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Review article

Applications of oxygen-enhancing plants used in the house to enhance the oxygen-rich environments for combating pollution challenges

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ABSTRACT

In modern day's urban cities areas are facing air pollutions. It has been seen that urban cities areas situated homes environment having also polluted air present age much high. The bad air quality of indoor home increases the air related diseases in persons such as asthma, sneezing, headache, heart related problems etc. The problems of indoor house air quality can manage by using oxygen rich indoor plants and cottons. It has been seen that the possibilities of oxygen-enhancing these indoor plants are buildup sustainable environment and reduce indoor air pollution and get better human health. In this review articles covered the name of oxygen richest plants, advantages and their applications.

Keywords: Oxygen-Enhancing Indoor Plants, Roles of reactive oxygen species, antioxidant enzymes, health, air quality assessment, biochemical oxygen demand.

INTRODUCTION

In modern-day urban areas, air pollution is a problem. It has been seen that urban city areas have homes environment with polluted air, with a much higher age. The bad air quality of indoor homes increases the air-related diseases in persons, such as asthma, sneezing, headache, heart-related problems, etc. In practically seen that the selection, placement, and care of these indoor plants in household having many advantages, such as incorporating oxygen-enhancing plants and buildup greenery environment in their home, which is good for eye and enhances pleasure [1, 2].

Indoor air pollution causes serious health problems in urban cities due to the presence of chemical free radical species in the air. These air quality reated major health issues in children below 5 years old. These oxygen-rich plants increase the oxygen levels and replace the fresh air by releasing oxygen itself, and increase the percentage of good quality air in the house. These indoor plants have the quality to absorb the CO2 from the house and add the freash air through the process of photosynthesis. It has been seen that some specific indoor plants successfully absorb the chemicals from the air, such as trichloroethylene, formaldehyde and benzene [3].

The names of that type of indoor oxygen-rich and chemical absorbing nature of plants are Snake Plant (*Sansevieria trifasciata*), it is one of the most common plants found all over the world and famous for absorbing dangerous chemicals that are present in the air at presence of low sunlight. Second, the name of plants is Peace Lily (*Spathiphyllum*), it is beautifull indoor plant and cabale to absorb contamination from the air and spreading beauty in the house. The third name of plants is Spider Plant (*Chlorophytum comosum*), producing the highest oxygen and maintaining the level of moisture in the house, it also enhances the indoor joyfulness [3].

Benefits of oxygen-enhancing indoor Plants

The advantages of oxygen-rich indoor plants are

Oxygen-rich indoor pants are increased the oxygen level in the house.

Oxygen-rich indoor pants are amplified oxygen levels and increased the feeling betterment, mental comfort, and the enhancement of consciousness, etc.

Oxygen-rich indoor pants are decreasing stress and increase the beauty in the house.

Oxygen-rich indoor plants are filtering the air, decreasing the levels of allergens, providing fresh air and decreasing the respiratory heart-related health issues [3-4].

Designing oxygen-rich indoor spaces

Many home decorators or interior designers are guided and advice to the right places for these oxygen-rich indoor plants in the house because these indoor oxygen-rich plants are able to mix the fresh oxygen, and are functioning properly, spreading beauty when they are present in the right place in the house. The right place of these plant arrangements are livelihood, bedrooms, and working rooms, where we need the maximum air to increase our working efficiency [3-4].

Caring for oxygen-enhancing plants

The right place for oxygen-rich plants provides light; in the presence of low light, these plants undergo the photosynthesis process and provide fresh air in the house [1, 4].

Roles of reactive oxygen species and antioxidant enzymes on formaldehyde removal from air by plants

The oxygen-rich indoor plants do not need to remove out pollutant from the air. These plants are absorbing higher chemical species that are reactive oxygen species. The reactive oxygen species are higher reactive substances that are produced from pollution, capable of absorbing the fresh air. When this fresh air quantity becomes low, our cells are deprived of oxygen. These crisis conditions of oxygen induced the cell's DNA to survive in this condition; the cell's DNA became mutated and induced cancer diseases. It has been seen that these oxygen-rich indoor plants reduce these higher quantities from the air and increase the antioxidant enzymatic quantity, which supports the cells to fight against the reactive oxygen species and provides protection to the body. Therefore, these oxygen-rich indoor plants are very necessary to take fresh air, green area, a sustainable, joyful environment and a healthy life [1, 4].

Indoor and outdoor air quality assessment of four wastewater treatment plants

In the second study, four wastewater treatment plants (WWTPs) had their indoor and outdoor air quality assessed over the course of a year (2001–2002). Grit removal, primary clarification, biological treatment, secondary clarification, sludge dewatering, and digesting were the six unit activities that were the focus of the measurement of hydrogen sulfide (H2S) and endotoxin levels. Incoming flow, temperature, humidity, and carbonaceous biochemical oxygen demand (CBOD) were also measured during the study. The findings showed endotoxin levels ranging from below 1 ppm. A statistical analysis showed that endotoxin was not significantly affected by humidity, but H2S concentrations were ($p < 0.05$), and H2S levels were ($p < 0.01$) in relation to incoming fluxes. The unit operations had varying quantities of H2S, with sludge dewatering and grit removal exhibiting the greatest values. On the other hand, there was little variation in endotoxin concentrations among units. To properly manage air quality in WWTPs, the study suggested putting in place specific control mechanisms for endotoxins and H2S [5].

Table 1: a list of a few indoor plants that raise oxygen levels [5-7].

Name	Biological Source	Family	Habitat
Aloe	Aloe vera Linn	Liliaceae	Plant
Areca palm	Dypsis lutescens	Areceae	Tree
Arrowhead vine	Syngonium podophyllum	Arecaea	Vine
Bamboo palm	Chamaedorea erumpens	Arecaceae	Plant
Boston fern	Nephrolepis exaltata	Nephrolepidaceae	Plant
Chinese evergreen	Aglonema comotatum	Areceae	Plant
Dwarf date palm	Phoenix roebelenii	Arecaceae	Plant
English ivy	Hedera helix	Araliaceae	Plant
Ficuc	Ficus macleilandii Aii	Moraceae	Plant
Gerbera	Gerbera jasmisonii	Asteraceae	Plant
Lady plum	Rhapis excelsa	Arecaceae	Plant
Lucky bamboo	Rhapis excelsa	Rhapis excelsa	Plant
Money plant	Crasula ovata	Areceae	Climber
Peace lily	Spathiphyllum wallisii	Araceae	plant
Peepal	Ficus religiosa	Moraceae	Tree
Rubber plant	Ficus elastica	Moraceae	Plant
Snake plant	Dracaena trifasciata	Asparagaceae Herb	Plant
Spider plant	Chlorophytum comosum	Asparagaceae	Plant

Challenges and future directions

In two Brazilian cities in the Legal Amazon region, we evaluated the levels of indoor atmospheric mercury (Hg) contamination in gold trade stores. As a sentinel species, we used Spanish moss (*Tillandsia usneoides*, Bromeliaceae) to measure Hg levels. Within plastic enclosures, these plants were exposed to regulated environments in order to track rates of mercury retention over time. To enable relative comparisons, they were then dispersed among several stores with different attributes. We calculated the amounts of mercury using cold vapour atomic absorption spectrophotometry. The findings showed that plants placed in busy stores with enough airflow had lower Hg levels. In contrast, older gold trade stores that had been closed for a long time had higher values. Furthermore, retailers with restoration before repurposing had lower mercury levels than those without restoration [8].

Direct tests showed that indoor mercury air concentrations were still below the World Health Organisation's recommended threshold for occupational exposure. Nevertheless, renovating former gold-trade establishments could improve workplace health. Allergists are generally recognised for having an extensive

understanding of the relationship between airborne pollutants and respiratory health, including both atopic and nonatopic conditions. As such, allergists are often sought out to provide their expert recommendations on how best to use air-cleaning equipment. This platform is an invaluable tool for allergists and other medical professionals who want to gain a deeper understanding of air filtration [6-8].

Future prospective

These oxygen-indoor plants are adding fresh oxygen. These plants are also known as "The Green Breath. The significance of these plants resolves this issue of air pollution and builds the connection between human health and productivity, and air quality improves. In many modern novels, technology has come to the monitoring and purification of the air. These novel technological systems have sensors that measure oxygen levels and air contaminants simultaneously. Now, current demands to fight air pollution problems and resolve this problem permanently, under these issues, oxygen indoor plants, green plantation, reduce the quantity of vehicles, increase the sustainable industry and collaborate with modern technologies for monitoring to maintain the environmental air pure and fresh [7-12].

CONCLUSION

Fresh air is a legal right of every person. This is necessary for living and health. Oxygen-rich indoor plants and green plantation is sustainable solution approach to civilising indoor air quality issues and enhancing people's quality of life. Now, current demands for combating the pollution of the air are sustainable practices. This is not the responsibility of any government alone; every people, communities need to play a role and maintain the relation of human and the environment both of relationship very important for maintaining the air quality always. This is an alarm of future; if people are not aware in present, then survival conditions become worse.

Conflicts of Interest: No conflict of interest

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