Indoor Plants: Nature's Way to Clean the Air

Vintapuram Swaroopa[1]*, Dr. Pragyanshree Mishra[2] and Uppada Thanuja[3]

[1,3] *M.Sc. Scholar, College of Agriculture, OUAT, Bhubaneswar, Odisha, India -751003*
[2] *Assistant Professor (Floriculture & Landscaping), College of Horticulture, OUAT-Chiplima, Odisha, India -751003*

Corresponding Author
Vintapuram Swaroopa
Email: vswaroopa@402gmail.com

OPEN ACCESS

Keywords

Indoor plants, Indoor air quality, Volatile organic compounds (VOCs), Pollutants

How to cite this article:

Swaroopa, V., Mishra, P. and Thanuja, U. 2026. Indoor Plants: Nature's Way to Clean the Air. *Vigyan Varta* 7 (01): 157-160.

ABSTRACT

Indoor plants are not only the decorative elements of the houses and offices, but they are also the natural air purifiers that improve indoor air quality and are beneficial to human health. People nowadays, because of their modern lifestyle, are trapped for long hours in indoor spaces which in turn are full of pollutants such as dust, smoke, volatile organic compounds (VOCs), and allergens. Some indoor plants like aloe vera, snake plant, and peace lily are capable of absorbing harmful substances, releasing oxygen, and even keeping the humidity at a certain level, thus, they make the living environment healthier. Moreover, these plants do not only bring physical advantages, but also positively impact mental health by lessening the stress and increasing the concentration. This article describes indoor plants, how they clean the air, and the scientific evidence that backs up their benefits.

INTRODUCTION

Most of the urban population are those who live an indoor life. Indoor places are always full of pollutants that are harmful to human health. Such pollutants may cause respiratory problems, headaches, and even tiredness. However, indoor plants have become nature's allies in this fight, providing a clean and always, good to air quality, solution. Therefore, apart from small and heavily polluted places that are free of it, their arrival also makes these places more colorful with positive vibes. Numerous scientific studies have been conducted recently, and they have

uncovered the exact potential of certain plants in the reduction of volatile organic compounds (VOCs), particulate matter, and air pollutants. The decision to have indoor plants is not only an eco-friendly one but also a great way to improve one's physical and mental well-being. This article is a tribute to the importance of indoor plants which are the cleansing agents and a source of integrated human health.

What are Indoor Plants?

Indoor plants, or houseplants, refer to the plants that individuals place in the rooms of their houses or offices, or any other indoor areas, with the idea of obtaining decorative, therapeutic, and ecological benefits. These plants differ from the outside ones as they are specifically chosen for their capability to live in a controlled environment with limited light and temperature. Some of these plants might be flowering ones, foliage plants, succulents, and air, purifying plants. Plants are also living beings which do photosynthesis and releases oxygen whereas transpiration makes the air more humid; thus, they become a part of the indoor environment. Correct picking and placing of indoor plants can work miracles with the household interiors, making them healthier, more comfortable, and more visually attractive.

Why Indoor Air Quality Matters:

Indoor air quality (IAQ) refers to how clean and safe the air is in a person's living or working environment. Poor IAQ has become a problem of significant proportions, especially in urban areas where people spend 80-90% of their time indoors (Deng *et al*. 2018). Dust, smoke, organic volatile compounds (VOCs), mold spores, and chemicals released from furniture or cleaning products may accumulate inside, quite often at levels that are higher than those in the fresh air. The prolonged exposure to such pollutants may result in respiratory diseases, allergens, and symptoms such as headaches, fatigue, and may also lead to serious health conditions in the future. The use of indoor plants is an environmentally friendly and affordable method of improving IAQ. Actually, they do this by absorbing harmful substances, releasing clean air, and making the room less dry through their process by which they help to create a healthy and comfortable indoor environment, their essential role being demonstrated in the evolution of sustainable living spaces that are human, friendly.

Sources of Indoor Air Pollution:

Combustion Products: Cooking, candles, and fireplaces can release particulate matter and carbon monoxide from their smoke.

Volatile Organic Compounds (VOCs): One of the main sources of VOCs emissions is the use of paints, varnishes, and cleaning products as well as synthetic furniture, which can release formaldehyde and benzene (Travaglini *et al*., 2025).

Biological Pollutants: Dust mites, mold (Mendell *et al*., 2011), pollen, and pet dander are the most common allergens and causes of respiratory irritation.

Particulate Matter: Dust, fibers, and airborne particles are accumulated through the normal activities of any indoor place.

How Plants Help Clean the Air:

Absorption of pollutants: The leaves of the plants are the ones that directly absorb the chemicals that harm health, such as benzene, formaldehyde, and trichloroethylene, from the air**.**

photosynthesis: Plants do absorb carbon dioxide and at the same time release oxygen, which is the main factor for the air to be considered clean and fresh.

Transpiration and humidity regulation: The water vapor that comes through the leaves

is the one that causes the rise of the room's humidity and therefore, less dust and allergens are present.

Soil microbes: Some microbes that live in the soil and cooperate with the roots of the plant to break down the pollutants and change them into less harmful substances.

Scientific Evidence on Air-Purifying Plants:

One of the major studies by NASA named the Clean Air Study (1989) came up with the list of the plants that are able to absorb the toxic substances in the air such as formaldehyde, benzene ammonia (Wolverton *et al*., 1989), trichloroethylene and xylene. For example, spider plants can eliminate carbon monoxide and xylene efficiently. Latest experiments suggest that room plants not only make the air less polluted with chemicals but also help in reducing particulate matter and microbial contamination. These scientific results are a strong argument for the use of indoor plants as a natural and eco, friendly way of air purification which is very important for homes, offices, and public places.

Role of Indoor Plants in Oxygen Balance and Humidity:

Indoor plants play a major role in making the air fresher as they take in carbon dioxide for photosynthesis and therefore release oxygen to the atmosphere. Nevertheless, this enhancement is mainly detectable in very tightly closed rooms where there may not be much fresh air coming in. Besides, plants also consume oxygen, and the operation is called transpiration, during which they emit water vapor and, consequently, the humidity of the surroundings increases naturally. In case the right humidity levels are maintained, dust, static electricity, and breathing difficulties caused by dry air will be lessened. By providing oxygen and humidity at the right levels, indoor plants are the perfect air purifiers to make the environment comfortable and healthier in the situations of households and offices with air conditioning or heating systems which are drying the air.

Health Benefits of Indoor Plants:

Reduced Respiratory Problems: The plants that are placed inside a home absorb pollutants and allergens from the air thus the risk of asthma and allergies is reduced.

Lower Blood Pressure and Stress Levels: The presence of greenery has a soothing effect on the body.

Improved Sleep and Breathing: Snake plant is one of the indoor plants that emits oxygen during night time (Sharma, 2019) thus it helps in getting good sleep.

Physiological and Well-Being Effects:

Several studies confirm that being exposed to green surroundings significantly lessens the feelings of stress, anxiety, and mental fatigue. The employees in offices with indoor plants say that they become more productive, can concentrate better and are more creative. On the other hand, plants in homes help to generate calm, uplift mood and improve the overall quality of life.

CONCLUSION:

Indoor plants are not just the means of making a room more attractive; they are the best natural air purifiers which, in a very considerable manner, can raise the quality of the air we breathe in our homes and thus our health as well. Green friends, while they take in pollutants, also release oxygen, that regulate humidity, and improve psychological well, being, thus, they make living and working places healthier and more comfortable ones.

Scientific studies have confirmed their capacity to absorb toxic chemicals while, at the same time, real, life instances are telling the success of plants such as aloe vera, snake

plant, and peace lily. If they are given proper care and especially if the correct position is chosen, indoor plants can even turn the most cramped places into vibrant, sustainable, and health, promoting ones. The decision to have indoor plants is not merely an aesthetic one but rather a step towards cleaner air, better health, and a closer connection with nature in the midst of the modern indoor lifestyle.

REFERENCES:

Deng, L., & Deng, Q. (2018). The basic roles of indoor plants in human health and comfort. *Environmental Science and Pollution Research, 25(36),* 36087–36101.

Mendell, M. J., Mirer, A. G., Cheung, K., Tong, M., & Douwes, J. 2011. *Respiratory and allergic health effects of dampness, mold, and dampness-related agents: A review of the epidemiologic evidence.* Environmental Health Perspectives 119(6): 748–756.

Sharma, A. (2019). *Air purifying plants: A boon of nature.* International Journal of Trend in Scientific Research and Development (IJTSRD), 3(4).

Travaglini, A., Della Giustina, A., Di Menno di Bucchianico, A., De Franco, D., Brighetti, M. A., Gori, A., Barreto, M., Sfika, I., Pattini, S. and Tripodi, S. (2025). *The role of plants in improving indoor air quality. Italian Journal of Pediatric Allergy and Immunology, 39(2)* ,17–24.