

# Study Effect of Wet Cupping on Hematological Parameters and Inflammatory Proteins of Healthy Iraqi Men

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## ABSTRACT

**Objective:** This paper intends to evaluate inflammatory proteins and hematological factors concurrently blood obtained during the cupping and with the venous blood.

**Methods:** About 30 samples of 10 men participated in this clinical evaluative study aged between 23 and 58 years. The hematological factors were evaluated by by KX-. Cytokines (IL-10) & hs-CRP were measured by a sensitive sandwich ELISA kit.

**Results:** Analysis of the results showed a significant difference in many of the inflammatory proteins, hematological factors between the venous blood and the cupping blood.

**Conclusion:** Based on the results of the comparison between venous blood and cupping blood, the cupping blood is different, both in components and immunologic response.

**Keywords:** Cupping, Hematological factors, hs-CRP, IL-10, Total blood count.

## INTRODUCTION

Cupping has a long history spanning several thousand years and various cultures in the East and West using various materials like bamboo, glass<sup>1</sup>. In china, cupping is considered the most important pillars of traditional Chinese medicine so far, as well as the ancient Greeks used by doctors and described the medical methods<sup>2,3</sup>. The Arabs knew the ancient cupping perhaps influenced by their surrounding communities<sup>2</sup>. There are three types of cupping dry, wet, and massage cupping. In dry cupping stationary cups are placed on the skin and left for a period of five to 15 minutes in one location without incisions,

while in wet cupping (hijama) the process of using a vacuum at different points on the body but with incisions in order to remove 'harmful' blood which lies just beneath the surface of the skin. In massage cupping, oil is applied on the skin to facilitate smooth movement and discover the areas of tension and congestion prior to applying the cup. Cupping can be used on the neck, shoulders, back, sacral area, hip, abdomen, thigh, upper arms and calves<sup>4</sup>. Cupping (hijama) is an alternative medicine that can treat many diseases ranging from minor to serious chronic diseases such as arthritis and diabetes<sup>5</sup>. Its treatment relies upon creating

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a local suction to mobilize blood flow in order to promote healing<sup>2</sup>. Suction is created using heat (fire) or mechanical devices (hand or electrical pumps).

Study of the mechanisms of action of cupping makes the traditional medicine more convincing and therefore it can be used more easily for treatment. It can then be presented to the society with a more convincing scientific base<sup>6</sup>.

The aim of current study is to compare hematological factors and inflammatory proteins between the cupping blood and venous blood (pre and post cupping), since there is rare study about cupping's blood.

## SUBJECT AND METHODS

The study was performed on 10 healthy volunteers with age range (20-53 year). These subjects were participated in this study with their agreements, and any patient was excluded such as (diabetes, rheumatoid arthritis, and hypertension). Five ml of fasting blood were collected from each subject three times: before cupping at base line, blood cupping, and two week after cupping. At the beginning of the study, 5 ml venous blood sample was obtained from each volunteer. Each sample blood was separated into two tubes one with EDTA for assessment hematological fact or sand other was centrifuged at 3000 rpm for 5 min for determination inflammatory proteins.

### Wet cupping

Some glass cups are warmed using a cotton ball, which is soaked in alcohol, let, then placed inside the cup. To remove all the oxygen and create a vacuum, substance inside the cup had burned .The cup was turned upside-down so that the practitioner could place the cup over a specific area. The vacuum created by the lack of oxygen anchored the cup to the skin and pulled it upward on the inside of the glass as the air

inside the jar cools. Drawing up the skin is believed to open up the skin's pores, which helped to stimulate the flow of blood, balances and realigns

## METHODS

Total protein and albumin levels were determined by spectrophotometric methods supplied by Human Diagnostic, Germany. Acute phase protein high sensitive C reactive protein (hs-CRP) and interleukin-10(IL-10)were measured using commercially available Enzyme Linked Immune sorbet Assay (hs-CRP and IL-10 : biocheck, Company, USA ,while Westergren method was used to measure the Erythrocyte Sedimentation Rate<sup>7</sup> . The total amount of hemoglobin in the blood(Hb) calculated from hematocrite values between 33% and 35% (0.33-0.35) ztable1z.,the number of white blood cells (WBC count)and differential were measured in the present study.

## STATISTICAL ANALYSIS

Paired Samples T-Test statistical analysis was performed using the SPSS version 15.0 for Windows (Statistical Package for Social Science, Inc., Chicago, IL, USA).Correlation analysis was used to test the linear relationship for TP,Alb,hs-CRP,IL-10 ,WBC count, Hb% and ESR between pre and cupping blood ,also, between pre and post-cupping blood using paired method.

## RESULT AND DISCUSSION

As shown in Table (1), the inflammatory proteins characteristics of this study subjects were a comparison between the baseline (before cupping) and 14 days after cupping furthermore, compare their levels with those in blood during cupping.

Results of proteins inflammatory summarized in Table 1; which shown a highly significant (\*\* $p < 0.01$ ) decrease in T. protein and albumin levels in cupping blood in compare to vein blood pre-cupping while after 14 days of cupping their levels had increased significantly ( $*p < 0.05$ ) in compare to cupping blood. Mean levels of hs-CRP and IL-10 had decreased non-significantly in cupping blood in compare to vein blood (pre-cupping). Beside, reduplication 2 weeks after cupping has caused decrease their levels returned back near to its normal values non-significantly which, is in agreement with Ahmed and colleagues findings<sup>8</sup>.

The reason for the significant difference between cupping and venous blood samples is yet not known, we just can confess that these are the first steps to search about cupping mechanism and further investigations seems more crucial.

In cupping, the flow of blood, breaks up obstructions, and creates an avenue for toxins to be drawn out of the body. Several cups may be placed on a patient's body at the same time<sup>6</sup>.

C-reactive protein CRP is used mainly as a marker of inflammation. Apart from liver failure, there are few known factors that interfere with CRP production<sup>9</sup>.

The erythrocyte sedimentation rate (ESR) is a simple and in expensive laboratory test that is widespread in clinical practice for assessing the inflammatory or acute response<sup>10</sup>.

Generally, ESR does not change as rapidly as CRP, either at the start of inflammation or as it goes away. Since CRP is not affected by as many other factors as is ESR, making it a better marker of inflammation<sup>11</sup>, and measuring CRP values can be useful in determining disease progress or effectiveness of treatments. Our results showed there was a non-significant difference between cupping blood samples and venous

blood samples from the view point of hs-CRP level.

Data in Table 2 illustrated the hematological parameters WBC count, Hb and ESR furthermore the differential count for WBC to the three types of blood samples. As shown the Hb and ESR could not be measured in the blood through the cupping due to speeds of clotting the blood in compare to venous blood in pre and post cupping, and this reveals cupping blood is so dense. So ESR decline can be considered as a result of high density of cupping blood samples in which RBC's number is much more than venous blood samples<sup>11</sup>.

Cupping more probably plays an important role in excretion of old RBCs<sup>12</sup>. The relationship is that when red blood cells increases, hematocrit increases, and blood viscosity also increases because too much red blood cells (erythrocytes) in the blood makes the blood more dense /thicker, and therefore slows down the flow of the blood. In short, blood cells, hematocrit, and blood viscosity are all directly proportional with each other<sup>13</sup>.

The mean level of ESR and Hb had decreased non-significantly for the post - cupping blood in compare to that pre-cupping, which means hijama decreased the inflammation statues. The erythrocyte sedimentation rate (ESR) is widely used as a screening or monitoring test for patients with acute or chronic inflammatory diseases<sup>14</sup>.

It has been reported WBCs count in cupping blood sample is one tenth of their count in venous blood samples<sup>12</sup>. Our results also showed WBCs count decline less than this decrease statistically highly significant. In addition, there was an increase in WBCs count after 2 weeks and it seems similar other studies<sup>8</sup>.

The International Council for Standardization in Hematology (ICSH) selected the Westergren method as the reference technique for measuring ESR<sup>15</sup>.

Also all of their levels had increased in the cupping blood, that's means the body returned to its homeostasis status after the cupping. Furthermore total WBC count almost non-existent in the cupping blood (nearly one tenth) and it increased after cupping .Then hijama increasing human immunity.

In studying the type of correlation for some above factors between vein and cupping blood; Table 3 illustrated the main results (i.e.,  $r$  &  $p$  values).As shown there was positive strong correlation between pre-cupping and cupping bloods for Hs-CRP ( $r=0.956$  , $p =0.044$ ) and a non-significant positive for IL-10 ( $r=0.136$  , $p= 0.748$ ),while it was a non-significant negative for total WBC count ( $r= - 0.073$  , $p=0.863$ ).In the same Table it could see a positive correlation between pre-cupping and post-cupping blood with a non-significant for Hs-CRP ( $r =0.687$  , $p =0.088$ ) and a significant for IL-10 ( $r =0.632$  , $p =0.050$ ) and a highly significant for both Hb and total WBC ( $r=0.958$  , $p=0.000$ ),( $r=0.842$  , $p=0.002$ ) respectively.

The no correlation for WBC between venous and cupping blood confirmed WBC results in Table 2(i.e. ,mean =699) which means WBC would not go out of the body then human immunities become stronger .The highly strong significant relation for Total WBC in vein blood pre and post cupping insurance our conclusion that hijama (wet cupping) increase the immunity

According to various studies about any effects of cupping it is obvious that cupping is effective in treatment of Migraine and tension headaches <sup>16</sup>.

## CONCLUSION

Generally we may conclude that cupping is a reason for betterment of blood factors in persons .It can be assumed that there is a marked difference in the composition of blood drawn through cupping as compared to the blood drawn intravenously, especially the

WBC count almost non-existent in the cupping blood then hijama increasing the human's immunity and returns the body to its homeostasis statue.

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**Table 1.** Inflammatory Proteins (TP, Alb, hs-CRP, IL-10) levels in the three groups included in this study

Type of Samples	Pre-cupping Blood		Cupping Blood		Post-cupping Blood	
	Mean±SD	SE	Mean±SD	Inflammatory Proteins	Mean±SD	SE
T.protein (gm/dl)	8.0167±1.0458	0.4269	6.900± 0.7321**	T.protein (gm/dl)	8.0167±1.0458	0.4269
Albumin (gm/dl)	4.2086±0.55243	0.2088	3.429±0.56231**	Albumin (gm/dl)	4.2086±0.55243	0.2088
Hs-CRP (µg/ml)	2.62203±1.9162	0.95814	2.1048±1.6486	Hs-CRP (µg/ml)	2.62203±1.9162	0.95814
IL-10 (pg/ml)	1.4056±0.8552	0.3023	1.1706±0.2997	IL-10 (pg/ml)	1.4056±0.8552	0.3023

\* $p < 0.05$ , \*\* $p < 0.01$

**Table 2.** Mean±SD for the Hematological Factors of Blood Samples (pre ,through and post-cupping)

Type of Samples	Pre-cupping Blood		Cupping Blood		Post-cupping Blood	
	Mean±SD	SE	Mean±SD	SE	Mean±SD	SE
ESR (ml/hr)	14.500± 8.944	2.8294	-	-	11.200± 6.7297	2.1281
Hb (g/dl)	15.590± 1.3119	0.4149	-	-	14.900± 1.2193**	0.3856
Total WBC	6430.00± 1597.2924	564.7281	897.500± 586.9229 ***	207.5086	7801.000± 2155.1099	681.5056
Neutrophils	58.9%	-	38.57%	-	57.5%	-
Lymphocytes	36.7%	-	58.125%	-	37.2%	-
Monocytes	1.9%	-	1.25%	-	1.9%	-
Eosinophils	3.4%	-	1.875%	-	2.4%	-
Basophils	0.0	-	1.0	-	0.0	-

**Table 3.** Correlation coefficients (r) and *p* values for some Hematological Factors of Blood Samples between (pre and through cupping) and between (pre and post-cupping)

Types of the Correlation	Pre-cupping Blood and Through cupping		Pre-cupping Blood and post-cupping	
	Correlation coefficients (r value)	<i>p</i> values	Correlation coefficients (r value)	<i>p</i> values
Hematological Tests				
Hs-CRP(mgm/dl)	0.956	0.044	0.687	0.088
IL-10 (mgm/dl)	0.136	0.748	0.632	0.050
Hb (gm/dl)	-----	-----	0.958	0.000
Total WBC	- 0.073	0.863	0.842	0.002

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