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## CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND HIJAMAH (CUPPING THERAPY): A NEW INSIGHT IN LIGHT OF UNANI MEDICINE

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### Abstract

Chronic obstructive pulmonary disease (COPD) has become a global epidemic. It is defined as a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lungs in response to the noxious agents including cigarette smoke, biomass fuels and occupational agents. By definition, it is treatable, but the effectiveness of the current treatment is unsatisfactory as there is no available therapy to better control the inflammatory progression which contributes to irreversible airflow limitation. Accordingly, the development of an efficient anti-inflammatory therapy is a priority for patients with COPD. Complementary and Alternative Medicine (CAM) is one of the promising approach in treating such patients. *Hijamah* or Cupping is one of the regimens or **CAM** modality, mentioned in *Unani system of Medicine* under ***Ilaj-bit-tadbeer*** (Regimental therapy). It has been in practice to treat various disorders since the time immemorial. It acts to draw inflammation and pressure away from the deep organs towards the skin and facilitates the healing process. It diverts the toxins and other harmful impurities from the vital organs towards the less vital. Eradicating the morbid material and prove to be beneficial in various diseases, especially the inflammatory conditions.

In the light of the above understanding, an alternative approach-“*Hijamah* or Cupping therapy” was intended to be explored in the light of Unani classical literature for the

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management of COPD as a better, safe and efficacious substitute to the existing treatment options.

Aim of this article is to provide a general outline on description of conditions mimicking COPD and their management by **cupping therapy** in the light of Unani system of medicine.

**Keywords:** COPD, Inflammation; CAM; Unani medicine; Ilaj-bit-tadbeer; Hijamah; Cupping therapy

### **CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

Chronic obstructive pulmonary disease (COPD) is a new name for an old malady. The ancients included the disease under the rubric of “catarrh”<sup>25</sup>. As a measure to raise awareness of Chronic Obstructive Pulmonary Disease as a public health problem by governments the “Global initiative for COPD (GOLD)” was launched in 2001, and subsequently updated in 2004 as a collaborating project of U.S. National Heart Lung and Blood Institute (NHLBI) and the World Health Organization<sup>49; 23</sup> which defined COPD:

*“as a treatable disease state characterized by airflow limitation that is not fully reversible. The airflow obstruction is usually progressive and associated with an abnormal inflammatory response of the lungs to the noxious particles and gases”.*

### **Global Burden of COPD**

Chronic obstructive pulmonary disease (COPD) is a growing healthcare concern and now occupies a leading cause of world-wide mortality and disability that results in an economic and social burden which are both substantial and increasing day by day<sup>12; 18; 10; 8</sup>. It is among the top 10 global contributors to the global burden of disease as measured by disability-adjusted life years<sup>60; 38; 44</sup> and reported to be the sixth leading cause of death in 1990. WHO predicts that it will become the fourth commonest cause of death by 2030 but discouragingly, it is projected to jump to third place by the year 2020 and kills million of people worldwide<sup>22; 38; 42; 41; 52; 53; 37; 26; 59; 47</sup>.

### **CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN CLASSICAL UNANI LITERATURE**

Since the time of *Hippocrates* (460-377 BC) the occurrence of physical disorder characterized by cough, expectoration, wheezing, and dyspnea first on exercise and later on rest has remained quite well known. In *Kamillussana* (1889) *Majoosi* (930-994 AD) mentions that

Hippocrates (460-377 BC) used the term *Zeeq-un-Nafas* for breathlessness. *Galen* (130-200AD) also talks about the treatment of such disorders (*Majoosi* 930-994 AD). Among the Arab physicians *Rabban Tabri* (770-850AD) was the first, who mentioned the disease *Zeeq-un Nafas* (*Usr-e-Tannafus*) which is mentioned in chapter 6 of his book *Firdaus-ul-Hikmat*. In this book *Tabri* (770-850 AD) mentions that *Zeeq-un-Nafas* (*Usr-e-Tannafus*) is due to “*Galeez Madda*” (Morbid matter) which obstructs the airways. *Razi* (865-925AD) was the first Arab physician who described the disease *Zeeq-un-Nafas* in detail. In his book “*Kitab-ul-Hawi*” *Razi* (865-925 AD) states that *Zeeq-un-Nafas* is the result of exudation of *Balghum-Ghair-Tabai* i.e. morbid and viscid phlegm from *Qasbat-ur-Riyah* (Trachea) and *Urooq-e-Khashina* (Bronchioles) which in turns results in obstruction of airways. *Razi* further states that “*Zeeq-un-Nafas*” is due to *Imtelai* (Congestion) condition of *Urooq-e-Khashina* (bronchioles) which prevents the bronchial tree from dilatation. *Ibn-Sina* (980-1037AD) has given a detailed description of *Zeeq-un-Nafas* in his famous book “*Al Qanoon Fit Tib*” while discussing its types and related conditions under separate headings, *Ibn-Sina* (980-1037 AD) states that *Zeeq-un-Nafas* is due to *Warm-e-Riyah* (Inflammation of lungs) and *Tang-e-Tannafus* (Difficulty in breathing) is either due to accumulation of *Balghum-e-Galeez* (Morbid phlegm) or due to *Warm-e-Sulb-e-Riyah* (Fibrosis of lungs).

### **Co-Relation between Current and Previous Concept of COPD:**

The description of the COPD in classical Unani literature is available under different nomenclature such as *Zeeq-un-Nafas*; *Rabu*; *Buhar*; *Intesab-un-Nafas* etc. while going through the descriptions of these conditions and keeping in view the etiology; clinical features and management, the above conditions are almost alike though may be different in severity and *Usr-e-Tanaffus* (difficulty in breathing) is commonly found in all the above disease entities. Though the literal meaning of *Usr-e-Tanaffus* is “difficulty in breathing” and is used as a synonymous for dyspnea<sup>1; 9; 34; 61</sup>

The current description of chronic obstructive pulmonary disease which includes chronic bronchitis and emphysema has pathology of airways narrowing (bronchoconstriction). While a comparative study of classical and modern literature reveals that bronchoconstriction either due to spasm, inflammation, fibrosis, exudation or congestion had been mentioned in classical literature under different terms which is now covered by the broad term COPD. The term *Usr-e-Tannafus* seems appropriate for dyspnea due to

bronchoconstriction and therefore, probably is being used rightly in the patients with COPD. While going through the classical Unani literature by, it is crystal clear that the mechanism of bronchoconstriction (*Tangi Tanaffus*) and *Usr-e-Tanaffus* given by Unani physicians is not different from the Modern view. Only thing is that ancient Unani physicians were not able to appreciate the terms like *Muzmin Iltehab Shaob* or *Nafkhtur Riyah*. Though, *Razi* (865-925 AD) had used the term "*Intifakhi*" (*Emphysematous*) for collection or filling of *Reeh* (Air) in the lungs. Similarly *Razi* also had mentioned terms like *Saul-e-Ateeq* and *Saul-e-Qadeem* along with *Zeeq-un-Nafas* in *Alhawi-Fittib*.

### **MAJOR TARGETS IN COPD MANAGEMENT**

An effective COPD management plan includes following components: *assess and monitor disease, reduce risk factors, manage stable COPD, manage exacerbations to preserve optimal lung function, improve activities of daily living, quality of life and survival with minimal adverse effects from treatment* <sup>45; 49; 16</sup>. A high priority should be given to the primary prevention of COPD by reducing the number of people who start to smoke <sup>28; 49; 22</sup>. As cigarette smoke induces the release of many inflammatory mediators including growth factors i.e. TGF- $\beta$ ; EGFR; IL-1 and G-CSF through oxidative stress pathways and this inflammation may persist for decades after even smoking cessation. Apart from this mucous production is also increased by these inflammatory mediators which enhance the inflammation to the airways and lungs. On contrary to this, the Conventional medical treatment includes short-acting inhaled  $\beta$ 2-agonists used on an 'as required' basis, regular use of an inhaled antimuscarinic bronchodilator or a long-acting  $\beta$ 2-agonist, oral theophylline, Mucolytics, inhaled corticosteroids, pulmonary rehabilitation programmes, oxygen therapy, and surgery to remove a single large bulla or functionless areas of lung, or lung transplantation <sup>16</sup>. Conversely, the International guidelines suggest that the long-acting-bronchodilator therapy should always be considered and remain the mainstay in treatment of COPD patients <sup>14; 18; 51</sup>. By definition, it is treatable but unfortunately, the effectiveness of the current advanced treatment option are unsatisfactory and COPD still remains one of the leading causes of respiratory morbidity and mortality <sup>15; 47</sup>. Besides being enormously expensive, these medicines are associated with serious adverse effects. Development of tolerance towards certain drugs after sometime is also well-known <sup>19; 27</sup>. These disadvantages call for an evaluation of the risks and benefits of the therapy in comparison with fewer side effects for

the management of COPD patients. Complementary and alternative (CAM) is one of such approach in treating such patients. This mode of treatment is more commonly operated in the Asian societies but now the popularity of CAM continues to grow in developed countries, including USA<sup>4</sup>.

**Unani system of Medicine**, one of the major traditional or Complementary mode of medical practice in Asia especially in India, has produced many useful leads in developing medications for chronic diseases especially in respiratory diseases as proved by numerous clinical trials <sup>7; 11</sup>. *Hijamah* or Cupping is one of such tadbeer (Regimen) or **CAM** modality, included in *Unani system of Medicine* under **Ilaj-bit-tadbeer** (Regimental therapy). Broadly, *Hijamah* is of two types: 1) *Hijamat-bish-shart* (Wet cupping) and 2) *Hijamat-bila-shart* (Dry cupping). It has been practiced for many diseases since the time immemorial.

It acts to draw inflammation and pressure away from the deep organs towards the skin and facilitates the healing process. It diverts the toxins and other harmful impurities from the vital organs towards the less vital. Eradicating the morbid material and prove to be beneficial in various diseases, especially the inflammatory conditions as prove by the clinical trials <sup>2; 33</sup>. Furthermore, Hekmatpou D et al-in 2013 states that Wet cupping- a traditional bloodletting method recommended for controlling of respiratory diseases and its complications<sup>29</sup>. Mahmoud H.S et al-2013 also reported that Wet Cupping enhances the venous drainage at the skin related to diseased organ or tissue, which may lead indirectly to enhancement of arterial circulation at that diseased organ or tissue causing improved perfusion and improvement of body's response to pathology <sup>39</sup>.

In such a scenario, this alternative approach-“*Hijamah* or Cupping therapy” must also be explored in light of Unani classical literature for the management of COPDs as a better, safe and efficacious substitute to the existing treatment options with a hope to treat the underlying disease process in COPD.

## **UNANI MEDICINE: AN ALTERNATIVE APPROACH TO CHRONIC OBSTRUCTIVE DISEASE PATIENTS**

There are **three principal modes of treatment** in Unani system of medicine.

1. Ilaj bit Tadbeer wa Taghziya (Regimental and dietotherapy)
2. Ilaj bid Dawa (Pharmacotherapy)

### 3. Ilaj bil Yad (Surgery)

**Cupping therapy** is an important part of *Ilaj bit Tadbeer* (Regimental therapy).

*Ibn Sena* described the *Tadbeer* as:

By “**Tadbeer (Regimen)**” we mean the intervention in *Asbaab-e-Sitta-Zaruriyah* (Six essential factors) which have been enumerated and are operating in life in customary way Ibn-e-Sena (980-1037).

The **Asbaab-e-Sitta-Zaruriyah** is the six essential factors, which are necessary to be under the normal limit to restore the health. Any subtle alteration in their limit may cause the health disorders. These factors are mentioned below<sup>30; 31</sup>:

1. Hawa-e-Muheet (Atmospheric air)
2. Makul wa mashrub (Food and beverages)
3. Harkat wa sukun e badani (Physical activity and relaxation)
4. Harkat wa sukun e nafsani (Mental activity and relaxation)
5. Naum wa Yaqzah (Sleep and awakening)
6. Ehtibaas wa istifragh (Retention and evacuation)

The intervention in above six factors i.e. *Asbaab-e-Sitta-Zaruriyah* is known as *Ilaj bit Tadbeer* (Regimental therapy). So all modes of treatment, which cause intervention in these factors are to be incorporated in the *Ilaj bit Tadbeer*, irrespective of whether *Advia* or *Amal-e-Yad* is used or not to accomplish the purpose<sup>3</sup>.

*Hijamah* has been discussed in classical surgical books, as surgical procedures, like *Kitabul-Umdah-fil-Jarahat* written by Ibn Al Quf Masihi and *Kitabul-ul-Tasreef* written by Abul Qasim Zehrawi, in which we can find the tools used for the *Hijamah* <sup>40; 41; 62</sup>.

### **HIJAMAH (CUPPING THERAPY) IN UNANI SYSTEM OF MEDICINE**

The word *Hijamah* comes from the root *Al-Hajm*. Its various meanings have been mentioned in different Arabic lexicons and dictionaries. Out of all these meanings most relevant that have correlated by various writers. *Al-hajm* means “to suck” <sup>4</sup>. There are different synonymous for this are: *Hijamah* (Arabic); *Singhi or pachna* (Hindi); *Cupping* (English); *Bekam* (Malay); *Kyuka Ku* (Japanese); *AlFaasik* (German) <sup>6; 43; 46</sup>

*Hijamah* can be defined as:

*“A mode of Unani treatment which is carried out by application of cup shaped glass vessels on the body surface, creating vacuum by heating or by special suction apparatus, in order to evacuate the morbid materials, to divert the material from the diseased part or to return a displaced organ to its natural position and to encourage the blood flow to the site of Hijamah”.*

#### ❖ Common types of Hijamah mentioned in classical unani literature

The classifications of Hijamah given in Unani classical literature are as under:

- A. Depending upon whether *shart* (Scarification or incision) is given or not, the Hijamah is of two types<sup>36; 41; 62; 34; 40</sup> :
  - Hijamah bish shart (Wet cupping or cupping with scarification)
  - Hijamah bila shart (Dry cupping or cupping without scarification)
- B. Depending on its need, Hijamah bish shart (Wet cupping or cupping with scarification) is of two types <sup>41; 54</sup>:
  - Hijamat-e-Iztirariyah (Mandatory)
  - Hijamat-e-Ikhtiyariyah (Optional)
- a. Depending on the basis of method of cupping Hijamah bila shart (Dry cupping or cupping without scarification) is of three types<sup>41; 54; 36; 62</sup>:
  - Hijamat-e-Nariyah (Cupping with fire or Fire cupping)
  - Hijamat-e-Ghair-Nariyah (Cupping without fire)
  - Hijamat-e-Mai (Cupping with decoction of drugs)

*Ibn-ul-Quf* has mentioned the *Hijamah* brilliantly in his book *Al-Umdah-fil-Jarahat*. He described the *Hijamat bila shart* and *Hijamah bish shart* in two separate chapters.

He further explains the purpose of Hijamah and states that the sanguineous material which is to be evacuated may be present in any of these four sites i.e. Superficial part of the body; Deep part of the body; Both superficial and deep parts of the body and in between the superficial and deep parts of the body. In case of first condition, it may be evacuated by Hijamah, in second and third type, it will be evacuated by Fasd (Venesection) and in the fourth condition by the process of Ta'leeq (Leeching) <sup>41</sup>.

#### ❖ Common sites of Hijamah mentioned in unani classical literature

*Abul Qasim Zehrawi* has described the Hijamah in his book *Al-Tasreef leman ajeza an-il-Talef*. Along with its types and uses, he had further mentioned the following 14 sites of *Hijamah*<sup>62; 41; 34; 56</sup>:

- ❖ Nuqra (Nape); Kahil (Upper part of the body/ interscapular region); Akhd'ain (both lateral margins of neck); Zaqan (Chin); Katifain (Both shoulders); Us'us (Coccyx); Zandain (Both Forearms); Saqain (Both shanks); Urqubain (Both Achilles tendon)
- ❖ **General indication and contraindication for Hijamah in various systemic diseases**

*Ibn-e-Sina* discussed *Hijamah* in detail in his well-renowned book "*Alkanoon-fit-tib*" in volume: 1st. He further described the following important points and the indications of *Hijamah* in his book i.e.

- For local evacuation Hijamah is far better than Fasd (Venesection).
- Hijamah is preferably done in hemodilation than in hemoconcentration
- Hijamah is less beneficial for obese individuals having viscid blood, because cannot be sucked out easily due to its viscosity<sup>56</sup>

While discussing the Hijamah, *Ibn Hubal* states in his book "*Kitabul Mukhtarat fit tib*" that *Hijamah* sucks out the blood from those vesicles which are scattered in the muscles and skin, therefore reduces the congestion from nearby organs <sup>13</sup>.

It is contraindicated in children below the age of two years and in elderly person above the age of sixty years as in the elderly it may lead to the dryness, which prevails in the skin and muscles in this age group<sup>36</sup>. Pregnant women or menstruating women, cancer (metastatic) and patients with bone fractures or muscle spasms are also believed to be contra-indicated. It has been reported that it may had some minimal discomfort like feeling of slight light headedness; feeling warmth; and slight sweating which may be due to the method of application of skin cuts to the patient<sup>21</sup>.

### **AN INSIGHT OF HIJAMAH (CUPPING THERAPY) IN RESPIRATORY DISEASES WITH SPECIAL REFERENCE TO CONDITION MIMICKING COPD:**

"Cupping therapy: a heritage from several thousand years"

#### **➤ Procedure of Hijamah (Cupping therapy):**

One of several kinds of cups (bamboo cups, glasses or earthen cups) placed on the desired sites on patients' skin, to make the local hyperemia or haemostasis and subsequently curing many diseases <sup>33</sup>. By placing the cups with the help of suction pump, vacuum is created which

anchors the cup to the skin and draws up the skin at the specific areas, thus opening the skin pores and stimulate the blood flow. This is the procedure for *Dry cupping*.

In *Wet cupping*, after the application of dry cupping, the area is cleaned with antiseptic and the same area of skin is punctured with surgical needle by making on average 10-20 pricks over the cupped area. Vacuum is created by applying cups with suction pump, skin draws up and small amount of blood flows from the punctured site which helps in the removal of harmful substance as well as toxins from the body (Morbid material). This is the procedure for *Wet cupping*.

➤ **Indication and site mentioned for Hijamah in Chronic Obstructive Pulmonary Disease Patients and similar disorders of respiratory system**

Bleeding through scarifications, venesection or cupping was practiced by most of the primitive people in the treatment of pneumonia, pleurisy and other diseases, particularly those that are combined with fever. It brings a certain relief by decongesting the system as the primitive found it out empirically<sup>58</sup>. Furthermore, Su Sen. Liang Fang recorded *cupping therapy* as an effective cure for chronic cough<sup>21</sup>. In a Tang Dynasty (1644-1911) book, *Necessities of a Frontier Official*, cupping was prescribed for the treatment of pulmonary tuberculosis or a similar disorder.

➤ **KAHIL (Interscapular Region):**

Kahil (Interscapular region) is the indicated site for Hijamah (Cupping), mentioned in unani classical literature for the management of conditions mimicking COPD<sup>13; 34; 40; 41; 36; 62; 9; 61</sup>.

- *Hijamah* at this site is substitute of *Fasd-e-Akhal* (Venesection of median nerve) (Tabri-1908; Jurjani-YNM) and *Fasd-e-Basleq* (Venesection of basilic nerve)<sup>41; 61; 62; 50</sup> and according to Abul Qasim Zehrawi<sup>50</sup>, it is substitute of both i.e. *Fasd-e-Akhal* and *Fasd-e-Basleq*.
- *Hijamah* at *Kahil* is further beneficial in *Rabu*; *Rabu-e-damavi Zeeq-un-Nafas*; *Su'al* (Cough); *Imtila-E-Riyah* (Congestion of lungs); *Amraz-e-sadr-damaviyah* (Sanguine diseases of thorax); *Khunnaq-e-damavi* (Sanguine diphtheria); *Waja-ul-hallaq* (Throat pain) and also in *Waja-ul-katif* (Shoulder pain)<sup>61; 13</sup>.

Though *Hijamah* at *Kahil* enfeebles the stomach and causes palpitation. So it is advised to change the position of *Hijamah* at this site slightly upwards in order to prevent the weakness

of heart and stomach. Contradictory to this well accepted concept, *Ismail Jurjani* states *Hijamah* at this site is beneficial in *Khafqaan-e-khooni* (Sanguine palpitation)<sup>36</sup>. It should preferably be done slightly downwards for *Nafs-ud-dam* (Hemoptysis) and *Su'al* (Cough).

### **Plausible Mechanism for Hijamah (Cupping Therapy) in COPD Patients**

According to *Professor Edzard Ernst*, University of Exeter, "Cupping is a form of acupuncture that focuses on the movement of blood energy called *Qi* and *body fluids* such as lymph which circulates around the body tissues and Acupuncture may help in relieving COPD patients by following proposed mechanism<sup>16</sup>:

- Reducing bronchial immune-mediated inflammation, and reducing inflammation in general by promoting release of vascular and immunomodulatory factors.
- Improving both airway mucociliary clearance and the airway surface liquid.
- Regulating cytokine production.

Based on the prophetic medicine "*Taibah theory*" for scientific mechanisms of cupping therapy is recently published as a novel evidence-based mechanism for explaining scientific and medical bases of cupping therapy<sup>39</sup>.

According to this theory, *Hijamah* filters and clears blood and interstitial fluids from Causative Pathological Substances (CPS) including Disease-Causing Substances (DCS) and Disease-Related Substances (DRS). This occurs via a percutaneous pressure dependent and size-dependent filtration of capillary blood of skin circulation. Negative pressure introduced through sucking cups creates skin uplifting inside which interstitial fluids, filtered fluids from blood capillaries, hemolyzed blood cells (but no intact blood cells) and Causative Pathological Substances (CPS) are collected just beneath skin barrier inside skin uplifting. Upon scarifying skin uplifting superficially and applying 2nd suction step using cups, all collected fluids are excreted, mixed with some blood cells that come out from traumatized capillaries. Capillary blood clearance occurs with further removal of Causative Pathological Substances (CPS) from capillary blood. During the process of *Hijamah* the excretory functions of skin is enhanced, congestion is removed, tissue adhesions are broken and homeostasis is restored, which explains why *Hijamah* treats diseases with different pathogenesis<sup>39</sup>.

**Unani physician** also indicate *Hijamah* as one of the mode of *Istifragh*. As this system is based on the humoral theory i.e. *Theory of Akhlat* and the condition mimicking COPD is considered

to be caused by the dis-equilibrium in *Khilt-e-Balghum* (Phlegm). *Hijamah* is among one of the method used for evacuation of morbid humors and this tadbeer (Regimen) have *Muhalil* (Anti-inflammatory) and *Mulattif* effect (Demulcent) and also drain the deep seated morbid materials towards the body surface. Apart from the action of *Istifragh* (Evacuation), it also does *Imala* (Diversion) of morbid matter and proves to be beneficial in so many diseases of the human beings. *Ibn-e-Hubl* in his book “*Kitabul Mukhtarat fit tib*” discussing *Hijamah* (Cupping) states that it suck out the blood from those vesicles which are scattered in the muscles and skin, hence reduces the congestion from the nearby organs <sup>50</sup>. *Ibn-ul-Quf-Masihi* further mentioned that it will evacuate (*istifragh*) the sanguinous material from the superficial part of the body <sup>41</sup>. This has further proved to be the most scientific mechanisms of cupping therapy recently published as a novel evidence-based mechanism for explaining scientific and medical bases of cupping therapy as reported by Mahmoud HS et al in 2013.

**“Cupping clearly has a physiological effect on the body”**

Generally, it has a variety of therapeutic functions including sweating and dispelling exogenous pathogens, relieving swelling, alleviating pain, promoting blood circulation, accelerating healing and regulating body temperature <sup>57</sup>. It influences the *neurological, hematological, circulatory and immunological systems* <sup>5</sup>. Both blood and lymph circulatory system are stimulated to work more efficiently, resulting in more efficient collection and transportation mechanism for toxic substances, depositing it into the lymphatic system to be destroyed and allowing the circulation of fresh lymph in order to nourish the tissues and boost the immune system.

The main objective of treatment is to remove the cause of disharmony from the body, restore the circulation of blood and fluids thus aiding physis in re-establishing homeostasis (University of the West-2009).

From a biomedical point of view, mechanical stimulation due to negative pressure in the jar activates the local tissue metabolism, intensifies phagocytosis and promotes a healing response. At biological level, cupping therapy works by stimulating or activating the immune system, Enkephalin secretion, neurotransmitter release, vasoconstriction and vasodilatation and gates for pain in the CNS which interrupt pain sensation <sup>55; 48</sup>.

In the hematological system, the main effect is likely via two pathways: 1) regulate the coagulation and anti-coagulation systems and 2) decreased the Hematocrit (HCT) and increased the flow of blood and increase the end organ oxygenation.

In the immune system, the main effect is likely via three pathways: 1) irritation of the immune system by making an artificial local inflammation, and then activates the complementary system and increase the level of immune products such as interferon and TNF 2) Effect the thymus and 3) Control traffic of lymph and increased the flow of lymph in lymph vessels<sup>5</sup>. Cupping could improve the cellular and humoral immunity in chronic asthmatic bronchitis patients. Cai-qing Zhang et al in a study while seeing the effects of drug cupping therapy on immune function in chronic asthmatic bronchitis patients found: the level of CD<sup>4+</sup>, CD<sup>4+</sup>/CD<sup>8+</sup>, IL-2, IFN-gamma, C<sub>3</sub>, C<sub>4</sub>, IgA, IgG, and IgM increased, while the level of IgE, IL-4, IL-10 and CD<sup>8+</sup> decreased after treatment in both groups. They concluded that the cupping therapy could improve the cellular and humoral immunity<sup>17</sup>.

Cupping has anti-inflammatory function as reported by Ilkay Chirali-2011 in a study done on inflammatory complaints by observing a decrease in the serum concentration of fibrinogen and ferritin after the cupping which is the inflammatory marker along with reduction in the inflammatory status of the patients<sup>35</sup>.

### **Conclusion:**

As “Hijamah or Cupping” therapy proves to be beneficial in treating the inflammatory conditions of various systemic diseases by numerous clinical trials. Hence, this traditional therapy may be taken as a better, safe and efficacious substitute to the existing treatment options in the management of COPDs patients.

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