

Role of Herbal Medication in Treatment of Asthma

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Abstract: Asthma is the most prevalent non-transmissible disease that entirely affects quality of life. Management of such diseases is a pre-requisite. . Modern biological therapy for extreme asthma care, along with biomarker advances, provide the potential for phenotypic-specific therapies and introduction of more tailored procedures. Although many measures were adopted to overcome from this issue but still some side effects are faced while using synthetic medications. The present review discusses about herbal medication that were adopted by different countries to cure asthma. Discussion of Chinese, Japanese, Indian and alike herbs were done along with their clinical trials conducted on different subjects. Final a conclusion is drawn wherein it is observed that herbal medications were effective in treating asthma but a full reliance over them may sometime cause serious consequences as it not always herbs are found to be effective on different subjects. The reason may be due to mis-guiding during preparation of the formulation or incorrect labelling of the formulation.

Keywords: Allergies, Asthma, Herbs, Medication.

1. INTRODUCTION:

Asthma is most prevalent non-transmissible disease that greatly affects quality of life. It is graded 17th globally among the major reason of disability caused due to it and graded 28th in the world as a major reason of bulk of diseases caused due to it[1]. Worldwide, nearly 400 million individuals have such allergies and another 100 million are expected to be infected by 2025[2]. Asthma prevalence, incidence and mortality are greatly affected geographically. Although the incidence of asthma is greater in highly organized countries, the majority of low-middle - income nations have the asthma-centered mortality[3]. With advancements in asthma care in recent decades, changes in medical safety, innovative medical methods and customized case management still need to be accomplished.

In order to retain control of, even whether it persists uncontrolled during care, asthma is classified as severe. Modern biological therapy for extreme asthma care, along with biomarker advances, provide the potential for phenotypic-specific therapies and introduction of more tailored procedures[4]. Asthma is linked T-helper cells immune responses that are characteristic of different atopic disorders. Allergic (e.g., house dust mites, cockroach odor, animal dander and mould and pollen) and non-allergic (e.g. viral infections, nicotine consumption, cold weather and exercise) triggers may contribute to series of chronic inflammatory events. Higher amounts of Th2 cells produce cytokines within airways, including interleukins (IL)-4, IL-5, IL-9 and IL-13 and stimulate the development of eosinophilic inflammation and immunoglobulinE (IgE)[5]. IgE development induces manumission of inflammatory mediators like histamine and cysteinyl leukotrienes, inducing bronchospasm, edoema, and enhanced silk secretion, contributing to asthma signs.

Incidence of asthma varies from infant to adults. Asthma usually occurs in gestation, but can appear in any moment of life and some individuals first experience asthma at adulthood. Although children suffer from increased incidences and severity of asthma, adult health treatment is linked to asthma and death[6]. Interestingly enough, asthma frequency and severity vary according to sex over the period. Incidence of asthma, is higher in pre-pubertal boys but in adolescence this prevalence reverse thereby causing greater rate of infection in girl than boys[7][8]. In fifth decade, females also have greater asthma pressure than males. But asthma difference between male and female diminishes by the fifth decade[7], [8]. Asthma refers to nuanced multifactorial disease, and etiology of asthma is primarily due to associations between hereditary vulnerability, host and environmental influences, which comprises environmental factors (air quality, pollens, aero-allergens or moulds and other climatic conditions), host elements (obesity, nourishing factors, diseases, sensitization to allergies) and genetic elements (gene susceptance loci)[9]. While fundamental principles of asthma are still not well known, respiratory inflammation, airway tone testing and sensitivity can also be considered. Figure 1 brief the mechanism of asthma and symptoms arose due to that.

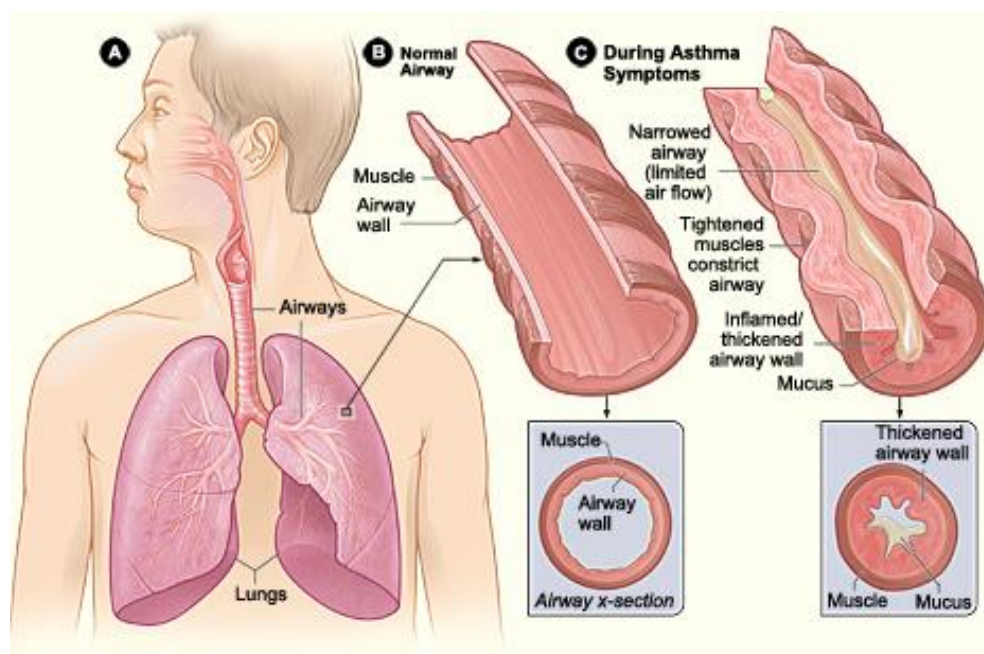


Figure 1: A brief of asthma. An asthma attack shrinks the air passage due to which mucous develops and thus breathing becomes difficult[10].

The successful anti-asthmatic portion is very hard to locate from Traditional Chinese medicine (TCM) by adopting standard protocols. It takes several trials and longer duration to verify active ingredients and possible goals against asthma[11]. However, network pharmacology can create communication network of 'disease-gene target medicine' to demonstrate the dynamic mechanism behind multi-component drugs along multi-target characteristics, on basis of databases knowledge about genomes, proteins, diseases, and drugs. Networks pharmacology shifts conventional drug finding / drug discovery definition from "one goal drug" to "multi-goal multi-component" mode, which is totally in line with China's herbal extracts and is widely utilized to reveal possible modes of action of individual Chinese or compound herbal formulations[11]. Figure 2 represents network pharmacology treatment for asthma treatment.

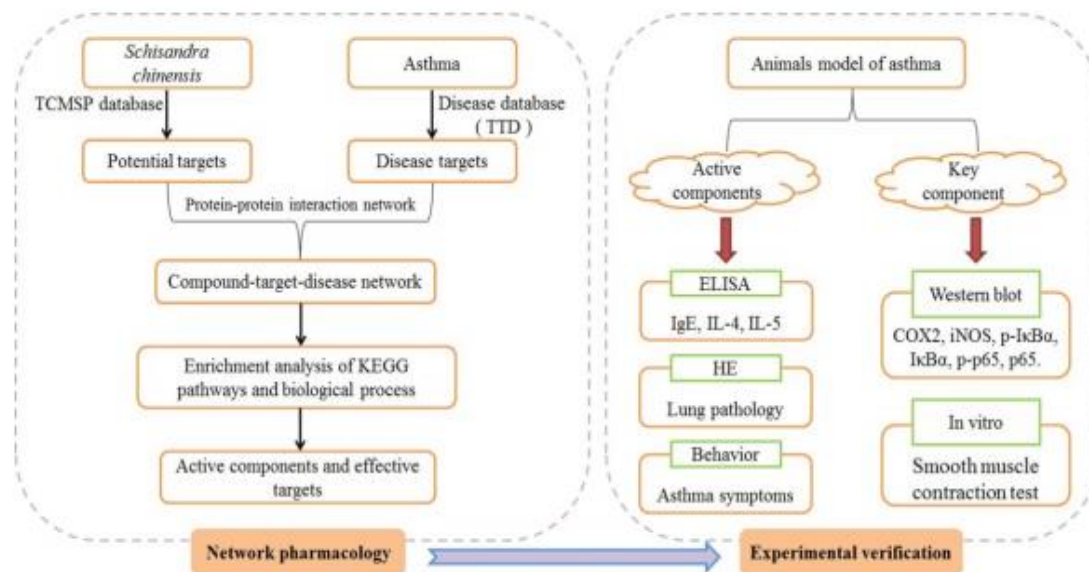


Figure 2: Network pharmacology for treatment of Asthma[11]

Although medical medicine has revolutionized health care, method of healing has invariably been too difficult to describe itself with the usage of drugs and scientific advancements. . In recent years, these components represented a movement towards expanded usage of complementary medicines. 85 % of world 's communities rely on complementary drugs for initial health care[5]. Alternative approaches in United States and several hospital facilities are integral feature of patient treatment and Health services are required to accept their inclusion into their procedure and guidance for care. Many patients pursue alternative treatment solutions not only because of rejection of traditional medicine but mostly because they think those approaches towards personal treatment are more reliable in terms of convictions, principles and conceptual attitudes towards health and life[1], [12]. Interestingly, all of these behavioral therapists are Caucasian, excellently-educated and wealthy. Such patients are clearly keen to take an involved role in their wellbeing and holistic medical practitioners somewhat satisfy this apparent vacuum.

They were described as reversible airway constraints if said norms were not feasible. Research in relation to asthma has led to conclusion that if not treated at correct time then one may has to suffer severe consequences. Outcome tests covered criteria of lung function, disease diaries, opioid use and incidents of asthma (unplanned visits)[13]. This paper focused on the biological importance of common herbs and therapies to control asthma and allergies associated with it. Plant elements with therapeutic properties are present in herbal medicines. Herbal products are favored espoused to have medicinal effects. New medications are still available with variety of side effects. Persistent intakes of synthetic drugs often allows development of anti-microbial resistance. Thus, herbal medicines increasingly to be utilized as nutritional add-ons to manage or avoid certain diseases affecting human bodies and oral cavities.

Herbalists believe the influence of herbs is represented by how human physiology will be influenced. They also say that herbal elements like bioflavonoids, alkaloids and essential oil comprises of anti-allergenic, antihistaminic, anti-asthmic, anti-inflammatory, etc." type members. Different types of countries comprises of different types of herbs for the treatment. Moreover, the culture adopted by them also varies to certain extent. The present paper provides a brief review of the tradition adopted by different countries to treat asthma. Table

1 represents some of the well-known herbs utilized by different countries. Table 2 represents the some common herbs along with their properties.

Table 1: Different types of herbs utilized in different countries for treatment of asthma[2], [13].

CHINESE HERBS		
Alisma	Ephedra*	Peony
Armeniaca	Ginger	Perilla leaves
Asarum*	Ginseng*	Pinellia
Atractylodes	Gypsum	Platycodon
Aurantii*	Licorice*	Poria (hoelen)*
Bupleurum*	Magnolia bark*	Prunus armeniaca
Cbuling	Ma huang	Santine derivatives
Cinnamon*	Minor Blue Dragon	Schisandra*
Codonopsis	Marus alba	Scutellaria *
Trichosanthes*	Wu-hu-tang*	Zingiber (ginger)
Zizyphus		
JAPANESE HERBS		
Bakumondo-to*	Saiboku-to*	Sairei-to*
Ryo-kan-kyomi-sin-ge-nin-	Orengedoku-to*	Seibai-to
Sho-seiryu-to*	Syosa iko-to *	
LATIN AMERICAN HERBS		
Allium cepa*	Desmodium (amor seco)*	
WESTERN HERBS		
Gingko*	Horseradish	Nettles (Urtica dioica)*
Ginseng*	Licorice*	Onions*
Paeonia officinalis (peony)*		
INDIAN HERBS		
Tylophora indica*	Albizzia lebbek*	

Table 2: Some herb Effective for treating Asthma along with their properties[2], [14]

HERBS	PROPERTIES
<i>Urtica dioica</i>	Anti-inflammatory, Vasodialatory,

<i>Glycyrrhiza glabra</i>	Breath restoration and relaxes breathing passageways
<i>Adhatoda vasica</i>	bronchodilator and mild expectorant
<i>Ginkgo biloba</i>	Platelets aggregator inducer and anaphylactic reactions enhancer
<i>Curcuma longa</i>	anti-inflammatory
<i>Scutellaria baicalensis</i>	anti-allergen, anticholinergic
<i>Grindeliaspp.</i>	bronchospasmolytic activity
<i>Nigella sativa</i>	bronchodilatory, hypotensive, antibacterial, antifungal, analgesic, anti-inflammatory and immunopotentiating
<i>Ginger</i>	Anti-inflammatory
<i>Cassia sophera</i>	antiasthmatic
<i>Casuarina equisetifolia</i>	antihistaminic
<i>Clerodendrum Serratum</i>	Anti-inflammatory
<i>Cnidium monnieri</i>	Anti-allergic
Garlic	Anti-inflammatory
<i>Crinum glaucum</i>	Antiallergic activity
1) <i>Curculigo orchioides Gaertn</i>	Anti-histamic

Different types of herbs are available in different countries but perform same effects on the problems caused due to asthma. This is explained in brief in a table mentioned below. Apart from these many herbs were shown to present potent effect towards treating asthma. Some examples of Chinese and Japanese herbs are mentioned below.

In China, herbal medication in combination with allopathic medication were used to reduce medical conditions. Researches has been conducted in the present country. In both China and Japan, variety of herbal variations were utilized (Table 3). Variations of Japanese goods are discussed below (Table 4)[13]. In vivo-and in-vitro analysis has been done to evaluate the effect of herbs on different subjects as discussed below. Observation regarding administration of each drug was made and effectiveness of each herb was then discussed.

Chinese herbs

Table 3: Herbs used in china for treating Asthma

CHINESE HERBS				
Herbs	Uses	functions	Active	Example

			constituents	
<i>Ma Huang</i>	Treats asthma, hay fever, tracheitis, cough, hemorrhage, circulatory collapse, congestion	Opens blocked pores, enables motion of lungs and controls wheezing, enhances heart rate.	L-ephedrine, L-methylphedrine, L-norephedrine, alkaloid.	Combination with gypsum, Scutellariae baicalensis and Morus alba roots used as cough suppressant and wheezing and nasal flaring.
<i>Ge Jie Antistham pill</i>	Anti-microbial effect.	Treats cough, act as expectorant	Aster, gold enthread, Scutellaria, lilyturf, licorice, apricot, cinnabar, gecko lizard tail, ma huang, kernel, Cinnabar	Combination with <i>Schisandra</i> or <i>Tussilaginis farfarae</i> treats cough and wheezing.
<i>Ginkgo Biloba</i>	Anti-histimic in nature, inhibits wheezing, anti-tubercular and anti-biotic effect, bronchoconstrictor, chemotactic agent.	Treats coronary artery disease, angina, Parkinson's disease, enhance cerebral blood flow.	Kaemferol-3-rhamnoglucoside, ginkgetin, bilobetin, isoginkgetin.	In combination with <i>Ephedra sinica</i> , apricot seed, <i>Morus alba</i> root for controlling cough, and wheezing.
<i>Licorice</i>	Expectorant, anti-bacterial, anti-inflammatory.	Controls cough, wheezing.	Triterpenes	Enhances energy in combination with Ephedra and apricot,

Japanese

Table 4: Herbs used in Japan for treating Asthma

JAPANESE HERBS				
Herbs	Uses	functions	Active constituents	Example
<i>Sho-Saiku-to</i>	Anti-allergic, anti-inflammatory, chronic hepatitis	Inhibit PAF production in activated human neutrophils, reduces IgE levels in serum		It is mixture of Bupleurum falcatum root extract, pinellia

				ternate tuber extract, Scutellaria baicalensis root extract, Zizyphus vulgaris extract, ginseng root extract, Glycyrrhiza glabra root extract, and Zinger officinale rhizome extract.
<i>Tylophora Indica</i>	Anti-inflammatory effect, immune enhancer.	Treats Respiratory disorders like asthma, bronchitis, common cold, expectorant effects, emetic effect.	Major ingredient in <i>Tylophora</i> .	

Herbal-centered therapies in Asthma treatment

In China, herbal medicine and allopathic medicine were used to reduce medical conditions. researches has been conducted in the present country. In both China and Japan, a variety of herbal variations are utilized. Any variations of Japanese goods will be addressed later. Two sections were checked in Chinese herbal approaches. The first component consists only of herbs that have been tested in vivo and in vitro.

Hsieh et.al conducted an interventional study to determine the effect of herbal medicine on individuals with asthma. The researcher conducted a multicellular, double blinded and controlled trial on asthmatic children with sample size of 303. The factors focused on included symptoms, medication, alteration in immunoregulatory functions, histamine release, PGE2 and LTC4 generation by PMNs. Similarly, a second research was conducted on guinea pigs, wherein factors studied included bronchoconstriction, eosinophil amounts, and infiltration levels in serum. From both the study it was concluded that, clinical phases and histamine suppression enhanced with both placebo and three herbal levels but enhanced more in drug groups. An increase in T cells were obtained by group A and decreased B cells. Both group A and B increased PGE2 generation. Introduction of herbs decreased the constriction of airways and thus decreased eosinophils amounts[15].

Next, interventional and prospective design was conducted on guinea pigs wherein factors studied included Bronchoconstriction, platelets and leukocyte levels. The study concluded that BN 52021 suppressed thrombocytopenia and leukopenia. Also a second interventional prospective design was undertaken for guinea pigs wherein bronchial reactivity was considered by giving dose of histamine producing 50% enhanced resistance. It was observed

that, BN52021 i.e. a PAF-acether antagonist suppressed antigen induced airway hyper reactivity[16].

Nakamura et.al. conducted a research on human neutrophils and rabbit platelet phases; wherein PAF factors were considered and was observed that, *Saiboku-to* and *sho-saiko-to* suppressed in vitro PAF generation in a dose-centered manner. Elements *Bupleuri radix* and *Glycyrrhizae radix* suppressed PAF generation. Ginseng was found to show same suppressing effects in vitro. *Scutellaria radix* represented little inhibition. *Saiko-saponin a* and *c* presented no inhibition, saikosaponin *d* and glycyrrizin suppressed production. Rats were also clinical trialed for asthma symptoms and blood pressure. It was observed that, Moku-boi-to relieved allergic asthma and suppressed blood pressure in anaphylaxis in rats[17].

An interventional, prospective design was made for controlled type on human neutrophils by utilizing a herb *Saiboku-to-sho-saiko-to*, *sho-seiryu-to*, wherein it was concluded that ketotofen and *sho-saiko-to*, *sho-seiryu-to* and *saiboku-to* suppressed PAF production in neutrophils in dose dependent manner. Further an interventional design was made which is an uncontrolled type and involved human neutrophils, rabbit platelet levels was selected for PAF production[13]. From the study it was observed that, *Saiboku-to* and *sho-saiko-to* suppress in vitro PAF production in a dose dependent manner. Shibata et al. conducted an interventional study on mast cells of rats including study of mast cell degranulation, percent histamine expel wherein it was observed that, *Ryo-kan-kyomi-sin-ge-nin-to* inhibited degranulation of mast cells and release of histamins in a dose dependent manner[13].

Another interventional study was performed on a controlled group of guinea pig nasal glands focusing on factors ionic currents augmented by ACh, cytosolic Calcium and Sodium amounts. It was observed that, the herb *Sho-seiryu-to* suppressed ACh- induced expressions in nasal glands, combining of K^+ and Cl^- ions, and enhancing amount of Ca^+ and Na^+ . Another study was performed by Sakaguchi et.al on a controlled group of rats by considering factors like vascular permeability, locomotor activity, or motor coordination, relaxing duration, binding to H1 receptors[13]. An interventional and prospective design was also conducted on patients with allergic rhinitis with sample size of $n=98$ by considering factors like symptoms, amount of doses administered, global evaluation. It is an interventional, prospective type of study involving herb *Urtica dioica*. The results concluded that *Urtica dioica* was found to be very effective than placebo with relieving allergic rhinitis symptoms[13].

From the above cited documents it may be concluded that, that many researches have been performed by utilizing various herbs but on different subjects and the results obtained from them were found to be effective. Due to the potent results obtained from aforementioned herbs it can be concluded that herbs has significantly resulted in reduction in problems caused due to asthma in numerous subjects without causing any sort of side effects.

While there is no scientific confirmation on effectiveness of herbal products, more herbal therapies are used in humans. Study of Robert Wood Johnson Foundation National Access to Care Survey represented that 15% Americans looked for an alternate medicine in 1994[13], [18]. Moreover, 1539 adolescents were polled by phone for one year, 34 percent responded one or more alternatives. One third had approx. 19 patients a year for complementary treatment providers. Non-African Americans between 25 and 49 years of age that were reported as a frequent user. 83% also searched for medical treatment because of same issue, but many did not mention their utilization of alternative medicine.

The myth related to herbal products is to think that it is safe as they are obtained from plants. Herbs may also cause harmful results in some cases. These negative impacts may arise in absence of an incorrect dosage of cannabis, or in prescribing of wrong plant. Many herbs may be hazardous. There is complex chemical structure in blooming plants, with many poisonous. Factors that contribute to issues involve plant species misinterpretation,

adulteration, pollution, and product heterogeneity. In certain plants, the hepatotoxic alkaloids of pyrrolizidine trigger hepatic veins. One of these alkaloid-containing plants, Teticnirrn, has been misnamed as Scutellarin, an allergy treatment and widely utilized plant.

2. CONCLUSION

A wide range of biological features, involving anti-microbial and anti-inflammatory impacts, have proven that herbal medicines were found to be effective. Phytochemicals present within them are able to inhibit allergens, and thus aids in curing of asthma or related issues. The present review concentrated towards the various types of herbs used in treatment of asthma, along with their usage, advancements and alike. Herbs effective in different parts of countries were also discussed in the paper along with their clinical trials conducted in different subjects. The conclusion drawn from the present review is that the herbal medications were found to be effective in treatment of asthma. Although they are effective but it should be thought that they are completely safe as sometimes it may cause side effects.

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