobin, neutrophils, and lymphocytes at baseline (pre-treatment) and after-cupping. There were significant differences ( $p<0.05$ ) in mean difference total white blood cells, eosinophils, and basophils between pre-treatment vs. after 1-month, pre-treatment vs. after 2-months, but no significant differences ( $p>0.05$ ) between pre-treatment vs. after 3-months.

**Conclusion:** Cupping therapy have a good effect for elderly patients as an alternative treatment for patients who have hematological parameters and inflammatory proteins issues.

**Key Words:** Cupping therapy – Inflammatory proteins – Elderly.

### Introduction

**CUPPING** therapy was a popular historical treatment in Arabic and Islamic countries. It was recommended by Arabic and Islamic physicians such as Ibn-Sina (AD 980-1037), Al-Zahrawi (AD 936-1036), and Abu Bakr Al-Razi (AD 854-925). Al-Zahrawi described cupping sites and illustrated cupping tools with diagrams [1]. Cupping is performed by applying cups to selected skin points and creating a sub atmospheric pressure, either by heat or by suction [2].

Eber's papyrus (1550 BC) from Ancient Egypt is one of the oldest medical texts to mention cupping therapy. Cupping therapy is part of numerous ancient healing systems, such as Chinese, Unani, traditional Korean, Tibetan, and Oriental medicine [3]. The ancient Greek physician Hippocrates compiled extensive descriptions of the cupping application. He described two different types of cups: One with a narrow opening and a long handle and the other with a wider opening. The first type was used to treat deep accumulation of fluids, while the second type was used to treat the spread of pain [4]. Al-Zahrawi described cupping sites and illustrated cupping tools with diagrams [1]. Cupping therapy practice spread to Italy and, subsequently, the rest of Europe between the 14th and 17th centuries, during the Renaissance. Cupping was a very popular treatment of gout and arthritis in Italy during this period [5]. Pearl divers in the Persian Gulf used to undergo hijamah before the diving season in the belief that the procedure will prevent diseases during the 3 months at sea.

Heating of the cups was the method used to obtain suction: The hot air in the cups has a low

**Correspondence to:** Dr. Muhammed A. Al-Tarzi,  
The Department of Cardiopulmonary Disorders & Geriatric,  
Faculty of Physical Therapy, Cairo University and  
Dessouk General Hospital, Kafr El-Sheikh

density and, as the cups cool with the opening sealed by the skin, the pressure within the cups declines, sucking the skin into it. In this case, the cups are hot and have a stimulating effect something like that of burningmoxa wool [6].

There are several methods of traditional cupping [7]. 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 [8].

Early classification of cupping therapy categorized it broadly into dry and wet cupping [9]. Another classification of cupping therapy was developed in 2013, categorizing cupping into five categories. The classification was updated in 2016 [10]. The updated classification categorized cupping therapy into six categories. The first category is “technical types”, which includes dry, wet, massage, and flash cupping. The second category is “power of suction”, which includes light, medium, and strong cupping. The third category is “method of suction”, which includes fire, manual vacuum, and electrical vacuum cupping. The fourth category is the “materials inside cups”, which includes herbal, water, ozone, moxa, needle, and magnetic cupping. The fifth category is “area treated”, which includes facial, abdominal, female, male, and orthopedic cupping. The sixth category is “other cupping types”, which includes sports, cosmetic, and aquatic cupping [10].

Cupping therapy can significantly lower the number of lymphocytes in the local blood related to the affected area with an increase in the number of neutrophils, which is one of the antiviral mechanisms that reduces the pain scores [11]. Loss of blood along with vasodilation tends to increase the parasympathetic activity and relaxes the body muscles which benefit the patient and could also be associated with the after effects of cupping. Furthermore, the loss of blood is thought to increase the quality of the remaining blood that improves pain symptoms [12]. It has also been found that cupping increases red blood cells RBCs [13]. It has been claimed that cupping therapy tends to drain excess fluids and toxins, loosen adhesions and revitalize connective tissue, increase blood flow to skin and muscles, stimulate the peripheral nervous system, reduce pain, controls high blood pressure and modulates the immune system [14]. Some

researchers believe that the build-up of toxins is the main reason for illness development. In the cupped region, blood vessels are dilated by the action of certain vasodilators such as adenosine, noradrenaline and histamine. Consequently, there is an increase in the circulation of blood to the ill area. This allows the immediate elimination of trapped toxins in the tissues, and, hence, the patient feels better. Cupping has been found to improve subcutaneous blood flow and to stimulate the autonomic nervous system [15,16].

Like injuries to the skin due to the incisions, stimulation of the skin causes several autonomic, hormonal, and immune reactions attributed to the sympathetic and parasympathetic efferent nerves to the somatic-visceral reflexes related to the organs [17]. Cupping is reported to restore sympatho-vagal balance and might be cardio-protective by stimulating the peripheral sympathetic and parasympathetic nervous system [18]. Cupping seems to play a role in the activation of complement system as well as modulation of cellular part of immune system. There is also a significant reduction in blood sugar in diabetic patients after cupping [20]. Chen and colleagues concluded that there are some improvements in the research concerning the mechanisms of cupping therapy [21]. Overall, cupping is reported to effect changes in the biomechanical properties of the skin, increase immediate pain thresholds in patients with neck pain and in a healthy subject as well, reduce significantly peripheral and local P substance and reduce the inflammation [22-25].

Blood is a lifesaving liquid organ. Whole blood is a mixture of cellular elements, colloids and crystalloids. As different blood components have different relative density, sediment rate and size they can be separated when centrifugal force is applied [26].

In increasing order, the specific gravity of blood components is plasma, platelets, leucocytes (Buffy Coat [BC]) and packed red blood cells (PRBCs). Functional efficiency of each component is dependent on appropriate processing and proper storage. To utilize one blood unit appropriately and rationally, component therapy is to be adapted universally [26].

#### *Study design:*

The current study had data about blood profile (RBC, WBC and Platelets) and inflammatory proteins (CRP, Interleukins, albumin, total protein) of elderly patients aged 60-70 years from outpatient Desouk general hospital in the study area.

*Ethical considerations:*

The protocol was approved from Faculty of Physical Therapy Cairo University Comity; the practical steps were explained for every patient. Every patient was signed a written consent form which has been attached, everything was confidential. No: P.T.REC/012/001807.

**Patients and Methods**

*Patients:*

The treatment program was in one group consists of thirty participants who applied cupping therapy once per month. The duration of the study was applied from 2019-2021, with age ranged from 60 to 70 years.

Exclusion criteria include existence of previous cupping treatment during the past 6 months, Patient who associated clinical disorders or pharmacological treatment which may affect the treatment program.

*Methods:*

*A- For evaluation:*

The procedure was performed every month for three months and once before beginning the treatment for the study group.

Measurement of Blood profile and inflammatory proteins: (RBC, WBC, PLATELETS, ESR and CRP) Blood profile measurement by (Semi-auto Chemistry Analyzer Model: SK3003).

*B- For treatment:*

*Wet cupping:*

Cups will be applied on the back especially on cervical region and para-spinal region below scapula by using 6-8 Cups. Wet cupping, is done by an incision of about 1.5ml deep and 1.5ml wide by doing a surgical lancet on skin where the cup is applied, removing superficial blood that flows into the cup which is thought to be full of toxic chemicals. Suction cupping uses a suction pump to pump the air out of the cup after it is applied to the skin [27].

**Results**

*Data collection:*

Data were screened, for normality assumption test and homogeneity of variance. Normality test of data using Shapiro-Wilk test was used, that reflect the data was normally distributed ( $p>0.05$ ) after removal outliers that detected by box and whiskers plots. Additionally, Levene's test for testing the homogeneity of variance revealed that there was no significant difference ( $p>0.05$ ). So, the data are normally distributed and parametric analysis is done.

*Statistical analysis:*

The statistical analysis was conducted by using statistical SPSS Package program version 25 for Windows (SPSS, Inc., Chicago, IL). Data are expressed as mean and standard deviation for measurements of inflammatory proteins and hematological factors of blood. One-way repeated measuring ANOVA-test used to compare the tested major variables of interest at different time (pre-cupping, after 1-month, after 2-months, and after 3-months of cupping). Repeated measuring ANOVA-test was used, the independent variable (within subject factor) was measuring periods with 4 levels (pre-cupping, after 1-month, after 2-months, and after 3-months of cupping). Bonferroni correction test was used to compare between pairwise within and between groups of the tested variables which F was significant from MANOVA test. All statistical analyses were significant at level of probability less than an equal 0.05 ( $p\leq 0.05$ ).

A total of 30 patients participated in the current study, the inflammatory proteins characteristics and hematological factors of blood of this study subjects were a comparison among the baseline (before cupping), after 1-month, after 2-months, and after 3-months cupping. Results of inflammatory proteins presented in Table (1), there were significantly differences ( $p=0.0001$ ;  $p<0.05$ ) in total protein, albumin, high sensitive C reactive protein, and interleukin-10 among pre-treatment, after 1-month, after 2-month, and after 3-month of cupping.

Table (1): Repeated one-way ANONA for inflammatory proteins within study group.

Inflammatory proteins	Cupping				p-value
	Pre-treatment	After 1-month	After 2-month	After 3-month	
Total protein (gm/dl)	8.99±0.95	6.34±1.98	7.59±2.37	9.03±2.83	0.0001 *
Albumin (gm/dl)	4.16±0.41	3.17±0.69	3.60 ±0.78	4.20±0.91	0.0001 *
High sensitive C reactive protein ( $\mu\text{g/ml}$ )	2.55±0.55	2.13±0.92	2.34±1.01	2.49±1.08	0.0001 *
Interlukein-10 (pg/ml)	1.50±0.23	1.30 ±0.56	1.35±0.58	1.53±0.66	0.0001 *

Data are expressed as are expressed as mean ± standard deviation (SD). p-value: Probability value. \*Significant ( $p$ -value  $<0.05$ ).

Multiple pairwise comparison tests (Post-hoc test) by Bonferroni test and mean difference (Table 2) revealed there were significant differences ( $p < 0.05$ ) in mean difference total protein and albumin between pre-treatment vs. after 1-month ( $p = 0.0001$  and  $p = 0.0001$ , respectively), pre-treatment vs. after 2-months ( $p = 0.031$  and  $p = 0.007$ , respectively), but no significant differences ( $p > 0.05$ ) between pre-treatment vs. after 3-months ( $p = 1.000$  and  $p = 1.000$ , respectively). This means that 2-months after cupping has caused decrease total protein and albumin levels returned back near to its normal values non-significantly at 3-months after cupping.

There were significant differences ( $p < 0.05$ ) in mean difference high sensitive C reactive protein (Table 2) between pre-treatment vs. after 1-month ( $p = 0.046$ ), but no significant differences ( $p > 0.05$ ) between pre-treatment vs. after 2-months ( $p = 1.000$ )

and pre-treatment vs. after 3-months ( $p = 1.000$ ). This means that 1-month after cupping has caused decrease high sensitive C reactive protein levels returned back near to its normal values non-significantly at 2-months after cupping.

No significant differences ( $p > 0.05$ ) in interleukin-10 (Table 2) between pre-treatment vs. after 1-month ( $p = 0.390$ ), pre-treatment vs. after 2-months ( $p = 1.000$ ) and pre-treatment vs. after 3-months ( $p = 1.000$ ). This means that no change in interleukin-10 before- and after-cupping.

Results of hematological factors of blood presented in Table (3), there were significantly differences ( $p = 0.0001$ ;  $p < 0.05$ ) in erythrocyte sedimentation rate, hemoglobin, total white blood cells, neutrophils, lymphocytes, monocytes, eosinophils, and basophils among pre-treatment, after 1-month, after 2-month, and after 3-month of cupping.

Table (2): Post-hoc test (Bonferroni test) for inflammatory proteins between pairwise of pre-treatment and post-treatment cupping.

Inflammatory proteins	Items	Post-hoc (Bonferoni test)		
		Pre-treatment vs. after 1-month	Pre-treatment vs. after 2-months	Pre-treatment vs. after 3-months
Total protein (gm/dl)	MD	2.65	1.40	0.36
	95% CI	1.51 - 3.77	0.09 - 2.71	-1.56 - 1.49
	p-value	0.0001*	0.031*	1.000
Albumin (gm/dl)	MD	0.99	0.57	0.03
	95% CI	0.59 - 1.40	0.12 - 1.01	-0.53 - 0.47
	p-value	0.0001*	0.007*	1.000
Hs-CRP ( $\mu\text{g/ml}$ )	MD	0.42	0.20	0.05
	95% CI	-0.01 - 0.85	-0.25 - 0.67	-0.43 - 0.55
	p-value	0.046*	1.000	1.000
Interleukin-10 (pg/ml)	MD	0.21	0.16	0.03
	95% CI	-0.10 - 0.52	-0.16 - 0.48	-0.39 - 0.33
	p-value	0.390	1.000	1.000

Hs-CRP: High sensitive C reactive protein.  
MD: Mean difference.  
CI : Confidence interval.

p-value: Probability value.  
\* Significant ( $p < 0.05$ ).

Table (3): Repeated one-way ANONA for hematological factors of blood within study group.

Hematological factors	Cupping				p-value
	Pre-treatment	After 1-month	After 2-month	After 3-month	
Erythrocyte sedimentation rate (ml/hour)	15.20±1.09	12.77±3.15	13.88±3.43	15.21±3.75	0.0001*
Hemoglobin (g/dl)	15.87±2.99	15.20±4.02	15.44±4.09	15.90±4.21	0.0001*
Total white blood cells	6479.49±532.14	8049.99±454.42	7264.54±410.08	6488.54±366.28	0.0001*
Neutrophils	59.62±5.38	57.40±9.06	58.40±9.21	60.23±9.50	0.0001*
Lymphocytes	37.18±3.75	36.37±4.30	36.66±4.33	37.69±4.46	0.0001*
Monocytes	2.04±0.36	2.02±0.30	2.00±0.30	2.06±0.31	0.0001*
Eosinophils	3.97±1.03	2.91±0.51	3.34±0.58	4.11±0.72	0.0001*
Basophils	0.053±0.015	0.028±0.008	0.039±0.011	0.048±0.013	0.0001*

Data are expressed as are expressed as mean  $\pm$  standard deviation (SD). p-value: Probability value. \*Significant ( $p$ -value  $< 0.05$ ).

Multiple pairwise comparison tests (Post-hoc test) by Bonferroni test and mean difference (Table 4) revealed there were significant differences ( $p < 0.05$ ) in mean difference total white blood cells, eosinophils, and basophils between pre-treatment vs. after 1-month ( $p = 0.0001$ ,  $p = 0.0001$ , and  $p = 0.0001$ , respectively), pre-treatment vs. after 2-months ( $p = 0.0001$ ,  $p = 0.012$ , and  $p = 0.002$ , respectively), but no significant differences ( $p > 0.05$ ) between pre-treatment vs. after 3-months ( $p = 1.000$ ,  $p = 1.000$ , and  $p = 1.000$ , respectively). This means that 2-months after cupping has caused decrease total white blood cells, eosinophils, and basophils levels returned back near to its normal values non-significantly at 3-months after cupping.

There were significant differences ( $p < 0.05$ ) in mean difference erythrocyte sedimentation rate

(Table 4) between pre-treatment vs. after 1-month ( $p = 0.002$ ), but no significant differences ( $p > 0.05$ ) between pre-treatment vs. after 2-months ( $p = 0.276$ ) and pre-treatment vs. after 3-months ( $p = 1.000$ ). This means that 1-month after cupping has caused decrease high sensitive C reactive protein levels returned back near to its normal values non-significantly at 2-months after cupping.

No significant differences ( $p > 0.05$ ) in hemoglobin, neutrophils, and lymphocytes (Table 4) between pre-treatment vs. after 1-month ( $p = 1.000$ ), pre-treatment vs. after 2-months ( $p = 1.000$ ) and pre-treatment vs. after 3-months ( $p = 1.000$ ). This means that no change in hemoglobin, neutrophils, and lymphocytes at baseline (pre-treatment) and after-cupping.

Table (4): Post-hoc test (Bonferroni test) for hematological factors of blood between pairwise of pre-treatment and post-treatment cupping.

Hematological factors	Items	Post-hoc (Bonferoni test)		
		Pre-treatment vs. after 1-month	Pre-treatment vs. after 2-months	Pre-treatment vs. after 3-months
Erythrocyte sedimentation rate (ml/hour)	MD	2.42	1.31	0.01
	95% CI	0.77 - 4.08	-0.47 - 3.10	-1.95 - 1.94
	p-value	0.002*	0.276	1.000
Hemoglobin (g/dl)	MD	0.67	0.42	0.02
	95% CI	-1.58 - 2.92	-1.86 - 2.71	-2.37 - 2.32
	p-value	1.000	1.000	1.000
Total white blood cells	MD	1570.49	785.04	9.04
	95% CI	-1940.79 - -1200.20	-1140.38 - -429.70	-350.47 - 332.38
	p-value	0.0001*	0.0001*	1.000
Neutrophiles	MD	2.22	1.21	0.61
	95% CI	-320 - 7.64	-4.27 - 6.70	-6.23 - 5.00
	p-value	1.000	1.000	1.000
Lymphocytes	MD	0.80	0.52	0.51
	95% CI	-2.04 - 3.64	-2.33 - 3.37	-3.40 - 2.38
	p-value	1.000	1.000	1.000
Monocytes	MD	0.02	0.04	0.02
	95% CI	-0.17 - 0.22	-0.15 - 0.24	-0.21 - 0.18
	p-value	1.000	1.000	1.000
Eosinophils	MD	1.06	0.63	0.14
	95% CI	0.53 - 1.56	0.10 - 1.15	-0.69 - 0.040
	p-value	0.0001*	0.012*	1.000
Basophils	MD	0.025	0.014	0.005
	95% CI	0.02 - 0.03	0.01 - 0.02	-0.01 - 0.02
	p-value	0.0001*	0.002*	1.000

Hs-CRP: High sensitive C reactive protein. MD: Mean difference. CI : Confidence interval. p-value: Probability value. \* Significant ( $p < 0.05$ ).

## Discussion

In this study we wanted to evaluate the effect of blood cupping on liver function tests (also known as a liver panel) are blood tests that measure different enzymes, proteins, and other substances made by liver. These tests check the overall health of our liver. Also showing how hijamah can help in treating some liver diseases.

In this study no significant difference ( $p=1.000$ ;  $p>0.05$ ) between pre-treatment vs. after 3-months. This means that 2-months after cupping has caused decrease albumin levels returned back near to its normal values non-significantly at 3-months after cupping.

This result of our study disagrees with the result of Zahraa in Iraq in which there was a significant decrease in its level [28]. Also disagree with Fatin F. Al-Kazazz, Sura A. Abdulsattar and Kutayba Mohammed in Iraq which there was a decrease in its level but the main difference in their study that they estimated its levels in cupping blood instead of venous blood [29]. In this study 1-month after cupping has caused decrease high sensitive C reactive protein levels returned back near to its normal values non-significantly at 2-months after cupping.

In this study concerning the results of inflammatory proteins, there were significant differences ( $p=0.0001$ ;  $p<0.05$ ) in total protein, albumin, high sensitive C reactive protein, and interleukin-10 in addition to hematological factors of blood, in erythrocyte sedimentation rate, hemoglobin, total white blood cells, neutrophils, lymphocytes, monocytes, eosinophils, and basophils among pre-treatment, after 1-month, 2-month, and 3-month of cupping. No change in hemoglobin, neutrophils, and lymphocytes at baseline (pre-treatment) and after-cupping. There were significant differences ( $p<0.05$ ) in mean difference total white blood cells, eosinophils, and basophils between pre-treatment vs. after 1-month, pre-treatment vs. after 2-months, but no significant differences ( $p>0.05$ ) between pre-treatment vs. after 3-months.

These results disagree with the study of Khaldoon, it showed that the post cupping results demonstrated some significant reduction in inflammatory markers especially RF ( $p<0.007$ ), CRP ( $p<0.05$ ) as well as WBCs (0.03), and neutrophils ( $p<0.011$ ) that are considered sensitive markers of inflammation. In addition, no adverse effects were reported from the subjects after therapy [30].

This study disagreed with Ranaeiet al., [31] They analyzed Some blood parameters including IgA, IgG, IgM, Alb, TSH, T3, T4, Ca, CREAT, SGPT, SGOT, LDL, HDL, MCV, Hb, and HCT were tested. The significant changes were observed only in Cholesterol, HDL, LDL, and FBS. Interestingly our results showed that cupping can regulate some blood parameters such as Cholesterol, HDL, LDL, and FBS.

On the other hand, This study was supported by Abdullah et al., [32] as it showed that cupping therapy can significantly lower the number of lymphocytes in the local blood related to the affected area with an increase in the number of neutrophils, which is one of the antiviral mechanisms that reduces the pain scores.

This study agreed with Kolahi et al., [33] as it showed although an increase in platelet count, hemoglobin, red blood cells and white blood cells and a decrease in hematocrit level was observed after cupping; the changes were not statistically significant. Cupping did not cause statistically significant changes in platelet count, white blood cells, red blood cells, hemoglobin and hematocrit.

This study was supported by findings of Ahmed et al., [34] as The findings revealed an increased significantly in the percentage of lymphocytes and platelets count due to blood cupping (Table 2). On the other hand, there were no significant differences in in the WBCs count and RBCs indices (RBCs count, hemoglobin, PCV, MCV, MCH, and MCHC) before and after bleeding by cupping.

## Conclusion:

Cupping therapy has a good effect for elderly patients as an alternative treatment for patients who have hematological parameters and inflammatory proteins issues.

## References

- 1- NAYAB M., TAUSIF M., LARI J. and ALAM A.: Therapeutic potentials of hijama-bila-shart (dry cupping therapy): A review. *Int. J. Unani Integr Med.*, 1 (1): 21-24, 2017.
- 2- MEHTA P. and DHAPTE V.: Cupping therapy: A prudent remedy for a plethora of medical ailments. *Journal of Traditional and Complementary Medicine*, 5 (3): 127-134, 2015.
- 3- QURESHI N.A., ALI G.I., ABUSHANAB T.S., ELOLEMY A.T., ALQAED M.S., EL-SUBAI I.S. and ALBEDAH A.M.: History of cupping (Hijama): A narrative review of literature. *Journal of Integrative Medicine*, 15 (3): 172-181, 2017.
- 4- CHRISTOPOULOU-ALETRA H. and PAPAVERAMIDOU N.: Cupping: An alternative surgical procedure used by

- Hippocratic physicians. *The Journal of Alternative and Complementary Medicine*, 14 (8): 899-902, 2008.
- 5- TURK J.L. and ALLEN E.: Bleeding and cupping. *Annals of the Royal College of Surgeons of England*, 65 (2): 128, 1983.
  - 6- SOYUNCU S.: Back pain in adult: what's your diagnosis? *European Journal of Emergency Medicine*, 16 (1): 57, 2009.
  - 7- CAO H., LI X. and LIU J.: An updated review of the efficacy of cupping therapy. *PloS One*, 7 (2): e31793, 2012.
  - 8- LEE M.S., KIM J.I. and ERNST E.: Is cupping an effective treatment? An overview of systematic reviews, *J. Acupunct. Meridian Study*, 4: 1-4, 2011.
  - 9- TEUT M., KAISER S., ORTIZ M., ROLL S., BINTING S., WILLICH S.N. and BRINKHAUS B.: Pulsatile dry cupping in patients with osteoarthritis of the knee—a randomized controlled exploratory trial. *BMC complementary and alternative medicine*, 12 (1): 1-9, 2012.
  - 10- AL-BEDAH A.M., ABOUSHANAB T. S., ALQAED M.S., QURESHI N.A., SUHAIBANI I. and IBRAHIM G.: Classification of Cupping Therapy: A Tool for Modernization and Standardization. *JOCAMR*. [Internet]. [cited May 13, 2018]; 1 (1): 1-10, 2016.
  - 11- HAO P., YANG Y. and GUAN L.: Effects of bloodletting pricking, cupping and surrounding acupuncture on inflammation-related indices in peripheral and local blood in patients with acute herpes zoster. *Zhongguozhenjiu=Chinese acupuncture & moxibustion*, 36 (1): 37-40, 2016.
  - 12- VASKILAMPI T. and HÄNNINEN O.: Cupping as an indigenous treatment of pain syndromes in the Finnish cultural and social context. *Social Science & Medicine*, 16 (21): 1893-1901, 1982.
  - 13- AEENI Z., AFSAHI A. and REZVAN H.: An investigation of the effect of wet cupping on hematology parameters in mice (BALB/C). *Research in Medicine*, 37 (3): 145-150, 2013.
  - 14- CHIRALI I.Z.: *Traditional Chinese medicine: Cupping therapy*. Elsevier Health Sciences, 3 rd Ed. P: 47-64, 1999.
  - 15- YOO S.S. and TAUSK F.: Cupping: East meets west. *International journal of dermatology*, 43 (9): 664-665, 2004.
  - 16- LUND I. and LUNDEBERG T.: Are minimal, superficial or sham acupuncture procedures acceptable as inert placebo controls? *Acupuncture in Medicine*, 24 (1): 13-15, 2006.
  - 17- SATO A.: Neural mechanisms of autonomic responses elicited by somatic sensory stimulation. *Neuroscience and Behavioral Physiology*, 27 (5): 610-621, 1997.
  - 18- ARSLAN M., YESİLÇAM N., AYDIN D., YÜKSEL R. and DANE Ş: Wet cupping therapy restores sympathovagal imbalances in cardiac rhythm. *The Journal of Alternative and Complementary Medicine*, 20 (4): 318-321, 2014.
  - 19- KHALIL A.M., AL-QAOU D K.M. and SHAQQOUR H.M.: Investigation of selected immunocytogenetic effects of wet cupping in healthy men. *Spatula DD*, 3 (2): 51-7, 2013.
  - 20- AKBARI A., ZADEH S.M.A.S., RAMEZANI M. and ZADEH S.M.S.: The effect of hijama (cupping) on oxidative stress indexes & various blood factors in patients suffering from diabetes type II. *Nationalpark-Forschung in Der Schweiz (Switzerland Research Park Journal)*, 102 (9), 2013.
  - 21- CHEN B., LI M.Y., LIU P.D., GUO Y. and CHEN Z.L.: *Alternative medicine: An update on cupping therapy*. *QJM: An International Journal of Medicine*, 108 (7): 523-525, 2015.
  - 22- NOROZALI T., ROOSTAYI M.M., MANSHADI F.D., ABBASI M., BAGHBAN A.A. and KHALEGHI M.R.: The effects of cupping therapy on biomechanical properties in wistar rat skin. *Journal of research in rehabilitation sciences*, 9(5): 841-851, 2013.
  - 23- EMERICH M., BRAEUNIG M., CLEMENT H.W., LÜDTKE R. and HUBER R.: Mode of action of cupping—local metabolism and pain thresholds in neck pain patients and healthy subjects. *Complementary therapies in medicine*, 22 (1): 148-158, 2014.
  - 24- TIAN H., TIAN Y.J., WANG B., YANG L., WANG Y.Y. and YANG J.S.: Impacts of bleeding and cupping therapy on serum P substance in patients of postherpetic neuralgia. *Zhongguozhenjiu=Chinese acupuncture & moxibustion*, 33 (8): 678-681, 2013.
  - 25- LIN M.L., LIN C.W., HSIEH Y.H., WU H.C., SHIH Y.S., SU C.T. and WU J.H.: Evaluating the effectiveness of low level laser and cupping on low back pain by checking the plasma cortisol level. In *2014 IEEE International Symposium on Bioelectronics and Bioinformatics (IEEE ISBB 2014)* (pp. 1-4). IEEE. April 2014.
  - 26- BORZINI P., BALBO V. and MAZZUCCO L.: Platelet concentrates for topical use: bedside device and blood transfusion technology. *Quality and versatility*. *Current pharmaceutical biotechnology*, 13 (7): 1138-1144, 2012.
  - 27- BONDOK and S.M.A.: *Cupping the great missing therapy*, Cairo, Dar Al-Salam, 82-83, 2006.
  - 28- ZAHRAA: *Investigation of The Effects of Wet Cupping Therapy on Some Biochemical Parameters in Thi-Qar Governorate/ Iraq*: MSC thesis University of Thi-Qar, 1-5: 13-20, 2016.
  - 29- FATIN F. AL-KAZAZZ, SURA A. ABDULSATTAR and KUTAYBA MOHAMMED: *Study Effect of Wet Cupping on Hematological Parameters and Inflammatory Proteins of Healthy Iraqi Men*. *Iraq*, 2 (5): 644-649, 2014.
  - 30- ABDULLAH K.S., MOHAMMED A.S., NAVEED M., AL-ERYANI E., AHMED A.A. and AL-ATANY S.M.: *Effect of Cupping (Al-Hijama) therapy in rheumatoid arthritis patients: A cohort study in Yemen*. *Dokkyo Journal of Medical Sciences*, 48 (02): 189-199, 2021.
  - 31- RANAIE S.S., KHEIRANDISH H., ADIBI Z., AGIN K. and BARSHAN T.M.: *The effect of cupping (hejamat) on blood biochemical and immunological parameters*, 3 (2): 31-32, 2004.
  - 32- AL-BEDAH A.M., ELSUBAI I.S., QURESHI N.A., ABOUSHANAB T.S., ALI G.I., EL-OLEMY A.T. and ALQAED M.S.: *The medical perspective of cupping therapy: Effects and mechanisms of action*. *Journal of traditional and complementary medicine*, 9 (2): 90-97, 2019.
  - 33- KOLAH J.S., JELODAR G. and MALLAHI A.M. (2015): *Effect OF Wet Cupping ON hematological parameters*.

Journal of Traditional and Complementary Medicine, 9:  
90-97, 2019.

34- AHMED K.A.A., OLA A.S., HAIDAR A., ESKANDER  
S., AL-QIARI B. and HAMZAH A.: Evaluating the Ther-

apeutic Effects of Wet Cupping (Al-Hijamah) on Hema-  
tological Parameters, Kidney Function Tests and Lipid  
Profile in Adult Women. Biomedical and Pharmacology  
Journal, 15 (1): 187-197, 2022.

## تأثير العلاج بالحجامة على مكونات الدم والبروتينات الالتهابية في كبار السن

الهدف : كان الهدف من هذه الدراسة هو تحديد تتأثير العلاج بالحجامة على مكونات الدم والبروتينات الالتهابية في كبار السن.

المرضى : ثلاثون مريضاً متطوعاً من كبار السن تم اختيارهم من العيادات الخارجية بمستشفى دسوق العام. تراوحت أعمارهم بين ٤٠-٥٠ سنة، وقد تواجدوا بمجموعة واحدة المجموعة (أ) طبقت برنامج بالحجامة مرة واحدة في الشهر لمدة ثلاثة أشهر.

النتيجة : يمكن استخدام النتيجة كمرجع للدراسة الحالية لإظهار فعالية العلاج بالحجامة على مكونات الدم والبروتينات الالتهابية في كبار السن. وجد تغيير في قياسات مكونات الدم والبروتينات الالتهابية في كبار السن. وجد انخفاض كبير بعد العلاج مقارنة بما قبل العلاج ( $p<0.05$ ) في المجموعة (أ).

الاستنتاج : هذا يوضح التأثير الجيد المتوقع للعلاج بالحجامة على مكونات الدم والبروتينات الالتهابية في كبار السن.