



Herbal and Animal Derived Remedies for Obstructive Pulmonary Disease (Asthma and Chronic Obstructive Pulmonary Disease): A Review Study

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ABSTRACT

Asthma and chronic obstructive pulmonary disease (COPD) are common inflammatory obstructive lung diseases which affect many millions of people worldwide. As well as the risk of possible adverse effects not all patients respond to treatments and non-adherence to treatment is common due to issues such as complex treatment regimens, poor inhalation technique and delayed results thus there is an unmet medical need for complementary therapies for asthma and COPD. Complementary and Alternative Medicine (CAM) includes techniques such as acupuncture, chiropractic, homeopathy, herbal medicine, animal resources and spiritual healing. In this article we have undertaken a review of the existing literature about this treatment. Along with studying the clinical efficacy of these natural compounds it is also important to understand the mechanisms through which these compounds exert their effect. While the mechanisms of some promising phytomedicines, such as Anti-asthma Herbal Medicine Intervention, have begun to be elucidated the mechanisms of most plant-based medicines remain unknown. On the other hand, Animal resources, such as camel's milk and its various products, have comprehensively been dealt with regarding their nutritive and therapeutic effects, However, in spite of various experimental and animal studies, lack of comprehensive clinical trials aimed on regarded effects still remains to reconfirm the traditional knowledge.

Key words: Asthma, COPD, Complementary Therapies, Herbal

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INTRODUCTION

Asthma and chronic obstructive pulmonary disease (COPD) are inflammatory obstructive lung diseases have an effect on millions of people's life and health in world [1-3]. Asthma and COPD are lung diseases that have totally different diagnostic

and treatment ways [4-6]. Mortality rates of asthma is low and representing only 1 % of all deaths [7] and is recognized that in many expired cases, that death could have been avoided by better routine care and treatment; however COPD, is the 4th leading cause of death [3] and is projected to rise to the second most common cause of death worldwide by 2020 [3].

Asthma is a chronic inflammatory disease as a result of interaction between the immune system and resident cells of the lung that leads to bronchial hyper-responsiveness, increased mucus production, narrowing of the airways and airway remodeling [1, 8, 9].

COPD presents with similar symptoms to asthma such as chronic cough, wheezing and shortness of breath and is caused by an exaggerated inflammatory response to noxious particles and gases [2, 12] smoking is the leading cause of COPD in the developed world [13], while indoor air pollution due to the burning of fuels is the important risk factor in the developing countries [14].

Asthma described as an allergic disease that develops during childhood and is characterized by reversible airway obstruction (AO). In contrast, COPD is typically related to smoking and develops later in life, and is characterized by incompletely reversible airflow limitation. Although both diseases share airway obstruction as a common feature, they are at opposite ends of the spectrum of obstructive airway disease that is seen in clinical practice. There is a Protrude pathologic and functional overlap between asthma and COPD, particularly among the elderly, who may have components of both diseases (overlap syndrome).

Treatment of asthma and COPD

The most aim of asthma treatment is controlling symptoms and reduces the prevalence of exacerbations during life and current guidelines advocate the use of anti-inflammatory treatments, such as inhaled corticosteroids (ICS) and bronchodilators [11]. However, the overuse of inhaled corticosteroids particularly in children can have systemic adverse effects, and the inappropriate use of long acting bronchodilator therapy can be associated with increased morbidity [11].

Treatment for COPD includes cessation of cigarette smoking, bronchodilators and inhaled corticosteroids which can stop or slow disease progression [15, 16]. While such treatments are endorsed in international treatment guidelines [17] only a small population of COPD patients shows significant improvements [17].

Because of these possible adverse effects not all patients respond to treatments and poor outcome is common because of some issues such as

complex treatment regimens, poor inhalation technique [13] thus there is a medical need for complementary therapies for this diseases. Thus there is a need to protrude other therapeutic options which could be used to complement existing treatments. Complementary and Alternative Medicine (CAM) is defined as "A group of diverse medical and health care systems, practices, and products that are not generally Protruded to be part of conventional medicine" which have become increasingly in populations [19]. CAM includes techniques such as acupuncture, chiropractic, homeopathy, herbal medicine, animal resources and spiritual healing [20].

Acupuncture is a form of alternative medicine [48] in which thin needles are inserted into the body (49) it is a key component of traditional Chinese medicine (TCM) and is generally used only in combination with other forms of treatment [50]. The main chiropractic treatment technique involves manual therapy, especially spinal manipulation therapy (SMT), manipulations of other joints and soft tissues [51]. Homeopathy is a system of alternative medicine that based on his like cures like, a claim that a substance that causes the symptoms of a disease in healthy people would cure similar symptoms in sick people [52].

Iranian traditional medicine (ITM) includes all the theoretical and practical sciences applied in diagnosis, prevention, and treatment of diseases, which have descended from the written works of Persian physicians, such as Avicenna (980-1037 AD), Zakariya al-Razi (864 -930 AD), Seyed Esmail Jorjani (1042-1137 AD), and others in texts like: "Al-Qanun fit-tib", "Al-Hawi", "Zakhireh Khaarazmshahi", etc. In this science of medicine, focus on nutrition is one of the major principles of prevention and treatment; besides, there is a rising tendency, all over the world, to take advantage of complementary or alternative medicine [18]. Iranian Traditional Medicine (ITM) is one of the oldest traditional medicines with more than 1000 years of history. Dietary consideration is the first step in ITM-based treatments [21]. In this article we have undertaken a review of the existing literature in Iranian database such as Magiran, Irandoc, Iranmedex and English database such the PubMed, MEDLINE and NLM databases, using the search terms "herbal", "plant", "alternative therapy", "complementary therapies", "camel milk", "asthma" and "COPD".

Plant-derived therapies for asthma and COPD

plant-based traditional medical uses varied plant materials for each preventive and therapeutic intervention that contain several chemical and so medicine derived from this sources will have multiple health advantages for patients [22] in Chinese and other Asian cultures, plant-based medicines have been used to treat and prevent lung disease, and also remain a major therapeutic choice; and using this medicines for treatment of asthma and COPD is not new [22, 23].

Many studies had done to explore the effectualness and safety of this medicines and to elucidate the mechanisms through that they may have a therapeutic impact. In the area of asthma and COPD therapies many promising plant-based treatments have arisen from these studies.

A number of plant-based medicines have shown promising results in clinical studies of asthma such as Anti-asthma Herbal Medicine Intervention (ASHMI). Since 2005, several clinical studies of "anti-asthma" herbal remedies including anti-asthma herbal medicine intervention have been published and this article we just talk about it. ASHMI is a combination of 3 plant-based extracts; Ling Zhi from *Ganoderma lucidum*, Ku Shen from *Sophora flavescens* and Gan Cao from *Glycyrrhiza uralensis*, which has shown potential for the treatment of asthma [24] this studies also shows that ASHMI directly affected airway narrowing and increased production of the smooth muscle relaxants prostacyclin and prostaglandin I₂ (PGI₂) [25].

In a review study by Xiu-Min Li about the herbal drugs, anti-asthma herbal medicine intervention (ASHMI) is the only anti-asthma TCM product that is a US FDA investigational new drug (IND). Researches about ASHMI's affect and it's mechanisms in animal models is being pursued. Laboratory and clinical studies demonstrate that the possible mechanisms of efficacy are multiple and have beneficial effect on asthma [26].

Patients with COPD also have important comorbidities such as metabolic and in renal function. Therefore the safety profile of their novel therapies must be carefully evaluated. Perhaps of most interest recently has been the concern regarding the safety of inhaled corticosteroids especially at high doses, with an increased rate of

pneumonia having been reported in a number of large clinical trials in patients with moderate to severe COPD who received corticosteroid-containing inhaled therapy [15, 27, 28].

Reducing exacerbations and improving quality of life is an important treatment goal in the treatment of COPD. A number of clinical trials of herbal and plant-based treatments for COPD have focused on these important treatment outcomes. Li *et al.*, [29]. Looked into the effect in an open label study of the combination of three different traditional Chinese plant-based medicines, Bu-Fei Jian-Pi, Bu-Fei Yi-Shen and Yi-Qi Zi-Shen, formulated as granules and given as add-on therapies to conventional Western medicine on symptoms and QOL in COPD patients. They found that compared to conventional therapy the addition of the plant-based medicine combination was associated with improved symptom scores (cough, sputum, chest tightness, and breathlessness) and improvement in QOL scores across the physical, psychological, environmental and social domains [29].

Guo *et al.*, [30] conducted a randomized, double-blinded, placebo-controlled study looking into the effects of Bu-Fei granules on the frequency of COPD exacerbations along with lung function and serum inflammatory mediator levels. The authors observed a significant reduction in symptom scores in the treatment group when compared to the control group and they also saw an improvement in FEV₁, FVC, FEV₁/FVC and PEF in the treatment group which did not occur in the patients receiving placebo [30].

Animal resources therapy for asthma and COPD

In Iranian traditional medicine, animal resources such as milk have a significant role in treatment. In "Al-Qanun fit-tib", camel's milk is introduced as the most compatible one with mother's milk. Moreover, recent studies have revealed that , it can replace mother's milk to feed infants and children [31,32].

Camel milk has enough nutrients to sustain a person through the day. In some populations, camel milk is given to patients that have malnutrition. Camel milk has a high vitamin and mineral content and immunoglobulin content [33]. Camel milk is believed to modulate the immune system. A study showed its ability to ameliorate

allergies in children [34] and it is used extensively within a variety of societies for its proposed healing features and disease prevention [36]. Some of the more common indications to using it include diabetes, allergies, immune disorders, and cancer [37].

In a systematic review by Mihic *et al.*, that the therapeutic effects of camel milk have investigated, It is mentioned that Of 430 studies, 24 were included after assessment. Identified studies highlighted treatment with camel milk of diseases, including diabetes, cancer, various infections, heavy metal toxicity, colitis, and alcohol-induced toxicity human and animal studies showed a clinical benefit but limitations of these studies must be taken into Protruding before widespread use. Based on the evidence, camel milk should not replace standard therapies for any indication in humans. Therefore, according to available data, the advantages of camel milk in the treatment of diseases in humans have not yet been accurately confirmed [38].

Camel milk has medicinal properties [39] that contains protective proteins, which may have a possible role for enhancing the immune defense system. In Antibacterial and antiviral activities studies has showed effective (40), So that camel milk destroys *Mycobacterium tuberculosis* [41].

The fact that camel milk lacks beta lactoglobulin and powerful allergens in cow's milk, that makes the milk effective for children suffering from food allergies [42,43]. According to El-Agamy *et al.*, [44], the absence of immunological similarity between camel and cow milk proteins may be taken as an important Property from nutritional and clinical of this nutrient. Another fact is that the camel milk includes immunoglobulins similar to mothers' milk, which reduce children's allergic reactions [42]. Phylogenetic differences could be responsible for the failed recognition of camels' proteins by circulating IgEs and monoclonal antibodies. It appears that camel milk has a positive effect when drunk by children with severe food allergies [45].

Camel milk, meat and urine are among the materials used as traditional medicines. Respondents (97.5 and 85% for Babilie and Kebribeyah, respectively) recognize the medicinal value of camel milk. This finding is in agreement with those of Yagil, Knoes *et al.*, Tezera and Alemayehu who are convinced that camel milk has

special medicinal properties, especially for conditions affecting the lungs [46]. Respondents from Babilie indicated the medicinal value of camel milk for asthmatics is (7.5%). This finding is in conformity with those of Yagil (1994) and Guakhar and Bernand (2004) who reported the medicinal value of camel milk for cirrhosis of the liver, rickets, constipation, asthma and anemia [47].

CONCLUSION

The recent approach to managing asthma and COPD is based on the use of inhaled bronchodilators and corticosteroids. However, some adverse effects of these treatments exist in some patients especially when use high dosage of this drugs. There is a need for properly conducted scientific studies about the effects and safety of this drug.

Along with studying the clinical efficacy of these natural compounds it is important to understand the mechanisms through which these compounds. While the mechanisms of some promising phytomedicines, such as ASHMI, have begun to be elucidated but the mechanisms of most plant-based medicines remain unknown. On the other hand, Animal resources, such as camel's milk and its various products, have comprehensively been dealt with regarding their therapeutic effects. Camel's milk exhibits a range of biological activities that influence on some systemic activity, growth and development of organs and resistance to diseases. However, in spite of various studies, lack of comprehensive clinical trials aimed on regarded effects still remains to reconfirm the traditional knowledge.

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