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A Review of Siddha medicinal herbs in the management of chronic obstructive pulmonary disease

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Abstract

COPD –Chronic Obstructive Pulmonary Disease is a term for a group of diseases such as chronic bronchitis, emphysema etc., that cause progressive damage to the lungs. According to WHO report 2012, on every year an estimated 3 million people die due to COPD. It is the fourth leading cause of death in the world. There are 66 percent of mortality due to total global COPD in India and China alone. COPD is caused mainly due to tobacco smoke, with a number of other factors such as air pollution, occupational exposures, genetics, acute exacerbations etc., The symptoms are mainly excess of sputum production, breathlessness, a chronic cough. Some currently available drugs such as steroids, anticholinergics, phosphodiesterase (PDE) Inhibitors has numerous adverse effects. Though oxygen therapy can give some beneficial effects, it causes nasal irritation, diminished respiratory drive, and pulmonary oxygen toxicity. Pulmonary thrombo embolism, ischemic injuries and reperfusion, fibrosis in upper lobe of lung, post-transplantation lympho proliferative disorder are some of the common complications faced in lung transplantation. So there is an urgent need of medicines for the management of COPD without any adverse effects. In Siddha system of medicine there are so many herbals and herbal formulations are indicated as a valuable drug for COPD. This present paper review and analyse the therapeutic value of some Siddha herbals such as *Andrographis paniculata* , *Curcuma longa* , *Piper longum* , *Justicia adathoda* , *Glycyrrhiza glabra* , *Zingiber officinale* , *Euphorbia hirta* etc, with their research findings for the management of Chronic Obstructive Lung Disease.

Keywords: COPD, Herbals, Siddha medicine, chronic bronchitis, Emphysema.

Introduction

Chronic obstructive pulmonary disease is also known as chronic airflow limitation. It is a state characterized by breathing discomfort, persistent cough and increased production of phlegm. Air passages get much limited which is not fully reversible. . COPD is a general term that refers a group of diseases such as bronchitis and emphysema. Although the two diseases have different pathological causes, both share an obstructive pattern in pulmonary airways mostly recognized as dyspnoea.

Chronic bronchitis

It is defined as the inflammation of the bronchi, the main air passages of the lungs.¹ According to the definition of the World Health Organization, bronchitis is considered a chronic disease if the patient suffers from periods of coughing and production of viscous secretions. In bronchitis, chronic contribute to airflow obstruction inflammation of the small airways, scarring of its walls, its lining swelling, mucus and smooth muscle spasm.

Emphysema

It is defined as a chronic condition characterized by rupture of the alveolar walls, i.e. several alveoli socket forms a single larger dimension.¹ These walls are thickened and have the ability to make an accurate pulmonary ventilation. In the case of emphysema alveolar walls are destroyed and reduced airflow is permanent.

Risk Factors

In 80-90% of cases of COPD, smoking is the main underlying cause. It is clear that the smoke inhaled by the smoker is a factor, and exposure to secondhand tobacco smoke plays a very important role probably, though less clearly defined. Occupational exposure to dust (eg. Coal dust, grain dust) and some smoke. Exposure to non-specific dust may aggravate the effect of smoking.

COPD is the fourth leading cause of death in the world,² after the infarction, the strokes, community respiratory infections and tuberculosis. The World Health Organization (WHO) estimates the number of deaths from COPD worldwide in 2000 to 2.7 million. Worse, it expects that by 2020, the disease is the third leading cause of death by disease in the world because of smoking, especially among women.

Adverse effects of current therapy for COPD and their issues:

The mainstay of treatment of COPD are symptomatic drugs, especially inhaled bronchodilators (beta adrenergic agonists, anti cholinergic, xanthines), but are also used inhaled and oral corticosteroids, mucolytics and also anti muscarinic agents, phosphodiesterase 4 inhibitors, alpha 1 antitrypsin augmentation therapies. Even though bronchodilator opens the airways, it has its own side effects. Beta adrenergic agonists produces effects such as heart beat, palpitations i.e. irregular heartbeats, irritability, trouble sleeping, muscle cramps and tremors of the hands while anti cholinergics gives out dry mouth occasionally, difficulty urinating, for men who have prostate problems. Xanthines causes nausea, heartburn, restlessness ("restless") and rapid heartbeat. Side effects of steroids is a vast and includes thinning skin, bruising (bruises) on the skin, sore throat, hoarseness, bloating in the stomach, weight gain, changes in emotions, problem to control the amount of

sugar present in the blood problem in controlling blood pressure. The steroid tablets have more side than those inhaled effects. Oxygen therapy even though has some beneficial effects, it can also cause nasal irritation, diminished respiratory drive and pulmonary oxygen toxicity. So there is a need for a drug for the management of COPD without any adverse effects. In Siddha system of medicine, certain herbals are indicated for the management of chronic obstructive pulmonary diseases without causing any adverse effects.

Pharmacological intervention of herbs for COPD management:

In Siddha literatures, there are so many herbals indicated as a valuable drug against the symptoms of chronic obstructive pulmonary diseases. Here are some herbals for managing COPD are going to discuss with their research findings.

Justicia adathoda

Vasicinone is an active principle has been isolated from *Adathodavasica* possess bronchodilator activity. Some mucolytics such as benzylamines, bromhexine and ambroxol have been isolated from this plant are very effective in the management of COPD. This plant shows anti inflammatory, antispasmodic activity. It has some active principles such as phenols, tannins, alkaloids, anthraquinones, saponins, flavonoids, amino acids and reducing sugar.

Glycyrrhiza glabra

This plant contains active principles such as glycyrrhizinic acid glycyrrhetic acid, liquiritic acid, glycyrrretol, glabrolide, isoglabrolide and liquorice acid. It also has some flavanoids, coumarins, phenols and sterols. *Glycyrrhiza* produce demulcent and expectorant effects by stimulating tracheal mucus secretions. Glycyrrhia compounds are very effective in reducing chemokine production. It also acts as a bronchodilator and plays an effective role in the management of COPD.⁵

Zingiber officinale

Research studies found that through blockade of plasma membrane channels, ginger inhibits airway obstruction and associated Ca²⁺ signalling in murine airway smooth muscle cells.⁶ Research evidence shows that rhizomes of *Zingiber officinale* act as a bronchodilator.⁷

Taxus buccata

There are evidences for the bronchodilating activity of the alcoholic extract of *Taxus buccata*. It works by decreasing the infiltration of inflammatory cells in the airway.⁸ Reduction of bronchial hyperactivity is also facilitated, by inhibiting histamine. In Siddha literatures, this plant and the formulation of this plant acts as an expectorant and plays a significant role in the management of chronic obstructive pulmonary disease.

Andrographis paniculata

Research study of *Andrographis paniculata* showed that it contains important active principle, Andrographolide which activates the erythroid 2 related nuclear factor leads to inhibition of glutathione peroxidase and reductase activities in lungs from animal models exposed to cigarette smoke.⁹ Research evidence shows that via augmentation of Nrf 2 activity I possess antioxidative properties against cigarette smoke induced lung injury. It shows some beneficial effects in treating the symptoms of COPD.

Curcuma longa

Based on research findings *Curcuma longa* and its constituents possess bronchodilator activity. It is found that in NTHi(non-typeable hemophilus influenzae) induced mice curcumin effectively suppresses COPD like airway inflammation through dietary administration.¹⁰

Piper longum

In Siddha literatures, this plant indicated as an expectorant. And also research findings shows that piperine is an active constituent from piper longum possess anti tussive and bronchodilator activity. Extracts of *Piper longum* showed the inhibitory activity on endothelial cells by TNF alpha induced expression of ICAM-1.¹⁴ And it shows anti inflammatory activity. This herb showed progress in the management of COPD exacerbations.

Piper nigrum

Milk extracts of *Piper nigrum* shows good progress on in vivo models of passive cutaneous anaphylaxis and methanolic extract of this plant shows an *in vitro* inhibitory effect on histamine release from mast cells.

¹¹ In Siddha texts this herb indicated as a best remedy

for chronic respiratory diseases. It possess bronchodilator activity.

Boerhaavia diffusa

The flavonoids isolated from *Boerhaavia diffusa* immune suppressive property which are associated with COPD. In Siddha texts this plant is indicated as an effective drug for kapha related diseases.

Clerodendrum serratum

Clerodendrum serratum (*C.serratum*), known as kanduparangi in Siddha, ethanol extract of roots of *C. serratum* showed antiasthmatic activity using isolated goat tracheal chain preparation, clonidine induced catalepsy; Milk induced leucocytosis and eosinophilia in mice at doses 50,100 and 200 mg/kg.

Euphorbia hirta

Popularly known as ammanpachcharisi (asthma weed), *Euphorbia hirta* is an herbaceous wild plant which grows in the hotter parts of India. Ethanol extract of whole aerial part of the plant at doses (100-1000 mg/kg) shows antihistaminic and antiallergic activity by inhibiting inhibited the passive cutaneous anaphylaxis and paw anaphylaxis reaction; protection of mast cell from degranulation and also effective in treating COPD. In Siddha texts this plant is indicated as an effective drug for kapha related diseases¹⁵.

Terminalia chebula

Terminalia chebula is good for chronic cough, coryza, sorethroat, asthma and COPD. It is used along with holistic herbal formulations in Siddha.¹⁶

And also some herbals such as *Albizia odoratissima*, *Elaeocarpus sphaericus*, *Terminalia bellerica*, *Anisochilus carnosus*, *Leucas aspera*, *Allium cepa*, *Tylophora indica*, *Nyctanthes arbour tristis*, *Solanum trilobatum*, *Solanum xanthocarpum*, *Mukia maderaspatana*, *Coccinia grandis*, *Caesalpinia bonduc*, *Borassus flabellifer*, *Calotropis gigantea*, *Crocus sativus* are indicated as an effective in the management of kapha diseases.¹³ These plants and their active constituents shows effectiveness in the management of COPD.

Siddha herbo- mineral formulations to manage COPD¹²

S.No	Formulation	Indications
1.	<i>Thalisathic hooranam</i>	Hoarseness of voice, coryza
2.	<i>Thirikadugu</i>	Cold, cough, dyspnea
3.	<i>Korosana mathirai</i>	Breathlessness,
4.	<i>Suwasakudori mathirai</i>	Dyspnea, cold
5.	<i>Aadathoda imanappagu</i>	Reduces phlegm
6.	<i>Thudhuveelai nei</i>	Chronic Cough,
7.	<i>Pavala parpam,</i> <i>Thipilli rasayanam</i>	Wheezing, reduce excessive sputum production
8.	<i>Gowri chindhamani</i>	Wheezing, dyspnoea
9.	<i>Kasthuri karuppu</i>	Cold, cough, wheezing
10.	<i>Purnachanthrodhayam</i>	Chronic cough, Wheeze
11.	<i>Kandakathiri Choornam</i>	Hoarseness of voice, Wheezing
12.	<i>Neerkovai Mathirai(Ext)</i>	Breathlessness, Cold, Headache

Conclusion

In the present scenario of the world many non communicable diseases play a threatful role in affecting the quality of life. Though there are many currently available drugs for the management of COPD there is a need of drug for the same with lesser adverse effects. This research results in the discovery of many medicines which were used traditionally. The above listed Siddha herbals and Siddha herbo mineral formulations will provide the right path for the management of the disease. Many scientific researches and pharmacological studies related with the above preparations support in the treatment of COPD. This article might be helpful in evaluating the mode of herbals and herbo-mineral formulations indicated in Siddha system of medicine for the management of Chronic Obstructive Pulmonary Disease.

References

1. National Heart, Lung, and Blood Institute, World Health Organization. Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. NHLBI / WHO workshop report. National Institutes of Health (NIH) Publication No. 2701A, 2001.
2. Sundeep S Salvi, Roslina Manap, Richard Beasley, Understanding the true burden of COPD: the epidemiological challenges, Primary care respiratory journal, vol 21, issue 3, sep 2012 pages 249-251.
3. John M. Grange, Noel J.C. Snell, Activity of bromohexine and ambroxol, semi-synthetic derivatives of vasicine from the Indian shrub *Adathoda vasica*, against *Mycobacterium tuberculosis in vitro*, journal of ethnopharmacology, vol.50.issue1, Jan 1996, pg:49-53.
4. A. Karthikeyan, V Shanthi, A. Nagasathaya, Preliminary phytochemical and antibacterial screening of crude extract of the leaf of *Adhatoda vasica* .L, international Journal of Green Pharmacy, year 2009/vol.3, issue: 1, pages 78-80.
5. Sachiko Matsui, Hiroatsu Matsumoto, Yoshiko Sonoda, Kumi Ando, Eriko Aizu-Yokota, Toshitsugu Sato, Tadashi Kasahara, Glycyrrhizin and related compounds down-regulate production of inflammatory chemokines IL-8 and eotaxin 1 in a human lung fibroblast cell line, International IMMUNE pharmacology, vol.4, issue 13, 2004, page 1633-1644.
6. Muhammad N. Ghayur, Anwar H. Gilani, Luke J. Janssen, Ginger attenuates acetylcholine-induced contraction and Ca²⁺ signalling in murine airway smooth muscle cells, Canadian Journal of Physiology and Pharmacology, vol.80, N.o.5 may 2008.
7. Thitiyamanprayol, S Anjeevkupittayanant, nuannoichudapongse, Participation of citral in the bronchodilatory effect of ginger oil and possible mechanism of action fitoterapia, vol.89 sep 2013, pages 68-73.
8. Kpatel, k v patel and T R Gandhi, Evaluation of effect of *Taxus baccata* leaves extracts on bronchoconstriction and bronchial hyperactivity in experimental animals, Journal of Young Pharm. 2011, Jan-Mar; 3(1):41-47.

9. Guan SP, Tee W, Ng DS, Chan TK, Peh HY, Ho WE, Cheng C, Mak JC, Wong WS, Br Andrographolide protects against cigarette smoke-induced oxidative lung injury via augmentation of Nrf2 activity, *J Pharmacol.* 2013 Apr; 168(7):1707-18.
10. S.J. Moghaddam P. Barta, S.G. Mirabolfathinejad, Z. Ammar-Aouchiche, N. Torres Garza, T.T. Vo, Robert A. Newman, Bharat B. Aggarwal, Christopher M. Evans Michael J. Tuvim, Reuben Lotanand Burton F. Dickey, Curcumin inhibits COPD-like airway inflammation and lung cancer progression in mice, *Oxford Journals, Life Sciences & Medicine, Carcinogenesis Volume 30, Issue 11 Pp. 1949-1956.*
11. Arjun ram, Duraisamyaruljoseph, Selvakumar Balachandar, Vijay Pal Singh, Medicinal plants from Siddha system of medicine useful for treating respiratory diseases, *International journal of pharmaceutical analysis, Vol 1, issue 2, 2009, pp 20-30.*
12. Dr. K. N. Kuppusamy mudhaliar, Dr.K.S.Uthamarayan, Siddha vaidhyathirattu.
13. Vaidyarathnam Dr. K.S . Murugesu mudhaliar, mooligai –*Gunapadam*
14. Sarveshkumar, pragyaArya, chandranimukherjee, Brajendra k singh, Nareshsingh, Virinder s. parmar, Ashok k.prasad and Balaramghosh. Novel Aromatic Ester from *Piper longum* and Its Analogues Inhibit Expression of Cell Adhesion Molecules on Endothelial Cells[†], *Biochemistry*, 2005, 44 (48), pp 15944–15952.
15. Mathew JE, Srinivasan KK, Dinakaran V and Joseph A. Mast cell stabilizing effects of *Euphorbia hirta*. *J Ethnopharmacol.* 2009; 122:394-396.
16. Mali Praha R and Asif K. Studies on antiasthmatic activity of aqueous extract of roots *Terminalia chebula* L. *IRJP.* 2011; 104-110.

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