

## Green Lungs through Ayurveda: A Preventive Model for Urban Air Quality Crisis

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### Abstract

**Introduction:** Air pollution in Delhi has become one of the most significant public health issues, and the city has regularly been among the worst industries in the Air Quality Index (AQI) in many countries with a record of up to 500 and above. Urbanization in expressive form, high population density, motorization, industrialization, biomass burning, and seasonal burning of crop residues in neighboring states like Punjab, Haryana among others are also adding to the poor quality of air. The geographical location, which is landlocked, geographical location, in the Indo-Gangetic Plains, low wind velocity during the winter months, and frequent occurrence of temperature inversion causes the pollutants to be nearer to the surface increasing the formation of smog in Delhi. With the sharp rise in the AQI, the respiratory conditions, heart diseases, poor lung productivity in youngsters, and progression of chronic diseases like asthma and COPD (Chronic Obstructive Pulmonary Disease) get aggravated. **Methodology:** An extensive review was done. **Result:** The paper highlighted the potential of Ayurveda as a holistic and preventive healthcare system that would provide a solution to the multifactorial aspect of the disorders caused by pollution. **Discussion:** The increasing burden of disease reminds us of the strong demand of both environmental and healthcare-based approaches, such as tightening of emission control, sustainable urban planning, and preparedness to health. This abstract dwells upon the interdependence between the geographical vulnerabilities of the city of Delhi, the increasing AQI, and the increasing health hazards, as well as the need of combined measures to ensure the health of communities.

**Keywords:** Air pollution, AQI, Respiratory disorder, *Rasayana*, *Dincharya*.

## Introduction

Air pollution has become one of the most pressing environmental and public health challenges of the 21st century (1), particularly in rapidly urbanizing regions like Delhi. From a modern medical perspective, polluted air contains a complex mixture of particulate matter ranging in size between 2.5 nanometre to 10 nanometre. Unrestricted discharge of nitrogen oxides, sulphur dioxide, carbon monoxide, and volatile organic compounds into the surrounding area have been poisoning the air for ages. These pollutants penetrate deep into the respiratory system, impairing lung functioning, triggering inflammatory responses, and causing growth in the burden of respiratory, cardiovascular, neurological, and metabolic disorders (2). Ayurveda interprets pollution in detail through the concepts of vitiated Vayu, Kala, Aama formation, and environmental imbalance (Vikrita Vayu, Jala, Desha). Impure air (Dushita Vayu) is believed to disturb the equilibrium of the Doshas especially Vata and Kapha which leads to conditions such as Pranavaha Srotas Dushti. This Pranavaha Srotas Dushti causes Shwasa, Kasa, Pratishyaya, and lowered immunity (Ojas Kshaya). Ayurveda establishes a relation between the environment and human health, asserting that disturbances in ecological balance directly affect internal homeostasis.

## Classical texts

In Vimanasthana, Chapter 3, Verse 6, Acharya Charaka says: “tatra mārutam-upahatam abhighātajam, sāmsargajam, durgandham, kledayuktam, vāta-pitta-kapha-sannipātakaram vidyāt.” This means that the Vitiated air is caused by external impact (abhighataja, samsargaja), association with other polluting factors, is foul-smelling (durgandham), contains moisture/contaminants (*kledayuktam*), and is responsible for causing imbalances in *Vata, Pitta, and Kapha* doshas. *Acharya Charaka* quotes that “Air that is impure, foul-smelling, discoloured, irregular in movement, excessively sharp or intense, and disturbing to living beings is called polluted air” (3). The relation established between nature, which is the surrounding environment, and the human body in Ayurveda is supported by *Charaka* in *Sharirasthana*: “When there is an abnormality or disturbance in the natural seasons (*ṛtu viparyaya*), severe diseases arise among living beings” (3). *Sushruta* states, “When air, water, land, and seasons become polluted, serious diseases destroy communities (epidemics)” (4).

## Review

### **Roga Nidana perspective:**

*Roga Nidāna* is the branch of Ayurveda that deals with the causes of diseases, their pathogenesis, early symptoms, and diagnostic principles. It explains how and why a disease develops by studying *nidāna*, *pūrvarūpa*, *lakṣaṇa*, and *samprāpti* as followed.

### **Nidāna (Causative Factor) (5)**

1. Exposure to cold air, dust, smoke, and pollutants.
2. Intake of heavy, cold, oily, and incompatible foods.
3. Suppression of natural urges, excessive talking.
4. Day sleep, lack of physical exercise.

### **Pūrvarūpa (Pre-Symptoms) (6)**

1. *Kanthasya Toda / Ushnata*: Mild burning, irritation, needle-pricking sensation in the throat.
2. *Pratishyanda* (Nasal Watering): Watery discharge before full rhinitis develops.
3. *Shaushya* (Dryness) of Nose and Throat: Dry mucosa due to polluted air.
4. *Kshavathu* (Recurrent Sneezing): Early sign of *Pratishyaya* caused by dust, smoke, or fine particles.
5. *Shiro-Gaurava*: Heaviness or mild headache due to aggravated Pitta and blocked channels.
6. *Kanthoparodha* (Throat Congestion): Sense of obstruction or thickened airway.
7. *Asyam Parsveda* (Mouth & Nasal Dryness + Thirst): Pollution-induced *pittaja rukshata*.
8. *Akshi Kandu / Netra Daha*: Itching, burning, redness of eyes.
9. *Urah-Kandu / Ushna Sparsha*: Mild itching or warmth in the chest region.
10. *Srotorodha Lakshana*: Feeling of blocked channels, heaviness in face/head.
11. *Mandagni* (Reduced Digestive Fire): Pollution disturbs *vata-pitta* and reduces vitality, causing fatigue.
12. *Jrumbha* (Frequent Yawning / Tiredness): Early pranic depletion due to polluted air.

13. *Avasthambha* (Mild Chest Tightness): Heaviness before wheeze.

### **Rūpa (Symptoms) (5)**

1. *Kasa* (Cough): Dry cough; Productive cough with thick sputum; Burning cough with yellow sputum.
2. *Shwasa* (Breathlessness): Difficulty in breathing; Short, shallow breaths, worse during exertion or at night.
3. *Ghurghurakam* / Wheezing: Whistling sound while breathing; Indicates narrowed air passages.
4. *Nasarodha* (Nasal Congestion): Blocked or partially blocked nose; Thick mucus.
5. *Pratisyaya* (Rhinitis): Runny nose, sneezing; Itchy nasal mucosa.
6. *Kantha Shosha* (Dryness of Throat): Dry, scratchy throat; Irritation worsening with polluted air.
7. *Kantha Daha & Raga* (Burning / Redness of Throat): Due to smoke, chemicals, and pitta aggravation.
8. *Shirahshoola* / *Shirahgaurava*: Headache & Heaviness.
9. *Netra Daha / Kandu* (Eye Burning & Itching): Irritation and redness of skin and eyes.
10. *Urah-Gaurava* (Chest Heaviness): Feeling of weight or pressure in the chest.
11. *Utklesha* (Nausea or Discomfort): Due to inhalation of foul air disturbing Pitta & Kapha.
12. *Asya Shosha*: Dry Mouth and Throat as polluted air dries mucosa.
13. *Dourgandhya*: Foul Smell from Mouth or Mucus.
14. *Shrama* (Fatigue): Tiredness due to poor oxygenation; Disturbed Prana Vata leading to low energy.

*Sraktasrava*: Mild Blood-tinged Sputum; seen in strong pitta aggravation or chronic irritation.

### **Samprapti (pathogenesis):[6]**

Step 1: Entry of *Dushita Vayu*

Pollutants enter through nose, eyes and oral cavity → irritate *Udharva-jatru* region.



### Step 2: *Vata–Pitta Prakopa*

Dry, hot, chemical-laden air → aggravates *Vata & Pitta* .



### Step 3: *Kapha prakopa* occurs

*Kapha dosha* dries due to *ruksha ushna guna* of *vata & pitta* → as defence mechanism, body reacts with excess mucus to protect airways.



### Step 4: *Srotoshodhana & Srotosanga*

Fine particles cause drying of mucosa (*shoshana*). Mucus + inflammation → obstruction of channels (*sanga*). A combined aggravated *vata dosha* condition develops.



Step 5: *Kasa, Shwasa* affects *Amashaya* which leads to *Agni manda* and *Ama*-like state + poor *prana vayu* intake → micro-ama formation in *pranavaha* srotas ; as a defence, inflammation occurs[7]



### Step 6: *Rasa–Rakta Dushti*

Pollutants vitiate circulating fluids and blood → cause redness, burning, irritation.



Step 7: Formation of *Lakṣaṇa* (Symptoms) *Vata* causes Dry cough, breathlessness.

*Pitta* causes Burning throat, eye irritation, yellow mucus.

*Kapha* causes Congestion, heaviness, productive cough.

This leads to *Kasa, Pratishyaya, Tamaka Shwasa*, and other *Urdhva-jatrugata* disorders.

### ***Dravya guna* perspective:**

*Dravyaguna Vigyana* is one of the fundamental branches of Ayurveda that deals with the study of medicinal substances (*dravyas*) used for healing. It explains the qualities, properties, actions, and therapeutic uses of herbs, minerals, and animal-origin substances.

### **List of Ayurvedic Herbs with Respiratory benefits-**

The herbs mentioned below are mainly *Katu and Tikta rasa pradhana, ushna veerya* and *Katu, Madhur vipaka*[8].

1. Tulsi: *Katu and Tikta rasa pradhana*
2. Pippali: *katu rasa pradhana*
3. Haridra: *Tikta and Katu rasa pradhana*
4. Mulethi: *Madhura rasa pradhana*
5. Vasaka: *Tikta and Kshaya rasa pradhana*
6. Adraka: *Katu rasa pradhana*
7. Neem: *Tikta and Kshaya rasa pradhana*
8. Guduchi: *Tikta rasa pradhana*
9. Maricha: *Katu rasa pradhana*
10. Amla: *Amla rasa pradhana*
11. Kantakari: *Tikta and Katu rasa pradhana*
12. Shirish: *Kshaya and Tikta rasa pradhana*
13. Baheda: *Kshaya rasa pradhana*
14. Vibhitaki: *Kshaya rasa pradhana*
15. Dhatura: *Katu and Tikta rasa pradhana*
16. Arjuna: *Kshaya rasa pradhana*
17. Ajwain: *Katu rasa pradhana*
18. Laung: *Katu and Tikta*
19. Dalcheeni: *Katu and Tikta*
20. Pudina: *Katu and Tikta*

#### **Indoor Air-Purifying Plants (With Key Properties) [9]**

1. Areca Palm: Removes indoor toxins & increases humidity.
2. Snake Plant: Gives oxygen at night, absorbs formaldehyde.
3. Peace Lily: Removes benzene, acetone & mold spores.
4. Money Plant (Pothos): Absorbs CO & VOCs, very hardy.
5. Aloe Vera: Removes benzene; increases oxygen.
6. Spider Plant: Removes CO, xylene; pet-friendly.
7. Tulsi (Holy Basil): Anti-microbial air cleansing.
8. Rubber Plant: Absorbs chemical pollutants.

9. Boston Fern: Removes formaldehyde; natural humidifier.
10. Bamboo Palm: Removes xylene, toluene & cleans dusty air.

### **Roadside Trees with good pollution resistance[10]**

1. Neem: Strong toxin absorber; purifies air.
2. Peepal: Releases oxygen even at night; traps dust.
3. Banyan Large canopy: excellent dust & gas absorber.
4. Jamun: Dense canopy; high carbon sequestration.
5. Amaltas: Pollution-tolerant; good for dusty roads.
6. Ashoka: Absorbs noise + particulate matter.
7. Gulmohar: Wide shade; traps soot & airborne dust.
8. Kadamba: Large leaves; fast-growing dust filter.
9. Kikar / Babool: Thrives in polluted dry zones; dust barrier.
10. Sheesham: Fast-growing; heavy dust absorber.
11. Pilkhan: Pollution-resistant; strong canopy filtration.

### ***Rasa shastra and Bhaishajya Kalpana perspective [11]:***

Rasa Shastra is a specialized branch of *Ayurveda* that deals with the use of metals, minerals, gemstones, and mercurial preparations for therapeutic purposes. It focuses on purifying, processing, and transforming these substances into safe, bioavailable, potent medicines.

*Rasayana* is one of the comprehensive disciplines of *Ayurveda*, which comprises a specialized use of herbs, herbomineral formulations, food articles, and lifestyle along with self-discipline with social etiquette to achieve the optimum state of tissues and systems of the body so that there is the least effect of etiological factors on the body. In other words, it can be stated that *Rasayana* is a way to achieve homeostasis and thus retarding the process of aging phenomenon and prevention of diseases [12]. In *Suśruta Chikitsāsthāna* states “*Rasayana* herbs improve immunity, strength and resistance to environmental toxins.” [13]

*Bhaishajya Kalpana*, also called *Ayurvedic* pharmaceuticals, is the branch of *Ayurveda* that explains the principles and methods of preparing herbal and herbo-mineral medicines. It deals with transforming raw drugs into effective, stable, palatable, and

clinically useful formulations.

**Table 1 - Ayurvedic Formulations for Respiratory Disorders**

| S.no | Name of Formulation        | Ingredients                                                                                                                                                                                                                  |
|------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.   | <i>Shwasakuthar rasa</i>   | Shudha <i>parada</i> + <i>gandhaka</i> + <i>tankan</i> + <i>pippali</i> + <i>maricha</i> + <i>shunthi</i>                                                                                                                    |
| 2.   | <i>Sitopaladi churna</i>   | Mishri + <i>vanshlochan</i> + <i>pippali</i> + <i>ela</i> + <i>dalcheeni</i>                                                                                                                                                 |
| 3.   | <i>Talisadi churna</i>     | <i>Talishpatra</i> + <i>vanshlochan</i> + <i>pippali</i> + <i>marich</i> + <i>shunthi</i> + <i>ela</i> + <i>dalcheeni</i>                                                                                                    |
| 4.   | <i>Trikatu</i>             | <i>Pippali</i> + <i>marich</i> + <i>shunthi</i>                                                                                                                                                                              |
| 5.   | <i>Laxmivilas rasa</i>     | <i>Abhrak bhasma</i> + <i>vang bhasma</i> + <i>tamra bhasma</i> + <i>shuddha parada</i> + <i>shuddha gandhaka</i> + <i>jaypal</i> + <i>laung</i>                                                                             |
| 6.   | <i>Kamadudha rasa</i>      | <i>Praval pishti</i> + <i>mukta pishthi</i> + <i>kamdudh</i> + <i>giloyasatva</i>                                                                                                                                            |
| 7.   | <i>Kantakari avleha</i>    | <i>Kantakari</i> + <i>guduchi</i> + <i>chavya</i> + <i>chitraka</i> + <i>musta</i> + <i>karkatashrunji</i> + <i>trikatu churna</i> + <i>dhanvayasa</i> + <i>bharngi</i> + <i>rasna</i> + <i>shati</i> + <i>Vamshalochana</i> |
| 8.   | <i>Vasa avleha</i>         | <i>Vasa</i> + <i>jaggery</i> + <i>pippali</i> + <i>ghee</i>                                                                                                                                                                  |
| 9.   | <i>Chyawanprash avleha</i> | <i>Amla</i> + <i>dashamoola</i> + <i>pippali</i> + <i>ghee</i> + <i>honey</i> + <i>vanshlochan</i>                                                                                                                           |

*Acharya Sushruta* has called the respiratory formulations as '*muhurmuhu*' which means to be consumed frequently.[14]

#### Homemade Ayurvedic Preparations for Respiratory Health

1. *Tulsi*–Ginger–Black Pepper Kadha
2. Turmeric Milk (*Haldi Doodh*)
3. Mulethi Herbal Tea
4. *Trikatu* and Honey Paste
5. Ginger and Pepper Infused Honey

**Swasthviritta perspective:** *Swasthviritta* is the branch of *Ayurveda* that deals with the principles of maintaining health and preventing disease through proper diet,

lifestyle, daily routine (*Dinacharya*), seasonal regimen (*Ritucharya*), personal hygiene, mental discipline, and ethical conduct.

### **Yog asanas for Respiratory Health (with Time & Period) [15]**

1. *Bhujang asana*: Morning; All seasons (best in winter)
2. *Gomukhasana*: Morning or Evening; All seasons
3. *Matsyasana*: Morning; Winter & pollution months
4. *Ardha Matsyendrasana*: Morning; All seasons
5. *Dhanurasana*: Morning empty stomach; Winter & Spring
6. *Setu Bandhasana*: Morning/Evening; All seasons
7. *Chakrasana*: Morning; Spring & Winter
8. *Vakrasana*: Morning; All seasons
9. *Marjariasana* (Cat–Cow): Morning; All seasons, especially winter
10. *Uttanasana*: Morning; All season
11. *Tadasana*: Morning; All seasons
12. *Shashankasana*: Morning/Evening; All seasons
13. *Anuloma Asana* (forward bend variations): Morning; Winter & Monsoon

### **Pranayamas for Respiratory Health [15]**

1. *Anulom–Vilom* (Nadi Shodhana): Early morning; All seasons
2. *Bhastrika*: Morning (empty stomach) Winter, polluted season
3. *Kapalbhati*: Morning; Winter & Autumn (avoid in high Pitta)
4. *Ujjayi*: Morning or Night; Winter & monsoon
5. *Bhramari*: Night before sleep; All seasons (especially stress-related dyspnea)
6. *Sheetali*: Morning; Summer only
7. *Sitkari*: Morning; Summer only
8. *Surya Bhedana*: Morning; Winter & monsoon (cold, damp season)
9. *Chandra Bhedana*: Evening; Summer & stress seasons
10. *Pranav Pranayama* (Om chanting): Morning or Evening; All seasons

**Karmas (Shuddhi Procedures) for Respiratory Protection [15]**

1. **Jal Neti:** Morning (empty stomach); Winter, monsoon, pollution season.

*Jala Neti* is a yogic nasal cleansing technique using lukewarm saline water. It helps remove mucus, dust, and allergens from the nasal passages. This practice improves breathing, prevents sinus infections, and enhances respiratory health. It is widely recommended for allergic rhinitis and air-pollution-related nasal issues.

2. **Sutra Neti:** Morning (after Jal Neti); Weekly during pollution months.

*Sutra Neti* involves cleansing the nasal passage using a soft rubber catheter or thread. It helps improve sinus drainage, reduces nasal blockages, and enhances olfactory function. This technique strengthens the nasal mucosa and is beneficial in chronic sinusitis. It requires guidance from an expert due to its skill requirement.

3. **Nasya (Anu Taila / Shadbindu):** Morning after mild warm bath; Winter season

*Nasya* is the administration of medicated oils, ghee, or herbal juices through the nasal route. It nourishes the nasal mucosa, clears toxins from the head region, and balances doshas, especially Vata. It is useful in conditions like headaches, sinusitis, and allergic disorders. Regular Nasya improves respiratory and mental clarity.

4. **Dhoomapana** (Herbal medicinal smoke): Morning or after meals; Winter & monsoon season (avoid in summer).

*Dhoomapana* refers to inhalation of medicated herbal smoke for therapeutic purposes. It helps clear excess Kapha from the respiratory tract and reduces congestion. This therapy is useful in cough, asthma, and pollution-induced respiratory issues. It must be performed under proper supervision.

5. **Kavala (Oil/Gandusha):** Morning after brushing; All seasons

*Kavala* is an oral therapy involving gargling with medicated decoctions, oils, or warm water. It strengthens the throat, improves voice, and reduces infections of the mouth and pharynx. It also helps in relieving dryness and irritation caused by pollution. Commonly used for sore throat and oral hygiene.

6. **Jihva Dhauti (simple tongue cleansing):** Morning; All seasons

*Jihva Dhauti* refers to daily cleaning of the tongue using a scraper. It removes Ama (toxins), enhances taste sensation, and prevents bad breath. This practice improves oral hygiene and digestion. Ayurveda recommends it as part of Dinacharya (daily routine).

7. **Steam Inhalation (Swedana – mild):** Evening or when congested; Winter season. Steam inhalation involves inhaling warm steam infused with herbs like mint, tulsi, or ajwain. It loosens mucus, reduces nasal congestion, and relieves throat irritation. Effective for colds, sinusitis, and pollution-induced breathing discomfort. Safe for regular use.

8. **Laghu Vamana** (very mild, home cleansing for kapha): Early morning; Late winter & spring season only (under guidance).

*Laghu Vamana* is a mild form of therapeutic emesis used to expel excess Kapha from the chest and stomach. It helps in acute cough, asthma, heaviness, and allergies.

This light detoxification enhances respiratory function and prevents recurrent infections. Should be performed with proper Ayurvedic supervision.

**Table 2 - Dincharya**

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Morning routine | <ol style="list-style-type: none"> <li>1. Wakeup practices : Drink warm water, Tongue cleaning, Jal neti or simple steam inhalation, Nasya with anu taila</li> <li>2. Breathing practices: Anulom vilom, Bhramari, Ujjayi, Om chanting or pranav breathing</li> <li>3. Yoga practices Marjariasana Bhujangasana Gomukhasana Setubandhasana Shashankasana</li> <li>4. Herbal support : Tulsi+ ginger+black pepper kadha Warm water+ half tablespoon ghee Mulethi tea</li> <li>5. Before breakfast: 1 tablespoon of chyawanprash</li> </ol> |
| Daytime routine | <ol style="list-style-type: none"> <li>1. Outdoor precautions: Wear N-95 mask, Apply thin layer of ghee inside nostril for dryness</li> <li>2. During work : Sip warm water, avoid cold drinks</li> <li>3. Take herbal infusions: eg: tulsi+mulethi+cardemom, pippali honey, ginger honey, warm water sipping</li> </ol>                                                                                                                                                                                                                  |

|                 |                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evening routine | <ol style="list-style-type: none"> <li>1. After work : Light walking or stretching</li> <li>2. Avoid heavy workouts in dusty environment cleansing practices (2-3 times per week)</li> </ol>                                                                         |
| Night routine   | <p>Dinner Light food, Avoid curd and cold salad</p> <p>Night breathing Bhramari</p> <p>Gentle diaphragmatic breathing</p> <p>Before sleeping</p> <p>1-2 drops cow's ghee in each nostril</p> <p>Keep room pollution free with indoor plants Avoid sleeping late.</p> |

## Combined effective techniques to control air Pollution

### A. Individual-Level Practices

1. Daily *Nasya* with *Anu Taila*, *Shadbindu Taila*.
2. *Gandusha/Kavala* with warm sesame oil.
3. *Dhoomapana* with medicated herbs (elaichi, ghee wick) *Shodhana* therapy.
4. Regular Steam inhalation with Tulsi/ VasaSwasthavritta practice.
5. *Ayurvedic* home fumigation (*Dhoopan*) using neem leaves, guggul, loban, sarso *Krimighna* & *Vayu-shuddhi karma*.
6. *Ushnodaka Pana* (warm water drinking).
7. Growing air-purifying herbs indoors (Tulsi, Aloe, Vasa).
8. Seasonal regimen (Ritucharya) adjustment.
9. Wearing cotton mask and avoiding vitiating *Vata* places.

### B. Household & Community (Mass-Level Ayurvedic Initiatives)

In *Shushruta sthana*, *Acharya Sushruta* stated to “Fumigate houses with *Aguru*, *Chandana*, *Kushta* etc. to purify the air” [16].

1. Community *Dhoopan Yajnas* / *AgnihotraVayu-śuddhi*, *Rakshoghna* Uses ghee, herbs, and cow dung smoke to purify air and reduce microbes.
2. Mass plantation of *Ayurvedic* herbs like *Neem*, *Arjuna*, *Vasa*, *Peepal* *Vrukshayurveda* reduces CO<sub>2</sub>, increases oxygen, cleans particulate matter.
3. Local herbal gardens in schools & colonies - *Aushadhi Vr̥ksha* concept - Provides medicinal plants; improves environmental prana.

4. Discouraging *agni-dahana* of waste (burning plastic, leaves, dung cakes). *Dhumavarjan* prevents smoke-related vitiation of *Vata* & *Pitta* in environment.
5. Promoting eco-friendly havan fuels instead of chemical dhoop. Non-vikara dhuma - prevents toxic aerosols and enhances *sattva* of air.
6. Community training on *Ayurvedic* indoor air purification - *Swasthasya Swasthya Rakshanam*. Use of Tulsi, Guggul, Loban fumigation weekly.
7. *Ayurvedic* awareness camps for respiratory health prevention. *Janapadodhvans*. Educate masses on preventive measures.
8. Encouraging *Ayurvedic* green architecture. *Vastu* & *Ayurveda* ecology. Proper ventilation, sunlight, open spaces to reduce indoor pollution.
9. Promoting *Ayurvedic* diet habits (light, non-ama forming) *Ama-nashana* - Reduces susceptibility to pollution-related diseases.
10. Water sprinkle practices in dusty areas using herbal decoctions. *Vayushamana* using neem, tulsi, or vetiver-infused water for community dust control.

## Discussion

Due to advancement of science and research into the life span of human being has been increased but simultaneously threat of disease is increasing day by day. *Ayurveda* though being ancient life science clearly mentions about such disease conditions. A detailed chapter on *Janapadodhwans* in *Charaka Samhita* explains epidemic disease and its etiological factors [17]. In *Sushrut Samhita* *Kushthanidanadhyay* there is a good description on mode of transfer of disease. They are called *Aupasargikrogas* (Communicable diseases). From these references we come to know that in ancient time also there were such epidemics. A detailed regimen for such diseases is also described in *Charak Samhita* as use of *Panchakarma* and *Rasayana* along with *Sadvrittapan*. In *Charak Samhita* *Vimansthan* 3rd *adhyaya* *Aacharya Charaka* has described the term *Janapadodhwamsa* which means destruction of a population living in an area. It is similar with epidemics. People having different *Prakrati*, *Sarata* and *Aahara* but some factors like air, region, time are common to them and vitiation of these factors leads to disease production and death which is termed *Asjanapadodhwans*. *Janapadodhwans* occurs due to vitiation of *Vayu*, *Jala*, *Desh*, *Kala*. They are nothing but modes by which infectious diseases spread. *Aacharya Charaka* has mentioned

*Adharma* (unrighteousness) as the root cause of *Janapadodhwams* [18].

### **Conclusion**

Air pollution has become a widespread popular health issue that has reached deep consequences regarding respiratory, cardiovascular, and overall systemic health. The results of this paper highlight the potential of Ayurveda as a holistic and preventive healthcare system that would provide a solution to the multifactorial aspect of the disorders caused by pollution. Air pollutants are considered to be agents in Ayurvedic which vitiate doshas and impair *pranavaha srotas* and stimulate *aam*. The management modalities include shodhana therapies, *nasya*, *pranayama*, *rasayana* formulations, as well as lifestyle modifications that provide a systematic guide towards the improvement of immunity, defense of respiratory tract, and systemic detoxification. Moreover, Ayurvedic herbal interventions used in conjunction with contemporary environmental management practices can come up with a synergistic solution to the reduction of disease burden. The article highlights that more research, education to the population about the health benefits of Ayurvedic methods, and policy-level advocacy are required to implement Ayurvedic methods on a bigger scale. Finally, the model of collaboration between the traditional wisdom and modern science is promising to be deployed in terms of sustainable management of air pollution and its health effects.

### **Acknowledgement**

I extend my sincere gratitude to all scholars, mentors and institutions whose guidance and contributions supported the development of this review.

### **Funding Source**

No financial support was received.

### **Conflict of Interest**

The author declares no conflict of interest.

## References

1. World Health Organization. Air Pollution and Its Precautions. Geneva: WHO; 2019, Available from: [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health).
2. Ayurveda's unique approach to the concept of pollution. Ann Ayurvedic Med. 2025 Jan;14(3):271.
3. Pt. Sastri K., Chaturvedi G., 1st edition, charak Samhita, sutrasthana, Chapter 11, verse 43, Varanasi, Chaukhamba bharti academy ,2024;204
4. Pt. Sastri K., Chaturvedi G., 1st edition, charak Samhita, Sharirsthana, Chapter 6, verse 3, Varanasi, Chaukhamba bharti academy ,2024;792
5. Vd. Trikamji J., Narayan R ,1st edition sustruta samhita ,sutrastana , Chapter 6, verse 20, Varanasi, Chaukhamba Sanskrit sansthan 2019,
6. Kumari N., 1st edition, roga nidana and vikruthi vijnana,chapter- 4, varanasi, chaukhambha orientalia, 2015,225
7. National Institutes of Health. Air pollution effects on the gut microbiota: link between exposure and inflammatory disease. Saad Y Salim et al. Gut Microbes. 2014 Mar-Apr. PubMed Central (PMC). Available from: <https://pubmed.ncbi.nlm.nih.gov/24637593/>.  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC4063847/>
8. National Institutes of Health. Traditional Herbal Plants and their Phycoconsyituents Based Remedies for Respiratory Diseases. PubMed Central (PMC). Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10879782/>.
9. National Institutes of Health. The Role of Indoor Plants in air Purification and Human Health in the context of COVID-19 Pandemic. 2021 Jun 30; 8: 709395. doi: 10.3389/fmolb.2021.709395. PubMed Central (PMC). Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC8279815/>.
10. Roadside vegetation design to improve local near-road air quality. PubMed Central (PMC). 2017 May.
11. Gupta A.K., reprint 2024, rasa shastra evam bhaishajya kalpana, Chapter 1, New delhi, Chaukhambha publications, 1 to 8.
12. Rasayana in perspective of the present scenario. PubMed Central (PMC)
13. Vd. Jadvji Trikamji J., Narayan Ram Acharya, 1st edition, Susruta samhita, chikitsasthan, Chapter 29, Verse 3, Chaukhambha Sanskrit Sansthan 2019 ,131.

14. Vd. Jadvji Trikamji J., Narayan Ram Acharya, 1st edition, Susrutasamhita, uttarsthan, Chapter 64, Verse 78, Chaukhambha Sanskrit Sansthan 2019,814.
15. Vaidya Samagandi K., 1st edition, text book of Swasthavrtta and yoga, chapter -1, jaipur, ayurved sanskrit hindi pustak bhandar,2019,245.
16. Acharya Trikamji J., Narayan Ram Acharya, 1st edition, Susrutasamhita, sutrasthan, Chapter 6, Verse 25, Chaukhambha Sanskrit Sansthan 2019, 29.
17. Pt. Sastri K., Gorakha Natha Chaturvedi, 1st edition, charak Samhita, Vimanasthana, Chapter 3, Varanasi, Chaukhamba bharti academy ,2024; 614.
18. Concept of environmental pollution and its management in Ayurveda. J Ayurveda Integr Med Sci. 2021.