TANG [HUMANITAS MEDICINE]

Review Article

Therapeutic Effects of Botanicals Used in Management of *Dhiq al-Nafas* (Bronchial Asthma): An Evidence Based Review

Taufiq Ahmad[1], Shabir Ahmad Parray[2], Naseem Ahmad[3], Javed Ahmad Khan[4], Sharique Zohaib[5]

[1,4]Associate Professor, Dept. of Ain, Uzn, Anaf, Halaqwa Asnan, Mohammadia Tibbia College, Mansoora Malegaon, Nashik. Maharashtra 423203 India. [2]Assistant Professor [5]Associate Professor, Dept. of IlmusSaidla (Unani Pharmacy), Mohammadia Tibbia College, Mansoora Malegaon, Nashik, Maharashtra 423203 India. [3]Assistant Professor, Dept. of Kulliyat, Mohammadia Tibbia College, Mansoora Malegaon, Nashik, Maharashtra 423203 India.

ABSTRACT

Bronchial asthma is one of the most common chronic diseases globally and currently affects approximately 300 million people worldwide. As per scientific data, approximately 10–12% of adults; and 15% of children are affected by the disease. The increasing global prevalence of the disease imposes a high health care costs into its mechanisms and treatment.

Unani system of medicine (USM) is a well known traditional therapy for number of diseases since ancient times. Time has proved that USM has a special role in treatment of chronic diseases, due its special *Usooleilla*j (Line of treatment). *Dhiq al-Nafas* (bronchial asthma) is also considered as a chronic disease. Since ancient times, the disease was cured by number of single as well as compound formulations by renowned Unani scholars.

This review provides a comprehensive summary of medicinal plant throughout the world, with reference to renowned Unani scholars and physicians for treatment of *Dhiq al-Nafas*. A number of Unani single and compound drugs, highly efficacious and safe drugs are available for the asthma. The data were taken from classical literature of USM, Modern reference books & electronic journals. The recent information was collected from different authentic search engines. This review will provide the centuries therapeutic information's of classical literature and recent scientific studies of 12 herbal drugs mentioned in USM, which will help the academia, clinicians, research scholars and post graduate students from Unani Medicine, Traditional & Complementary Medicine and other related disciplines, having research interest or work in the Unani medicine.

Keywords Unani system of Medicine, Bronchial Asthma, *Dhiq al-Nafas*, Single herbal drugs.

INTRODUCTION

Asthma is primarily a chronic inflammatory disease that tends to present as a lifelong condition, with different degrees of severity throughout the patient's life (Nunes et al., 2007). Bronchial asthma is an inflammatory syndrome characterized by paroxysmal or recurrent episodes of bronchial obstruction causing shortness of breath, cough, chest tightness, wheezing and rapid respiratory rate (Frigas E, et al., 1991). It is one of the most common chronic diseases globally and it is estimated that more than 300 million people have asthma, and reports have suggested that in 2025, this figure may become around 400 million (Kameel and Steve, 2014). The prevalence of lifetime asthma was estimated from 1 to 18% of the general population of different countries. As per recent data from the general population, the overall incidence rate of asthma was 23/1,000 children per year, up to 5 years old; which is decreased among youth aged 12–17 years old to 4, (i.e. 4/ is caused by *Ghaleez khilt or ghaleez Balgham* (thick Phlegm), 1,000/year). In case of adults, the data has shown that adult females are more prone (1.8 times) to asthma than adult males (i.e. 4.9/1000 vs. 2.8/1000, respectively). As per the National Health Interview Survey (NHIS)-2012, 13% of the USA population (about 40 million) are suffered from lifetime asthma; while as 8% (26 million) have been reported as current asthma (Nunes et al., 2017). From the above data and researches, it is certain that in future, the asthma will be considered more chronic and panic problem for the worldwide countries.

Unani Description

Asthma has a long history and is mentioned by almost every renowned Unani scholars in their treatise. Asthma has various synonymous in Unani system of medicine like as *Rabu, Buhar, Dhiq-al Nafas* (also pronounced as *Zeeq-un-Nafas*) and *Intesab-un-Nafas* respectively (Anonymous, YNM; Baliyavi, 1986; Elias, 1925). According to the Unani physicians, asthma which causes narrowing of bronchial lumen due to its adherence, air becomes incapable to enter into the lungs during inspiration, and hence to fulfil the deficit of air (O2), which in turn compel the subject to breathe rapidly. This rapidity depends upon the severity of the disease. A number of Unani scholars like, Majoosi, Jurjani and RabbanTabri, has described that asthma becomes more severe if it is caused by *Barid and Raqeeq khilt* (cold and dilute fluid) (Majoosi,1889;

*Correspondence: Shabir Ahmad Parray
E-mail: saparray@gmail.com
Received January 16, 2018; **Accepted** Feburary 21, 2019; **Published** Feburary 28, 2019
doi: http://dx.doi.org/10.5667/tang.2019.0001

Jurjani,1878; Tabari,1981). One of the famous Unani physician and scholar has elaborated the pathological process of asthma in his book "*Moalajat-e-Buqratiya*", that *Ghaleez-Balgham* which is adhered on the inner layer of bronchioles is responsible for narrowing of the airways, resulting in hypoventilation of the lungs and ultimately breathlessness (Tabari, 1997). Another Unani physician mentioned causes of asthma his book, "*Moalajat-e-Nafeesi*" due to *Ghaleez wa barid ratoobat* (concentrated and unhealthy cold fluids). He emphasized that these fluids may be *Balgham* or *Sauda* or both (Hussain, 1906). The most scientific and appropriate description, which is very close to modern concept of pathology of asthma was given by famous Unani physician, Majoosi, in his treatise "*Kamil-us-Sana'at*" that asthma is caused by bronchospasm (Majoosi,1889).

A wide number of Unani single and compound drugs are available in the treatment of asthma, which has been designed by Unani scholars, comprising of drugs with hot and dry temperament for the disease based on the classical concept and treatment. The treatment line for the asthma is based on the properties of drugs possessing anti allergic (*Dafi'-i-Hassasiyat*), anti spasmodic (*Dafi-i-Tashannuj*), expectorant (*Munaffis*) and bronchodilator (*Moass-i- Shoaib*), anti inflammatory (Muhallil-e-Awram), respectively (Majoosi, 1889; Jurjani, 1878; IbneSina, 1906; Tabari, 1981; Razi, 1998).

The use of herbal medicines (medicinal plants or phytotherapy) has recently gained popularity in all over the world for their efficacy in bronchial asthma and some plants have minor side effects when given in large doses (Taur, DJ and Patil RY, 2011). These medicines are used since centuries in Unani system of medicine and they have more efficacy and fewer or no side effects therefore emphasis should be given on herbal medicine because allopathic system of medicine has failed in providing health to all. Medicinal plants have been used for the treatment of bronchial asthma since ancient times. In the present paper, we have summarized the Unani claims of 12 single herbal drugs used for the bronchial asthma and supported these claims with the recent scientific data and researches.

MATERIALS AND METHODS

The data for this review were taken from Unani, Modern reference books & electronic journals. The recent information was collected from search engines like Pub Med, Google scholars and the Cochrane database of systematic reviews. Some other relevant references were collected from personal database of paper on Bronchial asthma.

UNANI MEDICINAL PLANTS WITH ANTI ASTHMATIC ACTIVITY

Several preclinical and clinical studies have been carried out to observe the anti asthmatic effects of Unani medicinal plants. The phytochemicals present in these plants may have the potential to act as preventative or therapeutic agents against different type of bronchial asthma. The present paper describes 12 Unani medicinal plants which have been shown to possess anti asthmatic activity indicating that these could be possible agents to prevent or reduce the bronchial hyperresponsiveness.

Table.1

S.No	Unani Name /Botanical Name	Family/Parts Used	Unani Claims	Scientific Study
1.	Banafsha (*Viola odorata L*)	Violaceae, Whole plant, Flower, Root and Leaves	It relieves asthmatic condition by evacuating thick phlegmatic material (i.e. *MunafisBalgham* property) due to its inherent hotness (Razi, 1998).	Qasemzadeh et al., reported that the flower syrup of *Viola odorata* has a potent effect on the cough of children with asthma. According to them, the study possible effect of violet syrup as the adjuvant use is due to short-acting of β-agonist, which may enhance the cough suppression in children with intermittent asthma (Qasemzadeh et. al.,2015)
2.	AjwayinKhurasani (*Hyocyamusniger L*)	Solanaceae, Dried and fresh leaves, flowering tops and flower with the branches	It has *Daf-e-Tashanuj* property, hence used in asthmatic condition by relaxing the smooth muscles of bronchus (Ghani, YNM).	Yousefi et. al., reported that Black henbane (*Hyocyamusniger L*) has been regarded as a rich source of pharmaceutically important tropane alkaloids such as hyocyamine and scopolamine. The leaves, flowering top and seeds of the plant are widely used in asthma, bronchitis and also used as a mydriatic, sedative and pain killer (Yousefi et. al., 2007).
3.	Aspand (*Peganum harmala L*)	Zygophyllace, Fruits, Seeds roots, and bark	It has *MunafisBalgham* property, evacuates thick humours of chest, spleen and lungs. Continuous use of aspand in the dose of 5-10 gm for seven days relieves phlegmatic cough, and is used in bronchial asthma (Kabiruddin, 2010).	The study done by Lui W et al on aerial parts of *Peganumharmala* L for the evaluation of the anti tussive, expectorant, and bronchodilating effects of three quinazoline alkaloids of vasicine, deoxyvasicine and vasicinone on cough models in mice and guinea pigs. These alkaloids have significantly inhibited coughing frequency and prolonged the cough latency period in animals (Liu W et. al., 2015; Moradi et al., 2017).
4.	Arosa (*Adhatoda vasica L*)	Acanthecae Roots, Leaves, Bark and flowers	It has *MunafisBalgham* and *Daf-e-Tashanuj* properties, and hence is used in cough; bronchial asthma and tuberculosis (Anonymous, 2007). Its flowers, leaves and roots are also used in *Dhiq-al-Nafas*, cough, and phlegmatic fever (Ghani, YNM)	An aqueous solution of vasicinone hydrochloride was studied in mice and dogs, found to potentiate the bronchodilatory activity of aminophylline, and isoprenaline respectively. Vasicinone exhibited smooth muscle- relaxant properties of airways. Alkaloids present in the plant showed significant protection against allergen-induced

				bronchial obstruction in guinea pigs (Khare, 2007).
5.	Aslus'soos (*Glycyrrhiza glabra L*)	Papilionacea/ Fabaceae , Peeled Root	It has *Munzij, MunafisBalgham, Daf-e-Su'al, Daf-e-Tashanuj, Muhallil-e-Awram*properties respectively, hence used in Cough, asthma hoarseness of voice, and dyspnoea (Anonymous, 2007).	Asha Roshan et. al., has showed Liquiritin present in the roots of Glycyrrhiza is inactive as an anti spasmodic. However, when hydrolyzed by heat and converted to isoliquiritigenin, it was shown to exhibit strong spasmolytic activity. Glycyrrhiza has been shown to work as effectively as codeine in the throat, decreasing irritations and producing expectorant effects. *Glycyrrhiza glabra L* has anti allergic activity, which can relive Ig E-induced allergic diseases such as asthma and dermatitis (Roshan et. al., 2012).
6.	Alsi (*Linum usitatissimum L*)	Linaceae, Seed, Oil and Flowers	It has *Muhallil-e-Awram,Munzij, MunafisBalgham, Daf-e-Su'al, Daf-e-Tashanuj,* properties respectively, hence used in cough, dyspnoea, pneumonia, and pleurisy (Anonymous, 2007). *Lauq* of its seeds relieves phlegmatic cough. Paste of its seeds mixed in two fold honeys or sugar effectively relieves phlegmatic cough (Ghani, YNM).	Linseed contains Omega -3 fatty acid, resulted in a decrease in asthma attacks and a reduction in the use of medications (Borhade et. al., 2013).
7.	Parsi-aoshan (*Adiantum capillus L*)	*Adiantaceae*, Whole plant	It has *Mulattif*, *Muhallil*, *Mufatteh*, and *Mujaffif* actions. Due to these inherent actions, it is highly useful in chronic cough, and asthma. It evacuates thick phlegmatic material out of chest (Ghani, YNM).	K. Swaroop Kumar et al. had worked on influence of ethanolic leaf extract of Sargassum wightii and Adiantum capillus on histamine induced asthma in guinea pigs. The results suggested that it is effective in reducing the symptoms of bronchial asthma and also improve the lung function parameters of asthmatic subjects. (Kumar S et. al.,2012)
8.	Zoofa (Hyssopus officinalis L)	Labiatae/ Lamiaceae Leaves	It has *Mulattif, Munaffis-e-Balgham* and *Muhallil-e-Waram*(Ghani, YNM; Kabiruddin, 2010).	The effect of Hyssopus officinalis L. on airway immune regulation and airway inflammation was investigated in a mouse model of chronic asthma. The study showed that *Hysso-pus officinalis* L. not only plays an antiinflam-matory role by inhibiting the invasion of eosinophils and decreasing the levels of IgE, and the same time also affects immune regulation. Thus, the results suggested that *Hys-sopus officinalis* L. has a potent role on chronic asthma, and may provide a novel therapeutic strategy for the treatment of chronic asthma (Ma X et al., 2014).
9.	*Filfil Siyah (Piper nigrum L)*	Piperaceae, Dried unripe fruits	It is used internally as *Munafis Balgham.* It clears thick phlegm out of chest and lungs; oral intake of *Filfil Siyah* mixed with honey is highly effective in cough, bronchial asthma, and chest pain due to cold and wet temperament (Razi, 1998).	The study done by Kim et al., has shown that the Piperine has showed deep inhibitory effects on airway inflame-mation in a murine model of asthma; the possible mechanism is due to suppression of Th2 cytokines (IL-4, IL-5, IL-13), immunoglobulin E, eosinophil CCR3 expression, and by enhanced TGF-b gene expression in the lungs (Kim et. al., 2009; Gorgani et. al., 2017).
10.	*Gaozaban (Borage officinalis L)*	Boraginacaea, Flowers & Leaves	It has *Munaffis Balgham* and *Mulattif* actions. Hence it is used in bronchial asthma (IbneRushd, 1987).	Arm et al, had worked on impact of botanical oils on poly unsaturated fatty acid metabolism and leukotriene generation in mild asthmatics. According to their studies, dietary supple-mentation with botanical oils especially with borage oil of Borago officinalis, which contain n-6 and n-3 eighteen carbon chain (18C)-PUFA i.e. γ linolenic acid, stearidonic acid and α linolenic acid have been shown to impact PUFA metabolism, alter inflammatory processes including arachidonic acid (AA) metabolism and improve inflammatory disorders (Arm et al., 2013). Another clinical study conducted by Mirsad-raee et al., on the extract of *Borago officinalis* on moderate persistent asthma, concluded that there was a temporary relief of asthma symptoms in symptomatic asthmatics by using extract of *Borago officinalis* in patients. They further said that it can be prescribed for asthmatic patients as an adjunct for those who desire

				alternative treatment of herbal drug (Mirsadraee et al., 2016).
11.	Shooniz (Nigella sativa L)	Ranunculacea, Dried fruit and seeds	It is *Munaffis Balgham*, *Musakkin*, and *Muhallil-e-awram*(Ghani, YNM; Kabiruddin, 2010). It is useful in *Dhiq-al-Nafas* (bronchial asthma). It renders the sticky phlegm into liquefied state and thick humour suitable for evacuation. It is effective in chronic cough, and abscesses of chest and lungs through evacuation of morbific phlegm (Razi, 1998)	Keyhanmanesh et al has done study on guinea pig model of asthma. The effect of single dose of thymoquinone (TQ), (the main constituents of *Nigella sativa*) had, showed the preventive effect on tracheal responsiveness to meth-acholine and Ovalbumin and pathological and cytokine changes in sensitized guinea pigs. (Keyhanmanesh, et. al., 2014).
12.	Piplamol *(Piper longum L)*	Piperaceae, Root	It is highly effective in pediatric respiratory conditions such as *Su'al*and *Dhiq-al-Nafas*. As a *Munafis Balgham*, half pinch of its powder licked with honey easily evacuates phlegm (Ghani, YNM).	Dhanukar et al had worked on Chemistry and Pharmacology of *Piper longum* L. *Piper longum* extract in milk reduces passive cutaneous anaphylaxis in rat and guinea pigs models of antigen induced bronchospasm (Dhanukar et al, 1981; Dhanukar et al 1981; Zaveri et al, 2010).

CONCLUSION

The main aim of this review is to highlight and discuss the latest findings and studies conducted on Unani medicinal plants for their anti asthmatic effects, in order to fight against this global disease by developing the safe and effective anti asthmatic therapeutic agents. From the above description and scientific data, it is clear that the claims of Unani physicians centuries ago, are as per recent scientific data as well. Unani herbal drugs can be considered as promising chemotherapeutic agents. The efficacy of herbal drugs is significant and they have fewer side effects than the conventional medicines. The randomized controlled clinical trials (RCTs) may be conducted to evaluate the safety and efficacy of these Unani herbal drugs as an adjunct to conventional anti asthmatic treatment.

ACKNOWLEDGEMENTS

The authors are extremely thankful to President and Principal Mohammadia Tibbia College & Assayer Hospital for providing necessary facilities and encouragement while writing this manuscript.

CONFLICT OF INTEREST

None

REFERENCES

Anonymous. AL- Munjid (Arabic-Urdu Dictionary). (Delhi, India: Markaz Idarah Tabligh Diniyat), YNM

Anonymous. The Unani Pharmacopeia of India. (New Delhi, India: Government of India, Ministry of Health & Family Welfare, Department of AYUSH), 2007

Arm JP, Boyce JA, Wang L, Chhay H, Zahid M, Patil V, Govindarajulu U, Ivester P, Weaver KL, Sergeant S, Israel E. Chilton FH. Impact of botanical oils on polyunsaturated fatty acid metabolism and leukotriene generation in mild asthmatics. Lipids in health and disease. 2013: 12(1):141.

Baliyavi AFAH. Misbah-Ul- Lughat. (Arabic-Urdu Dictionary). (Delhi, India: Maktaba Burhan), 1986.

Borhade SS. Physico-chemical & phytochemical investigation of linseed (Linumusitatissimum L.) oil grown in Maharashtra (India) and Analytical Study by HPLC. Int. J. Drug Discov. Herb. Res. 2013: 584-589.

Dahanukar SA, Karandikar SM, Desai M. Efficacy of Piper longum in childhood asthma. Indian Drugs. 1984: 21(9):384-388.

Dahanukar SA, Zha A, Karandikar SM. Antiallergic activity of Piper longum. Indian journal of Pharmacology. 1981: 13:122.

Elias A. Al- Qamoos Al- Asri (Arabic-Eng). (Cairo, Egypt: Elias Modern Press Cairo), 1925.

Frigas E, Motojima S, Gleich GJ. The eosinophilic injury to the mucosa of the airways in the pathogenesis of bronchial asthma. EurRespir J Suppl. 1991: 13:123-135.

Ghani N. Khazain-ul-Advia. (New Delhi, India: Idar-e-Kitab-us-Shifa), YNM

Gorgani L, Mohammadi M, Najafpour GD, Nikzad M. Piperine—the bioactive compound of black pepper: from isolation to medicinal formulations. Comprehensive reviews in food science and food safety. 2017: 16(1):124-140.

Hussain MA. Moalejat-e- Nafeesi. (Lucknow, India: Munshi Naval Kishore), 1906.

Hussain MM. Tib-e- Akbar (Urdu Translation). (Deoband, India: Faisal Publication), YNM.

IbneRushd. Kitab-ul-Kulliyat (Urdu Translation). (New Delhi, India: Central Council for Research in Unani Medicine), 1987.

IbneSina. Al- Qanoon fit Tib. (Lucknow, India: Matba'aNamiWaqiey), 1906.

IbneSina. Al-Qanoon fit Tib (Urdu Translation by GH Kintoori). (New Delhi, India: Idar-e-Kitab-us-Shifa),YNM.

Jurjani SI. KhwarizamShahi (Urdu Translation). (Lucknow, India: Naval Kishor), 1878.

Kabiruddin. Makhzan-ul-Mufradat. 2nd Edition. (New Delhi,

India: Idar-e-Kitab-us-shifa), 2010.

Kameel M, Steve S. The spatial epidemiology of asthma: a chronic non-communicable disease and a neglected epidemic. Journal of Allergy and Asthma. 2014: 1(1):2.

Keyhanmanesh RLP, Omrani H, Mirzamohammadi Z, Shahbazfar AA. The effect of single dose of thymoquinone, the main constituents of Nigella sativa, in guinea pig model of asthma. BioImpacts: BI. 2014: 4(2):75.

Khare CP. Indian Medicinal Plants an Illustrated Dictionary. (New York, USA: Springer Publisher), 2007

Kim SH, Lee YC. Piperine inhibits eosinophil infiltration and airway hyperresponsiveness by suppressing T cell activity and Th2 cytokine production in the ovalbumin-induced asthma model. J Pharm Pharmacol. 2009: 61(3):353-359.

Liu W, Wang Y, He DD, Li SP, Zhu YD, Jiang B, Cheng XM, Wang ZT, Wang CH. Antitussive, expectorant, and bronchodilating effects of quinazoline alkaloids (±)-vasicine, deoxyvasicine, and (±)-vasicinone from aerial parts of Peganumharmala L. Phytomedicine. 2015: 22(12):1088-1095.

Ma X, Ma X, Ma Z, Wang J, Sun Z, Yu W, Li F, Ding J. Effect of Hyssopus officinalis L. on inhibiting airway inflammation and immune regulation in a chronic asthmatic mouse model. Experimental and therapeutic medicine. 2014: 8(5):1371-1374.

Majoosi ABA. Kamil-Us-Sana'a (Urdu Translation). (Lucknow, India: Munshi Naval Kishor), 1889.

Mirsadraee M, Moghaddam SK, Saeedi P, Ghaffari S. Effect of borago officinalis extract on moderate persistent asthma: a phase two randomized, double blind, placebo-controlled clinical trial. Tanaffos. 2016: 15(3):168-174.

Moradi MT, Karimi A, Fotouhi F, Kheiri S, Torabi A. In vitro and in vivo effects of Peganumharmala L. seeds extract against influenza A virus. Avicenna journal of phytomedicine. 2017: 7(6):519-530.

Nunes C, Pereira AM, Morais-Almeida M. Asthma costs and social impact. Asthma research and practice. 2017:3(1):1.
Razi ABBZ. Kitub-al-Havi (Urdu Translation). Part 4th. (New Delhi, India: Central Council for Research in Unani Medicine),1998.

Roshan A, Verma NK, Kumar CS, Chandra V, Singh DP, Panday MK. Phytochemical constituent, pharmacological activities and medicinal uses through the millenia of Glycyrrhizaglabra Linn: a review. International research journal of pharmacy. 2012:3(8):45-55.

Swaroop KK, Anbu J, Anjana A, Sumithra M, Sathish R. Influence of ethanolic leaf extract of Sargassumwightii and Adiantumcapillus on histamine induced asthma in animal model. Int J pharm pharm Sci. 2012:4(4):121-123.

Tabari, AABS. FirdausulHikmat Fit-Tib (Urdu Translation by AR Nadvi). (Karachi, Pakistan: Hamdard Foundation Press), 1981.
Tabari, AABM. Moalejat-e-Buqratiyah. 2nd edition. (New Delhi, India: Central Council for Research in Unani Medicine), 1997.

Taur DJ, Patil RY. Some medicinal plants with antiasthmatic potential: a current status. Asian Pacific journal of tropical biomedicine. 2011:1(5):413.

Yousefi MJ, Hassani ME, Jouzani GS, Arefi HM, Mohammadipour M. Genetic Variation of Some Iranian Black Henbane Accessions (Hyoscyamusniger L.) using RAPD and SDS-PAGE of Seed Proteins. International Journal of Plant Breeding.2009:3(2):92-98.

Zaveri M, Khandhar A, Patel S, Patel A. Chemistry and pharmacology of Piper longum L. International journal of pharmaceutical sciences review and research. 2010:5(1):67-76.