

# Indoor plants can reduce formaldehyde levels

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The toxic gas formaldehyde is contained in building materials including carpeting, curtains, plywood, and adhesives. As it is emitted from these sources, it deteriorates the air quality, which can lead to "multiple chemical sensitivity" and "sick building syndrome", medical conditions with symptoms such as allergies, asthma, and headaches. The prevalence of formaldehyde and other volatile organic compounds (VOC) is greater in new construction.

Researchers are studying the ability of plants to reduce formaldehyde levels in the air. A study led by Kwang Jin Kim of Korea's National Horticultural Research Institute compared the absorption rate of two types of houseplants. The results of the experiment on Weeping Fig (*Ficus benjamina*) and *Fatsia japonica*, an evergreen shrub, were published in the *Journal of American Society for Horticultural Science*.

During the study, equal amounts of formaldehyde were pumped into containers holding each type of plant in three configurations: whole, roots-only with the leafy portion cut off, and aerial-only, with the below-ground portion sealed off, leaving the stem and leaves exposed.

The results showed the combined total of aerial-only and roots-only portions was similar to the amount removed by whole plants. Complete plants removed approximately 80% of the formaldehyde within 4 hours. Control chambers pumped with the same amount of formaldehyde, but not containing any plant parts, decreased by 7.3% during the day and 6.9% overnight within 5 hours. As the length of exposure increased, the amount of absorption decreased, which appeared to be due to the

reduced concentration of the gas.

Aerial parts of reduced more formaldehyde during the day than at night. This suggests the role played by stomata, tiny slits on the surface of the leaves that are only open during the day. The portion of formaldehyde that was reduced during the night was most likely absorbed through a thin film on the plant's surface known as the cuticle. Root zones of ficus removed similar amounts between night and day. However, japonica root zones removed more formaldehyde at night.

Researchers consider microorganisms living among the soil and root system to be a major contributor to the reduction. Japonica were planted in larger pots than the ficus, which may account for the lower night reduction rate of the latter. More knowledge of the contributions of microorganisms is cited by the study to be important in further understanding the air purifying potential of plants.

More information: The complete study and abstract are available on the ASHS *J. Amer. Soc. Hort. Sci.* electronic journal web site:  
[journal.ashspublications.org/c ... t/abstract/133/4/521](http://journal.ashspublications.org/c...t/abstract/133/4/521)

Source: American Society for Horticultural Science

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