



## Review Article

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### EVIDENCE BASED RESEARCH STUDIES ON *Dīq AL-NAFAS* (ASTHMA) IN UNANI MEDICINE: A REVIEW

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Received on: 16/10/19 Accepted on: 02/12/19

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DOI: 10.7897/2277-4343.11018

#### ABSTRACT

Asthma is one of the most important non-communicable diseases (NCDs) which cause substantial disability and death worldwide. It is estimated that asthma accounts for one in every 250 deaths worldwide. More than 330 million individuals are currently suffering from asthma globally, about a tenth of those living in India. Although recent treatment guidelines have led to substantial improvements in asthma management and control but many of these patients continue to have disabling symptoms and severe exacerbations. It is common to find patients with asthma, seeking medications from alternative systems of medicine. Studies have shown that patients use either complementary or alternative medicine only if they are not satisfied with conventional medicine. Adverse effects of conventional medicines, holistic approach in the disease management are also the reasons for choosing complementary and alternative medicine. A wide range of 6-70% prevalence of use of complementary therapy for asthma is reported. Such treatments include acupuncture, homeopathy, and herbal therapy including Unani or Ayurvedic drugs, ionizers and spiritual healing. But there is a lack of evidence that these complementary or alternative medicine approaches work. This article is an attempt to collect and summarize the evidenced based research work done in Unani system of medicine for the management of Asthma or *Dīq al-Nafas*.

**Keywords:** Asthma, *Dīq al-Nafas*, Unani, Alternative medicine,

#### INTRODUCTION

Asthma has been declared as a disease of major public health importance by the World Health Organization (WHO). An optimal strategy for asthma management and prevention was implemented in 1992 by the Global Initiative for Asthma (GINA) which was constituted by WHO and the National Heart, Lungs and Blood Institute (NHLBI). Global Initiative for Asthma (GINA) defined asthma as a chronic persistent inflammatory disease of the airways, which is characterized by recurrent attacks of breathlessness and wheezing due to chronic airway inflammation, reversible airway obstruction and hyper responsiveness to a variety of specific and non-specific stimuli.<sup>1,2</sup> Asthma remains one of the most important non-communicable diseases (NCDs). It is a cause of substantial disability and death worldwide. It is estimated that asthma accounts for one in every 250 deaths worldwide.<sup>3</sup> As such; asthma requires global attention and commitment to lessen its burden. International burden of asthma is huge, with more than 330 million individuals presently suffering from asthma globally. Approximately a tenth of this population is living in India alone.<sup>1,4</sup> The disease prevalence has been estimated to range 3-38% in children and 2-12% in adults rendering it the commonest chronic disorder among children.<sup>5</sup> A latest Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis (INSEARCH) revealed the prevalence of asthma in India to be 2.05% among those aged more than 15 years, with an estimated national burden of 18 million asthmatics.<sup>6</sup> Another reports showed that there are about 489,000 deaths attributable to asthma annually<sup>7</sup> and the majority of deaths occur in low and middle-income countries, particularly Oceania, South and Southeast Asia, Middle East, and Africa.<sup>8</sup>

#### Pathophysiology

Asthma is the result of chronic inflammation of the conducting zone of the airways (most especially the bronchi and bronchioles), which subsequently results in increased contractility of the surrounding smooth muscles. This among other factors leads to narrowing of the airway and the classic symptoms of bouts of wheezing. The narrowing is typically reversible with or without treatment. Occasionally the airways themselves change.<sup>9</sup> Typical changes in the airways include an increase in eosinophils and thickening of the lamina reticularis. Chronically the airways smooth muscle may increase in size along with an increase in the numbers of mucous glands. Other cell types involved include: T lymphocytes, macrophages, and neutrophils. There may also be involvement of other components of the immune system including: cytokines, chemokines, histamine, and leukotrienes among others.<sup>10</sup>

#### Pharmacological management

The drugs used for the treatment of bronchial asthma are broadly classified as controllers and relievers. Controllers are the medications which are taken on a long term basis to keep the asthma under control. They include corticosteroids (inhaled or systemic), long acting  $\beta_2$ -agonists, leukotriene antagonists, sustained release theophylline, anti-Ig E, oral anti-allergic compounds and mast cell stabilizers. Relievers are the medications which are used on 'as needed' basis. They give quick action in reversing the broncho-constriction and relieve asthma related symptoms. They include short acting  $\beta_2$  agonists and anticholinergics.<sup>11,12</sup>

Pharmacological treatment for asthma relies heavily on  $\beta$ -agonists and corticosteroids. Nearly all the drugs that are effective are themselves capable of causing death on rare occasions whether directly, as with arrhythmias from theophylline or  $\beta$ -agonists, or indirectly, as with corticosteroid-induced hip fractures. Theophylline and prednisolone cause more problems. Many patients are unable to tolerate theophylline and its narrow therapeutic window limits its place in treatment.<sup>13</sup> Oral steroids clearly cause substantial morbidity. Osteoporosis is the long-term adverse effect of most concern.<sup>14</sup>

Although development of both classes of drug combined with a general improvement in management means that most patients with mild or moderate asthma can now enjoy a relatively symptom-free life. Many patients continue to have considerable morbidity nevertheless and these patients require a new addition to current treatment. It is therefore, common to find patients with asthma, seeking medications from alternative systems of medicine. Studies have shown that patients use either complementary or alternative medicine only if they are not satisfied with conventional medicine. Either the adverse effects of conventional medicines or holistic approach in disease management are the reasons for choosing alternative medicine. A wide range of 6-70% prevalence of use of complementary therapies for asthma has been reported,<sup>15</sup> such treatments include acupuncture, homeopathy, herbal therapies with Unani, Ayurvedic drugs, ionizers and spiritual healings. But there is a lack of evidence that these complementary or alternative Unani medicine approaches work. In relation to Unani medicine it is needed for long that published work on asthma should be compiled not only to provide researchers updated information on the subject but also to contribute in the generation of evidence regarding efficacy and safety of various Unani formulations used in the treatment of asthma.

### Asthma in Unani medicine

Asthma was recognized in ancient Egypt and its treatment was mentioned in Ebers Papyrus based on drinking a mixture known as kyphi.<sup>16</sup> Asthma is termed as *Dīq al-Nafas* in traditional system of Unani medicine. The term *Dīq al-Nafas* is composed of two words ‘*Dīq*’ and ‘*Nafas*’ meaning “narrowing” and “breathing”, respectively. In other words, it means difficulty in breathing. *Dīq al-Nafas* is mentioned by the ancient physicians and philosophers like *Bugrat* (Hippocrates - 460 BC) and *Jalinoos* (Galen - 120-200 AD). *Bugrat* for the first time described this disease as breathlessness or panting forming the basis of our modern name.<sup>10</sup> *Majoosi* has also mentioned this disease in his book *Kamil-us-Sana* with reference to *Bugart* and *Jalinoos*. In the 12th century the Unani physician-philosopher *Maimonides* wrote a treatise on asthma in Arabic, based partly on Arabic sources, in which he discussed the symptoms, proposed various dietary and other means of treatment and emphasized the importance of climate and clean air.<sup>17</sup> Unani scholars have mentioned this disease under different headings in their treatises e.g. *Rabw*, *Buhar*, *Dama*, *Intasabun-Nafas*, etc.<sup>18-23</sup> *Dīq al-Nafas* is a condition in which there is difficulty in breathing due to narrowing in air passages. The body does not get normal amount of air required for *Tarwih-e-Qalb* (supply of *Ruh* to heart) resulting in patient’s unrest in the form of breathlessness.<sup>24</sup> It is also known as *Intisab un Nafas*, which is also a combination of two words ‘*Intisab*’ means to stand and ‘*Nafas*’ means breath. In this condition sometime patient is unable to take breath or feel uneasy in sitting or lying position so they tend to stand to breathe and feels comfortable.<sup>25</sup>

### Alamaat (Symptoms and Signs)

*Dīq al-Nafas* is a respiratory disorder characterized by paroxysms of breathlessness with or without cough, cold and fever. The patient looks restless and weak; face gets red and *Nabz* (pulse) becomes *Azeem* (magnus), *Saree* (rapid) and *Layyin* (soft). Sometimes sweating, low body temperature and increased respiratory rate are observed. Bouts of breathlessness and cough may remain from 2-3 hours to 24 hours. These symptoms may be mild, moderate or sometimes severe.<sup>22,25</sup>

### Etiological classification

Unani scholar *Rabban Tabri* (838-923 AD) has described several types of *Dīq al-Nafas* such as: (a) *Dīq al-Nafas Qasir* - caused by weakness of the respiratory muscles. (b) *Dīq al-Nafas Mutataba*’e - caused by excessive heat. (c) *Dīq al-Nafas Mustaqeem* -caused by atony of the respiratory muscles. (d) *Dīq al-Nafas Qawi* - caused by *Iltehab* or inflammation of the diaphragm. (e) *Dīq al-Nafas Zaeef*- caused by *Baroodat* or excessive cold. (f) *Dīq al-Nafas Aseer*- caused by accumulation of viscid secretions in the bronchial tree or gaseous collection in the chest putting pressure on the bronchial tree externally.<sup>20</sup>

Hakim Ajmal Khan (1868-1927 AD) has described another two types of the *Dīq al-Nafas*: (a) *Dīq al-Nafas Yabis* i.e. asthma without expectoration caused due to the spasm in the bronchial tree and the respiratory muscles. (b) *Dīq al-Nafas Martoob* i.e. asthma with expectoration that is caused due to spasm with accumulations of phlegm in the bronchial tree.<sup>23</sup>

Eminent Unani physician, Hakim Azam Khan (1815-1902 AD) described eight types of *Dīq al-Nafas* viz. *Rabw Nazli* (Allergic asthma), *Rabw Balghami* (Catarrhal asthma), *Rabw Dukhani* (Asthma due to pulmonary insufficiency), *Rabw Istarkhai* (Asthma due to paresis of respiratory muscles), *Rabw Yabis* (Asthma due to pulmonary fibrosis), *Rabw Barid* (Asthma due to cold), *Rabw Warmi* (Potter’s Asthma or emphysema) and *Rabw Haar* (Hot Asthma due to excessive heat).<sup>22</sup>

### Mahiyat-e-Marz (Pathology)

As per Unani medicine the basic cause of breathlessness in *Dīq al-Nafas* is narrowing of *Urooq-e-Khashna* (Bronchioles) that may be due to *Waram* (Inflammation of air passages), *Insibab-e-Mawaad-e-Nazla* i.e. exudation and accumulation of *Balgham Lazij* (viscid phlegm), *Imtila-e-Sadr* (Thoracic congestion), *Abkhira Dukhaniyya* (air pollution) and *Yabusat* (dryness). When Asthma occurs in association with other diseases like *Zaatul Janb* (Pleurisy), *Sil-wa-Diq* (Pulmonary Tuberculosis), *Zaat-ul-Riya* (Pneumonia), *Nuqsuddam* (Anemia), *Shoib-e-Muzmin* (Chronic Bronchitis), *Warm-e-Gurda* (Nephritis), it is known as *Dīq al-Nafas Shirki*.<sup>18-22,25</sup>

### Usool-e-Ilaj (Principles of Treatment)

Principle line of treatment in *Dīq al-Nafas* can be set forth in the following manner:<sup>18,19,23,24,26</sup>

- Patient should be kept in clean, calm and airy room free from air pollution for *Tawsi-e-Nafas* or relieving breathlessness. Elimination of causative factors is essential before commencing the drug therapy like *Taftih-e-Sudad* (removal of airway obstruction) and *Tadeel Mizaj* (correction of deranged temperament).
- *Mulattif* drugs are used to liquefy thick and viscous matter or phlegm

- *Munaffis* and *Mukhrij-e-Balgham* drugs are used for evacuation of phlegm. Sometimes *Muqi* (emetics) are recommended for evacuation.
- *Mohallil-e-Auram* (anti-inflammatory) drugs are used to reduce inflammation
- *Murattibat* (Moistening) and *Daf e Tashannuj* (anti-spasmodic) drugs are used to relieve spasm
- Treat the underlying cause in case of *Dīq al-Nafas Shirki*.

### Tahaffuz (Preventive measures)

- Avoid constipation
- Avoid exposure to excessive cold, moist and dusty environment
- Avoid mental and physical stress
- Avoid use of citrus fruits, oily food and red chillies
- Avoid use of diuretics because it may increase the consistency of *Balgham*

### Recommended diet

All *Aghziya-e-Harra Yabisa* are recommended. *Ghiza-e-Lateef* (easy digestible) and *Musakhkhin* (Heat producing) such as *Maaush-Shaeer* (Barley Water), *Maa-ul-Asl* (Honey Water), *Chuqandar* (Beet root), Chicken soup; Almond oil, Spinach, *Kaddu* (Pumpkin), *Saib* (Apple), *Behi* (Quince), *Hareera*, Mutton soup, etc. have been advised for such patients.

### Restricted diet

All *Aghziya-e-hareef* (oily and spicy food, Red chilli etc.); Citrus fruits (Lemon, Grapes, Oranges etc.) sour dishes like pickle; Chilled water and *Aghziya-e-Muwallid-e-Balgham* i.e. phlegm producing foods are to be restricted.

### Ilaj Bit Tadbir (Regimental therapy)

- *Fasd-e-Basliq* (bloodletting through Basilic vein)
- *Fasd-e-Haft Andam* (bloodletting through Median Cephalic vein)

### Ilaj Bil Dawa (Pharmacotherapy)

Unani physicians have described several single as well as compound drugs which have bronchodilator, anti-inflammatory, antihistaminic and expectorant properties.

### Single Unani drugs used in the treatment of *Dīq al-Nafas*

Arusa (*Adhatoda vasica* L.), Filfil Daraaz (*Piper longum* L.), Kutki (*Picrorhiza kurroa* R.), Kataan (*Linum usitatissimum* L.), Zufaa (*Hyssopus officinalis* L.), Maghz-e-Amaltas (*Cassia fistula* L.), Irsa (*Iris ensata* T.), Zanjabeel (*Zingiber officinale* R.), Heel Khurd (*Elettaria cardamomum* M.), Qaranfal (*Syzygium aromaticum* L.), Ajwaayin (*Trachyspermum ammi* L.), Abhal (*Juniperus communis* L.), Jauz al maasil (*Datura innoxia* M.), Sarson (*Brassica rapa* L.), Zard Chob (*Cucurma longa* L.), Somalata (*Sarcostemma acidum* Roxb.), Gilo (*Tinospora cordifolia* W.), Kataai khurd (*Solanum xanthocarpum* S. and W.), Asl-us-Soos (*Glycyrrhiza glabra* L.), Kalonji (*Nigella sativa* L.)

### Compound Unani formulations

Kushta Abrak Siyah, Majoon Rahul Momineen, Habb-e-Hindi Zeeqi, Safoof-e-Dama Halidiwala, Sharbat-e-Zufa Murakkab, Sikanjabin Unsuli, Lauq-e-Rabvi, Lauq-e-Sapistan, Lauq-e-Zeequn nafas, Lauq-e-Katan, Laooq-e-Nazli, Intesaabi

### Common prescriptions from classical literature

- Oral administration of decoction of Tukhm e Hulba (*Trigonella foenum-graecum* L.) 7 g, Tukhm e Katan (*Linum usitatissimum* L.) and Mawiz Munaqqa (*Vitis vinifera* L.) 12 pieces.
- Oral administration of decoction of Sabus e Gandum (Wheat husk) mixed with Namak e Sambhar (salt of Sambhar Lake) at bedtime.
- Oral administration of decoction of Tukhme Hulba (*Trigonella foenum-graecum* L.) after mixing with honey.
- Oral administration of decoction of Tukhme Hulba (*Trigonella foenum-graecum* L.), Anjir (*Ficus carica* L.), Irsa (*Iris ensata* T.), Zufaa (*Hyssopus officinalis* L.) and Badiyan (*Foeniculum vulgare* M.) after mixing with honey.
- Oral administration of decoction of Anjir (*Ficus carica* L.), Banafsha (*Viola odorata* L.), Unnab (*Zizyphus jujuba* M.), Sapistaan (*Cordia myxa* Roxb.) and Barg-e-Gaozaban (*Borago officinalis* L.) after mixing with sugar.
- A combination of leaves of Arusa (*Adhotoda vasica* L.), fruits of Filfil Daraz (*Piper longum* L.), roots of Kutki (*Picrorhiza kurroa* R.), flowers of Zufaa (*Hyssopus officinalis* L.) and seeds of Kataan (*Linum usitatissimum* L.) is found to be very effective with a good response in chronic patients of bronchial asthma. In mild and moderate asthma the drug has shown significant symptomatic relief.
- Prepare a decoction with the equal parts of root of Arusa (*Adhatoda vasica* L.), rhizome of Turmeric (*Curcuma longa* L.), stem of Gilo (*Tinospora cordifolia* W.) and the fruit of Katai (*Solanum surattense* Burm. f.). Take this decoction 20 ml internally, with one gram of powdered Filfil Siyah (*Piper nigrum* L.) twice a day.<sup>18,19,23,24,26</sup>

### Evidence based research studies

Coded Unani formulation *UNIM-352*: The effects of *UNIM-352*, a poly herbal Unani preparation, which was used for bronchial asthma in traditional system of medicine, were assessed in experimental model of bronchial asthma. The study evaluated the possible effects of *UNIM-352* on biochemical markers and structural changes in allergen induced airway-remodelling in rats. Wistar rats were immunized on day 1 with ovalbumin and Al (OH)<sub>3</sub> and challenged with aerosolized ovalbumin from day 15 to 21. They were then divided into four groups and treated orally with vehicle, *UNIM-352* (200 or 400 mg/kg) or Prednisolone (10 mg/kg). The results suggested that *UNIM-352* prevents the development and progress of the structural and biochemical changes seen during airway remodelling and is beneficial in cases of chronic refractory bronchial asthma.<sup>27</sup> Furthermore, *UNIM-352* may act by preventing infiltration of the eosinophils and neutrophils (the effector cells in asthma) and reducing the levels of IgE and Th-2 cytokine, IL-4 which are responsible for release of various inflammatory mediators, thus contributing to the therapeutic benefits observed in patients of bronchial asthma. All these effects were comparable to standard drug Prednisolone. The results indicated that *UNIM-352* have anti-inflammatory and immuno-modulatory properties contributing to its beneficial effects in bronchial asthma.<sup>28-30</sup>

Coded Unani formulation *Zn5*: Drug *Zn5* is a herbal formulation in the form of *Majoon* containing Seer (*Allium sativa* L.); Karanjwa (*Caesalpinia bonduc* F.); Hulba (*Trigonella foenum-graecum* L.); Katan (*Linum usitatissimum* L.); Chillbeenj (*Strychnos potatorum*); Karanj (*Pongamia pinnata* L.), Honey and was given in the dose of 10 gram twice daily with lukewarm water. Total 2559 patients were registered, out of which 1778 (69.48%) patients were on bronchodilators and cortisones. After

therapy it was found that 1407 (79.13%) patients had withdrawn the use of bronchodilator and cortisones. It was concluded that the Unani formulation significantly reduces the symptoms and signs of asthma and helped in withdrawal of cortisones and bronchodilators. It was also concluded that Zn5 acts as an expectorant possibly bronchodilator and antihistaminic.<sup>31</sup>

**Sharbat-e-Umsul:** It was demonstrated that *Sharbat-e-Umsul* is an effective Unani drug for bronchial asthma which significantly reduces symptoms and signs after four weeks of study thereby benefitting 91.75% in breathlessness, 98.35% in cough, 85% in expectoration and 86.7% in ronchi.<sup>32</sup>

Efficacy of poly herbal Unani formulation containing *Irasa* (*Iris ensata* T.), *Zanjabeel* (*Zingiber officinalis* R.), *Qaranfal* (*Eugenia caryophylla* T.) and *Maghz-e-Amalatas* (*Cassia fistula* L.) was evaluated over a period of 60 days on the basis of improvement in the subjective parameters viz. cough, breathlessness, rhonchi and crepitations including blood investigations. Maximum improvement 82.6% was observed in crepitations whereas 100% improvement in fever was reported. Expectorant properties of *Zanjabeel*, *Irasa* and *Qaranfal*; antiseptic property of *Qaranfal* along with antipyretic property of *Maghz-e-Amalatas* and anti-inflammatory properties of *Maghz-e-Amalatas* and *Irasa* may be attributed to this action of drug.<sup>33</sup>

Evaluation of therapeutic effect of a poly herbal formulation in patients of asthma with different kind of temperament was carried out. The therapeutic response of Unani formulation containing *Barg-e-Aroosa*, *Gul-e-Zoofa* and *Asalussoos*, was found encouraging in patients with *Balghami Mizaj* while least response was observed in patients with *Saudavi Mizaj*. This poly herbal formulation exhibited significant effect on patients with Asthma and may be a better alternative for the treatment of all kinds of asthma.<sup>34</sup>

Temperament (*Mizaj*) determination is very important in Unani medicine for characterizing a person's normal state as well as nature of disease. Study on 60 individuals of both sexes having bronchial asthma revealed that 76.67% patients have *Balghami* (Phlegmatic) temperament followed by 13.33% *Damvi* (Sanguineous) and 10% *Saudavi* (Melancholic) temperament respectively concluding that patients with *Balghami Mizaj* are likely to be more affected with Bronchial asthma as compared to the patients of other *Mizaj*. Females are found to be more prone to develop the disease. This observation correlates to the theories presented by the eminent Unani physicians who have mentioned that this disease is caused by accumulation of phlegm in airways resulting inflammation of airways.<sup>35</sup>

Study conducted to know the incidence of *Zeequn Nafas* (Asthma) in the patients of different temperaments concluded that this disease is more common in *Balghami Mizaj* persons and Females are found to be more prone to develop this disease. Ninety (90) individuals of both the sexes were included in the study between the ages of 20 to 60 years. The duration of the study was 4 months. The eligible individuals were selected randomly on the basis of clinical symptoms, examinations and who were taking bronchodilator drugs. Then their temperaments were assessed by the pre-structured Performa based on *Ajnas-e-Ashra*. The study revealed that 40% have *Balghami* (Phlegmatic) temperament, 34% have *Damvi* temperament (Sanguineous) temperament followed by 15 % in *Safravi* (Bilious) and lowest in *Saudavi* (Melancholic) individuals respectively.<sup>36</sup>

The potency of a poly herbal Unani formulation comprising *Piper longum*, *Adhatoda vasica*, *Picorrhiza kuroa*, *Hyssopus officinalis* and *Linum usitatissimum* in a dose of 500 mg was evaluated for

its efficacy in bronchial asthma. Test drug was given for a period of 90 days. Pulmonary Function Test was performed before and after the treatment to evaluate the patients. Two parameters, PEFR and FEV<sub>1</sub> after the treatment showed marked improvement with lesser side effects of test drug. It was observed that maximum improvement in PEFR (37% with p < 0.001) and FEV<sub>1</sub> (27% with p < 0.001) was found on 90<sup>th</sup> day of the treatment.<sup>37</sup>

Poly herbal Unani pharmacopoeial formulations viz. *Habbe-Zeequn-Nafas* and *Sharbat-e-Zoofa Murakkab* along with decoction of some *Mufrad* (single) Unani herbs viz. Behidana (*Cydonia oblongata* seeds); Tukhm katan (*Linum usitatissimum* seeds) and Parsiyaoshan (*Adiantum capillusvenustum* leaves) showed potent broncho-dilatory and expectorant properties. These medicines caused the phlegmatic secretions expelled out from the trachea and bronchial tree, thereby relieving (76%) the dyspnoea, cough, rhonchi or crepts and improving vital capacity of lungs.<sup>38</sup>

Unani formulation *Namak-e-Chirchita* (*Achyranthes aspera* Linn.) showed an overall 72.8% relief in clinical features of bronchial asthma after treatment.<sup>39</sup>

A six weeks treatment with a poly herbal Unani formulation comprising *Adhatoda vasica*, *Glycyrrhiza glabra* and *Hyssopus officinalis* results in significant improvement 88% in the frequency of dyspnoea, rate of respiration and peak expiratory flow rate (PEFR) in asthma. No untoward effect was noted during the study.<sup>40</sup>

A randomized single blind standard controlled clinical trial revealed that a decoction of Unani formulation containing Asl-us-soos (*Glycyrrhiza glabra*), Abresham (*Bombyx mori*), Gauzaban (*Borago officinalis*), Saboos-e Gandum (*Triticum aestivum*) and ZoofaYabis (*Hyssopus officinalis*) resulted in a significant (p < 0.05) reduction in subjective and objective (FEV<sub>1</sub>, FEV<sub>1</sub>/FVC and PEF) parameters. Group A was given Unani Test drug whereas Group B was given Salbutamol (Asthralin) inhaler twice a day for a period of 45 days.<sup>41</sup>

A comparative study of three different combinations of Unani drugs revealed that Unani formulation containing *Gul-e-Zoofa* (*Hyssopus officinalis*), *Berg-e-Aroosa* (*Adhatoda vasica*) and *Asl us-Soos* (*Glycyrrhiza glabra*) is the better choice to treat Bronchial asthma. Though all the three drug combinations were proven to be effective individually, maximum improvement in PEFR (p < 0.001) was noted in this particular drug combination.<sup>42</sup>

**Coded Unani compound formulation (UNIM-353):** The coded drug *UNIM-353* was found effective in treating mild, moderate and severe types of Bronchial asthma. It was observed that there is an enhancement in the Peak Expiratory Flow Rate (PEFR) values after the treatment with coded drug for a period of 180 days.<sup>43</sup>

Study by Jabin et al 2010; proved the Unani principle of *Ilaj bil zid* is in accordance with the temperament of the disease Bronchial Asthma which showed a marked improvement in Phlegmatic patients who were treated with drugs having hot and dry temperament.<sup>44</sup>

In a study some single Unani drugs showed marked improvement in the symptoms and signs of Bronchial asthma and therapeutic efficacy were concluded as 65% in *Arusa*, about 27% in *Irsa* and approximately 47% in combination of *Arusa* and *Irsa*. Moreover, the drug *Arusa* showed a slight fall in blood pressure whereas *Irsa* showed a significant reduction in eosinophil count rendering it more effective in Eosinophilia.<sup>45</sup>

One study showed decoction of combined drugs, *Zoofa*- 6 gram and *Barg Badranjboya*- 4 gram relieved symptoms of Asthma or *Zeequn-Nafas-e-Nazli* (48% relieved in cough with expectoration, 40% in tightness in chest, 36% in cough without expectoration, 32% and 25% in nose block and breathlessness respectively). The rhonchi and crepitations were absent in 43% and 33% patients respectively concluding that the combined drug has mild effect on the patients of *Zeequn-Nafas-e-Nazli*.<sup>46</sup>

The efficacy of specific combination of Unani single drugs viz. *Irsa*, *Mulethi*, *Kakra Singhi* and *Zanjabeel* was shown in terms of improvement in the clinical sign and symptoms of Bronchial asthma. Rhonchi were improved in 63% cases. Both Expansion of chest and peak expiratory flow rate were increased from  $1.61 \pm 0.32$  cm and  $271.33 \pm 60.04$  litre per minute to  $2.21 \pm 0.41$  cm and  $345.33 \pm 61.40$  litre per minute respectively. The mean Eosinophil count and the mean Absolute Eosinophil Counts were reduced from  $9.3 \pm 2.6$  % and  $728.23 \pm 166.13$  /cumm of blood to  $6.0 \pm 1.8$  % and  $509.30 \pm 120.90$  respectively.<sup>47</sup>

Retrospective study revealed a positive correlation of Eosinophilia and the likelihood of mild exacerbations in well controlled cases of moderate asthma. The study also showed correlation of the two Unani treatments (Coded drugs *UNIM-352* and *UNIM-353*) with exacerbations and Eosinophilia.<sup>48</sup>

The efficacy of compound Unani formulation containing Asl-us-soos (*Glycyrrhiza glabra*), Tukhm e Kataan (*Linum usitatissimum* seed), Bazrul Banj (*Hyoscyamus niger* L.) and Namak Lahori (Sodium chlorate salt) was evaluated against placebo control in asthma. The drug was prepared in ratio of 1:1:1/2:1/2 and given in dose of 12 gram in two divided doses for 5 wks. The combination was found effective in relieving dry cough and dyspnoea in 64%, sneezing in 88%, wheezing in 76%, vocal fremitus in 84%, crepitations in 88%, ronchi in 80%, severity of attacks in 84%, dyspnoea on passive movement in 92% and chest pain in 88% of patients. Also, it increased the vital capacity (3500 to 4000) and reduced forced expiratory time (3-4) and decreased the number of leucocytes and eosinophils.<sup>49</sup>

In a single blind randomized placebo-controlled study on the efficacy of Unani formulations *Majoon e Maghz e Gajga* (group A), *Majoon e Maghz e Karanj* (group B) and *Majoon e Zeeq* (group C) has been conducted on 90 patients of *Zeeq un Nafas* (Bronchial asthma) in three groups, each group consisting of 30 cases for a period of 21 days with similar number of patients as control. In group A, 66.7% patients had reported complete relief whereas 10% reported partial relief when compared with control. In group B, 86.7% had reported complete relief whereas 10% reported partial relief when compared with control. In group C, 73.4% had reported complete relief whereas 16.6% reported partial relief when compared with control. All the cases had been followed up for 2 years and there was a relapse in 50% of the cases in group C only, whereas No relapse in other two groups was reported. It can be concluded that these research drugs are effective in the treatment of asthma as the percentage of complete relief was to the extent of 66.7% to 86.7% when compared to the control which showed 6.7% to 26.6% only.<sup>50</sup>

## CONCLUSION

Unani system of medicine had a history of understanding of Asthma and laid down a complete management of the disease based on the long experience of ancient scholars. Holistic approach in disease management and relatively no side effects of the Unani herbal treatment are the reasons behind rising acceptance of Unani treatment among the masses. This review summarises the research work done in Asthma and provides basis

for more structured trials in the field of Unani medicine. This would invite researchers to explore new dimensions of Unani and alternative medicines particularly in the management of Asthma.

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#### Cite this article as:

Shah Alam et al. Evidence based research studies on Dīq al-nafas (asthma) in Unani medicine: A Review. Int. J. Res. Ayurveda Pharm. 2020;11(1):35-40 <http://dx.doi.org/10.7897/2277-4343.11018>

Source of support: Nil, Conflict of interest: None Declared

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