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## Chronic Obstructive Pulmonary Disease (COPD): critical review from Ayurveda perspective

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### ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) which includes chronic bronchitis and emphysema is the fourth leading cause of death and its prevalence has been increasing steadily over the past 20 years. The main reason may be rapid socio-economic development which was resulted in a life style transition from traditional to modern. From Ayurveda point of view, COPD can be termed as, disorder of *Pranavaha Srotas*, as etiological factors and clinical features described in *Ayurvedic* classics for *Pranavaha Srotodushti* are nearly similar with those of COPD and occurs usually in the prolonged conditions of *Kasa* or *Tamaka Shvasa*. Risk factor include exposure to air pollution, second-hand smoke and occupational dusts and chemicals, smoking, cold weather etc. which are also mentioned in *Ayurvedic* classics "*Rajasa Dhoomvatabhyam Shitathanambusevanam Rukshanna Vishmashanat*". Identification, reduction, and control of risk factors to prevent the onset of COPD are important steps towards developing strategies for prevention of COPD. References regarding life style modification along with treatment principle & formulations mentioned in Ayurveda like *Haritakyadi Modaka*, *Vyaghri Haritaki Avleha*, *Pipalyadi Gutika*, *Agatsya Haritaki Leha* etc. can be adopted for the prevention and management of COPD.

**Keywords:** *Ayurveda*, COPD, Life style modification, *Pranavaha Srotodushti*, Prevention.

### INTRODUCTION

In India, COPD is the second most common lung disorder after pulmonary tuberculosis. The disease is frequently encountered in the middle aged patients and is rare below the 35 years. COPD affects male more frequently because of smoking and is a leading cause of chronic morbidity and mortality among patients over 55 year. It is equally prevalent in rural and urban areas. The global initiative for Chronic obstructive lung disease(COLD) defines COPD as a disease characterised by progressive development of chronic airflow limitation that is not fully reversible and is used to describe a number of conditions, which include Chronic bronchitis, emphysema and small airway disease<sup>[1]</sup>. Chronic bronchitis is characterised by chronic cough with expectoration for at least 3 months of the year for more than 2 consecutive years. Emphysema is defined as permanent abnormal distension of the air space distal to the terminal bronchioles<sup>[2]</sup>.

In *Ayurveda* respiratory diseases occur due to involvement of *Pranavaha Srotas* where cough, breathing difficulties, disturbed respiratory pattern occurs. Though it is impossible to correlate COPD with any single condition of *Pranavaha Sroto Dushti*, but advanced condition of *Doshika Kasa* and *Tamaka Shvasa* may result into COPD.

### AIMS AND OBJECTIVES

- To review *COPD* from Ayurvedic and modern science point of view and to plan life style modification along with its treatment principle & formulations.

### MATERIAL AND METHODS

To fulfil the aims and objectives relevant *Ayurveda* and Modern literature, available information on internet etc. were searched. The results on search are described hereafter.

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## DISCUSSION

### Aetio-pathogenesis<sup>[3]</sup>

Faulty diet and life style patterns form the basis of pathogenesis of any disease as per *Ayurveda*. Etiological factor of COPD mentioned in classical and modern literature include diet articles, food habits and life style errors. The summary of it is mentioned in Table 1.

**Table 1:** Diet articles, food habits and life style errors

Diet	Excessive intake of kidney beans, black gram oil, sesame oil, white flour preparations, tubers, curd, unboiled milk, aquatic and marshy meat or any dietetic articles difficult to digest causing indigestion
Dietic habits	Irregular and untimely eating of food ( <i>Vishamashana</i> ).
Life style	Exposure to dust, fume, smoke, wind, residing in cold place and using cold water, reduced physical exertion or over exertion, day time sleep, irregular or reversed sleep pattern
Other	injury to vital parts

### Pathogenesis<sup>[4]</sup>

In COPD, inhalation of toxic substances – particularly inhalation of tobacco smoke etc. causes inflammation of the lung tissue. The inflammation results into tissue damage, if the normal protective and/or repair mechanisms are overwhelmed or defective. The results of the lung tissue damage are mucus hyper secretion, airway narrowing and fibrosis, destruction of the parenchyma and vascular changes. These pathological changes lead to airflow limitation and the other physiological abnormalities resulting into clinical features of COPD.

In classics also pathogenesis of *Pranavaha Srotodusti* described in regards of *Kasa* and *Shvasa* resembles the above mention description and can be summarized as due to indulgence in etiological factors, vitiated *Prana* and *Udana* situated in *Pranavaha Srotas* enforces *Kapha*, resulting into obstruction of channels of *Pranavaha*. On the basis of these, it can be said that pathogenesis of COPD involves following steps<sup>[5]</sup>.

Smoking → Airway wall inflammation → hypertrophy of mucus secretory glands → increase in number of goblet cells in bronchi → decrease number of ciliated cells increased mucous transport become less → airway obstruction and loss of pulmonary elasticity → COPD

### Clinical features<sup>[6]</sup>

The predominant symptoms of COPD are a chronic sputum-producing cough and shortness of breath on exertion for many years along with a history of heavy tobacco or smoking. Cough occurs during cold weather, wheeze, tightness of chest, recurrent respiratory infection, dyspnoea, peripheral oedema secondary to over right ventricular failure, cyanosis, percussion note is normally resonant, medium to coarse crepitation and rhonchi which change in intensity and location are other clue for diagnosis of COPD.

The characteristic manifestations of the vitiation of *Pranavaha Srotas* are *Atisristam-Atibaddhama* (too long or too restricted respiration), *Kupita* (disturbed pattern of respiration), *Alpa-*alpam** (shallow or frequent respiration) and *Shashbdam Sashulam* (respiration associated with sound and pain)<sup>[7]</sup>, which resembles the description of COPD.

The patient with emphysema presents with long history of exertional dyspnoea with minimal cough associated with production of mucoidal sputum and may have asthenic body built, prolonged expiration with

pursed lips. Crepitation may be present mostly in lower zone of lung. Most of clinical features described for COPD, are also mentioned in classical either as general symptoms or specific features of *Doshika Kasa* or *Tamaka Shvasa*.

### Diagnosis<sup>[8]</sup>

Diagnosis is confirmed by Pulmonary function test where a post bronchodilator forced expiratory volume in one second (FEV1) /Vital capacity is less than 0.7 confirms the presentation of airflow limitations which is not fully reversible.

There is no characteristic abnormality on chest radiograph and may be normal or show features of co-existing emphysema, However, it may be helpful in detecting an alternative disease or complication.

### Complications

Recurrent respiratory tract infection, Pneumothorax, Weight loss in patient, Pulmonary hypertension, Chronic core pulmonale, Right heart failure are the few common complication of COPD. These are quite nearer to Upadrava mentioned for *Kasa* or *Shvasa*.

### Management of COPD by *Ayurveda*:

As per *Ayurveda* for the prevention or management of any disease, there are three broad steps described as *Nidanaparivarjana*, which includes life style modifications and diet pattern, *Shamana* (pacification treatment) and *Shodhana* (biopurificatory methods). Considering this the management of COPD can be summarized under the headings of :

### Avoidance of etiological factors:<sup>[9]</sup>

“ सर्वमन्यत् परित्यज्य शरीरमनुपालयेत्”

As rightly said, which means best way to stay healthy is to follow all such regimen which are suitable to one and to avoid factors which disturbs homeostasis. Hence it can be said that finding out the causative factor for COPD in individual, such as to stop smoking, taking appropriate precaution in certain type of occupational environment, avoiding close contact with people suffering from respiratory infection, exposure to excessive heat, cold and high altitudes, exposure to environmental irritants and day sleep.

### Modification of lifestyle:<sup>[10]</sup>

In most of the diseases, lifestyle changes, helps to reduce symptoms and improve quality of life like exercising regularly, taking fresh, warm diet which is low in saturated fat but rich in fruits, vegetables, and whole grain foods and maintaining a normal weight, to be in well ventilated hygienic environment. Similarly *Nasya* of two drops of *Anutaila / Shadbindu Taila* in each nostrils daily may prevent coming in contact with irritant or pollutant with the nasal mucosa. Waking up early in the morning at regular time and taking glass of warm water early morning empty stomach and avoiding Irregular and untimely eating of food may help to prevent complication of COPD

### Similarly due to importance diet articles may be done:<sup>[11]</sup>

Use of *Katu, Lavana, Ushna, Snigdha, Laghu, Ahara*, vegetables including of gourd, bottle gourd, *Spinach, Methi*, garlic, ginger, *Karvellaka, Patola, Shigru* and pulses like *Mudaga daal, Kulatha* should be encouraged in the patients of COPD.

However, excessive use of tomato, cauli flower, potatoes, preparation of rice flour, sweets, curd, whole milk, black gram, coconut oil, fermented and sour food articles and cold drinks, refrigerated food articles etc. shall be avoided in the daily diet.

## Management of COPD

Timely and seasonal *Shodhana* (biopurification) should be performed in accordance with the patients strength like strong patients may undergo *Vamana*, *Virechana*, and *Niruha basti* as well as *Nasya* therapy in a appropriate seasons. These type of therapies alleviate *Kapha* at and may dry up excess mucous secretions in the *Pranavaha Srotasa* (respiratory system).

### Medications:

Patient already suffering from COPD, should be treated with medication along with life style modifications which are mentioned here after.

### Single drugs:

*Andraka, Ela, Haridra, Trikatu, Pippali, Ashvagandha, Agnimantha, Ajmoda, Ajaji, Guduchi, Ativisha, Aragvadha, Karanjabija, Daruharidra, Lashuna, Rasona, Hingu.*

### Preparations:<sup>[12]</sup>

*Kaphketurasa, Gajihvadi Kvatha, Dashmula Kvatha, Chitraka Haritaki Avleha, Choshath Prahari Pippali, Tamra Bhasma, Mahalakshmi Vilas Rasa, Loknath Rasa, Vyoshadi Churna, Sarpi Guda, Shringyadi Churna, Haritakyadi Modaka, Pippalyadi Gutika, Sitopaladi Churna, Talishadi Churna, Vyaghri Haritaki Avaleha.*

### Rasayana:

*Pippali Rasayana, Chyavanaprasha, Agtsya Haritaki, Vyaghri Haritaki, Haridra Khanda, Ashvagandha, Guduchi* etc. can be used as *Rasayana*.

### Yogasana & Pranayama:<sup>[13]</sup>

Practice of *Pranayama* i.e. *Kapalbhati* purifies the *Nadi*. Depending upon the type of *Pranayama* performed, the flow of pranic energy may be increased or decreased in either one or more of the major *Nadi*: *Ida*, *Pingala*, or *Sushumna Nadi*. While Ayurveda understands the role of *Pranayama* in regards to *Prana*, *Tejas*, and *Ojas* and their corresponding effects on the mind, relaxation along with conscious breathing of almost any type improves the functioning of the respiratory system. Simple diaphragmatic breathing increases the volume of air moving through the lungs on inhalation and exhalation. It reported that practice of *Pranayama* and meditation enables patients to take some control over autonomic function, offering the patient an opportunity to relax and dilate the bronchial passages at the onset of an asthmatic episode. This may also benefit patients with additional breathing challenges such as chronic bronchitis.

### Yoga:

Yogik practices rehabilitate varies vital organs and make them functionally more competent.

*Bhujangasana, Savasana, Shalabhasana, Paschimotasana* are useful *Asana* for *Pranavaha Srotas* as it accelerates the blood circulation of the lungs and thus increase the vital capacity of lung.

## CONCLUSION

COPD being a chronic progressive disease with irreversible changes needs early diagnosis and proper management. An extra care of diet, diet- pattern modifications and life style modifications with judicious use of *Rasayana* can play major role in the prevention or progresion of COPD.

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