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# The Effect of Hijama (Cupping) on Oxidative Stress Indexes & various Blood Factors in Patients Suffering from Diabetes Type II

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**Abstract:** Diabetes is considered as one of the most important health-therapeutic and social problems of the world. Beta cells are ready for destruction by free radicals and severity of disease. Cupping is a factor for prevention of such destruction. This paper intends to evaluate cupping and its effects on biochemical factors and oxidative stress concurrently with taking medicines. About 30 persons participated in this clinical evaluative study. They were suffering from Diabetes type II. Prior to treatment, we took 5ml of venous blood of patients. They were not only subject to medical treatment but also with cupping. Again after treatment we took 5ml of their venous blood. We compared both pre/after blood samples from diabetes indexes and oxidative stress. In order to evaluate lipids per-oxidation we used tio-barbitoric acid and for measuring of Tam Serum Anti-oxidants we used FRAP method. Then we measured blood biochemical factors by the use of Pars Azmoun Kits. There were significant changes in hemoglobin rate A1C, hungry blood sugar, and blood sugar 2 hours after hungry, triglyceride, cholesterol, lipo protein with low density and also lipo protein with high density. There was a significant reduction in espartos transferees in diabetes patients after cupping ($p<0.05$).Cupping is effective in treatment of blood factors in diabetes patients. It is proposed to be used as a complementary method in patients suffering from diabetes type II. (IRCT: 2013041513019N1).

**Keywords:** Cupping, Diabetes, Oxidative stress, Blood Biochemical parameters

## 1-Introduction

Diabetes is one of the most common chronic diseases with an increasing world statistics even in Iran. It is the fourth factor of deaths in most of developed countries (1). Diabetes is considered as the most important health, therapeutic, social and economic problems of the world. There are great numbers of people throughout the world who are suffering from

diabetes. Mellitus diabetes means an increase in blood glucose level related to a group of etiology disorders resulted in difficulties in carbohydrates, proteins and fats metabolism. The result is absolute or estimated disorders in providing of insulin or lack of its functions (2). Generally Beta cells are responsible for providing insulin in response to any increase in blood serum glucose. Any disorders in functions of beta cells it may be resulted in loosing of insulin. Regarding the low capacity of antioxidants enzyme beta cells are ready for being destructed by free radicals (3). Furthermore some of the safety cells including macrophages and B & T cells are able to produce free radicals which may cause further damages to beta cells (4). On the other hand, oxidative stress has a great role in diabetes pathogens (5). According to various studies about any effects of cupping it is obvious that cupping is effective in treatment of Migraine and tension headaches (6). In addition, Daniali et al. have reported in their comparative study of venous blood and cupping one that the composition of bloods was different (7). According to the cupping mechanism from modern medicine viewpoint, the most important effects of cupping is regulation of safety system and providing of endocrine and exocrine glands and also further effects on sympatric and para-sympatric systems. Furthermore there are various site cines and keratin cites due to inflation. The mention site cines may cause some changes in cell receivers which may be helpful in treatment process. Some of the most important site cines out of cupping are as follows: Tumor Necrosis, Factor α-TNFα, Tumor growth factor-TGF, Fibroblast growth factor, FGF and Vascular epidermal growth factor VEGF. Also there are some other compositions which may be released like mono amines and icosanides and serotonin, histamine and anti-bacterial proteins and viruses and anti-fungi materials plus presto glanidines. It may cause activation of various complements and enrichment of safety system.Since there is not any study about cupping's effects as a complementary method in diabetes type II, we decided to evaluate any effects of cupping on this disease as a complementary method as well.

**2-Materials & methods**

About 30 persons participated in this clinical evaluative study. They were suffering from Diabetes type II at Arak city.

Firstly an executor provided required explanations about the project and their participations as well. Then all participants signed their Acceptance Certificate and answered to the mentioned questions. One of the executors filled the questionnaires including complete information of patients and some specific questions. Upon obtaining their acceptance and filling the questionnaire, patients went to next step of the study.Prior to treatment, we took 5ml of venous blood of patients. Samples were evaluated in laboratory from both diabetes indexes and other blood factors and oxidative stress indexes. Then the patients not only received medicines including goli benglamide and metformin, but also were subject to cupping at the end of 3$^{rd}$ week.The process of cupping included disinfecting the place by beta dine and cleaning the same with white alcohol and putting a special cup between middle line and T3, T4 back vertebras. Cupping rate was based upon personal bodily situation and skin resistance. The suitable rate for cupping is about 1-1.5cm from the highest rate of cupped skin up to the edge of the cup. Then the cup was removed and some parallel cracks were made with longitude axle of body and with a distance of 3-5mm. The size of crashes was about 20mm from longitude and about 30 crashes in three parallel rows. The depth of crashes was made in a way to cut epidermis and dermis. Upon cutting, three continuous times we made cupping for obtaining required blood. The time of cupping was 5

minutes through which about 100cc blood was taken from the cupping place. In next step and about one week later, again we obtained 5ml of venous blood and compared the same at laboratory from diabetes indexes and other blood factors and oxidative stress indexes.

**3-Evaluation of blood biochemical factors & Oxidative stress indexes**

Entrance criteria include those people with lack of any records of alcohol dinking, cigarette and anti-oxidants. Also there were not suffering from special diseases like cancer, thyroid, cardiovascular disorders, leukemia, and women at menopause time. Exterior criterion included higher 2.5 keratinize, hemoglobin lower than 10, consuming of vitamins, complementary and sugar materials. Prior to treatment, we took 5ml of venous blood. Again we took another 5ml blood after the end of treatment period. Both pre/after samples were analyzed from blood factors viewpoints like blood sugar, HDL, ALT, AST, LDL and Albumin factors, triglyceride and keratinine with Pars Azmoune kit. Then we evaluated oxidative stress parameters after separation of serum by centrifuge.

**4-Measuring of TBA concentration**

In this study we used 5 & 5 Dithionitrobenzoic acid-DTNB (Sigma-USA Co.) and 2-thiobarbituric acid-TBA) one butanol (Merke-Germany Co.), 6,4,2 tripyridyl-s-triazine-TPTZ) (Fluka-Italy), 1,1,3,3 tetra ethoxy propane (Ilrish Co.). Also we used spectrophotometer (model UV-Visible Jasco made by Shimadzu Japan Co.) for measuring of wavelength absorption.

We used Thio Barbituric Acid (TBA) method in order to measure lipid per-oxidation. Because of attacks of free radicals to lipids, we have various aldehydes including MDA with high temperature in Thio Barbituric Acid and acid PH. The maximum rate of absorption of pink complex is in 532 nanometer (8).

**5-Measuring of (FAAP) antioxidants and A1C hemoglobin**

FRAP method was used for evaluation relevant antioxidants. This method is based upon plasma ability for renovation of $Fe^{+3}$ ions (ferric) into $Fe^{+2}$ (Ferro) in presence of TPTZ. Then TPTZ-$Fe^{+2}$ could make a blue complex with maximum rate of absorption of 593 nanometers for renovating of serum or plasma and through increasing the above-mentioned complex by spectrophotometer (9). Also we could measure Hb A1C according to the relevant kit instructions.Finally we analyzed all obtained data by the help of SPSS software and also T pair test. Generally all involved people in research and study were followers of Medical Principles issued by Ministry of Health & Therapeutic and also Helsinki Notice and all approvals of Medical Ethic Committee (with code No. 90-114-13) of Arak Medical Sciences University. Therefore all patients were involved in this study with their complete satisfaction and without any forces. Their personal information was kept completely confidential with further efforts for maintenance of their data. Furthermore all participants were free to exit from the study at any time and on their personal preference.

After measuring of chemical factors and oxidative stress enzymes pre and after the study, we made data entry to SPSS statistical software. It was possible to measure the average and violation of criteria.

## 6-Findings

According to the mentioned results in tables 1 & 2, there was a significant difference among hemoglobin rate, hungry blood sugar, and blood sugar 2 hours after hungry, triglyceride, cholesterol, lipo protein with low density and also lipo protein with high density. There was a significant reduction in espartos transferees in diabetes patients pre & after cupping.

Table 1-The average and violation criterion of biochemical factors pre & after cupping

| Biochemical parameters | Before cupping | After cupping | P |
|---|---|---|---|
| Hemoglobin A1C (%) | 9.2±1.67 | 8.16±1.27 | 0.0001 |
| Hungry blood sugar (mg/dl) | 219.89±68.82 | 180.2±60.95 | 0.0001 |
| Blood sugar 2 hours after hungry (mg/dl) | 301.62±90.03 | 262.6±86.74 | 0.0001 |
| Creatinine (mg/dl) | 0.97±0.22 | 0.98±0.18 | 0.627 |
| Urea (mg/dl) | 15.41±4.89 | 14.84±4.43 | 0.57 |
| Triglyceride (mg/dl) | 225.9±128.64 | 202.97±122.76 | 0.011 |
| Cholesterol (mg/dl) | 202.3±46.96 | 191.37±49.7 | 0.037 |
| Low density lipo protein (mg/dl) | 131.9±68.91 | 116.85±67.18 | 0.002 |
| High density lipo protein (mg/dl) | 43.2±15.55 | 46.77±14.9 | 0.012 |
| Alkaline Phosphatase (Iu/l) | 216.6±71.02 | 204.5±57.88 | 0.138 |

Table 2-The average and violation criterion of oxidative stress enzymes pre & after cupping

| Biochemical parameters | Before cupping | After cupping | P |
|---|---|---|---|
| Concentration of tam serum antioxidants (Micromo /ml) | 1.99±1.06 | 2.31±0.69 | 0.115 |
| Concentration of lipid per-oxidation (nanomol/ml) | 33.36±18.61 | 31.96±16.99 | 0.72 |
| Alanine Transferees (ALT) SGPT(Iu/l) | 29.07±18.4 | 29.07±18.4 | 0.5 |
| Spartat Transferees (AST) SGOT (Iu/l) | 31.2±13.27 | 27.13±12.16 | 0.021 |

## 7-Discussion

According to the results of this study, the hemoglobin rate A1C, hungry blood sugar, and blood sugar 2 hours after hungry, triglyceride, cholesterol, lipo protein with low density and also lipo protein and espartos transferees had a significant reduction and also a significant increase in lipo protein rate with high density.In 2009, Fazel et al. had a study under the title of any effects of cupping on concentration of lipo proteins of people suffering from blood cholesterol increase. Therefore the LDL rate was lower at the end of the study in comparison with the beginning in both sample and witness groups.Niasari et al made another study in 2007 under the title of any effects of cupping on concentration of lipids in which cupping caused a reduction in concentration of lipids and prevention from atro schelorosis(11). Bika et al. have reported in their study about any effects of cupping in treatment of diabetes that it is effective in treatment of blood pressure (12). On the other hand, Lee et al. reported any

effects of cupping on rehabilitation of brain stops in a way that cupping has no more effects in this way (13). But regarding parallel situation of our results and the others', it seems that cupping has a positive effect on diabetes from therapeutic viewpoint. Also it seems that cupping is able to enrich blood circulation and lymph through some complex mechanisms. Since all studied people had A1C more than %8 and used just one time cupping, therefore it seems that we should make minimum three times cupping for obtaining better results. Since there is an increase in quantity of free radicals in diabetes type II, today one of the important actors is the role of free radicals in weakening of defense system in mellitus diabetes. Therefore cupping is able to enrich antioxidant system and prevent from progress of effects and control any production of free radicals and safety cells like macrophages and T,B cells (3,4,14,15). In another study by Shariat Zadeh et al. under the title of any effects of cupping on oxidative stress, it was obvious that cupping may cause a reduction in various oxidative stress indexes (16). The results of this study are in contrast with previous studies. It seems that the reason is number of made cupping in this study. Totally we can say that cupping will cause betterment in blood factors of diabetes patients. But since there is not an exact mechanism for it, it is proposed to evaluate cupping as a complementary method.

## 8-Conclusion

Generally we may conclude that cupping is a reason for betterment of blood factors in diabetes patients. But regarding various indexes of oxidative stress like measuring of catalos, glutathione and measuring of plasma anti oxidants and lipid per-oxidation we should make cupping at least three times. It is proposed to make an exact evaluation of the role of cupping in various diseases.

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