Phytoncides

Potential health benefits and current research

Phytoncides are plant-produced defensive compounds. Some are released into the air as aromatic substances, including terpenes such as alpha-pinene. Researchers are studying how exposure to selected compounds may influence relaxation, sleep, immune activity and inflammatory responses.

Potential health benefits

Relaxation and comfort. Small human studies report changes consistent with physiological relaxation. A 13-person experiment found that brief alpha-pinene exposure increased a measure associated with parasympathetic activity, slightly reduced heart rate and improved reported comfort. [1]

Cardiovascular and autonomic responses. A 26-person laboratory study found that inhaled cedrol reduced heart rate, blood pressure and respiratory rate during exposure. These short-term findings do not establish treatment of high blood pressure or long-term cardiovascular protection. [2]

Sleep support. In an 11-person study, cedrol exposure shortened the time needed to fall asleep and increased sleep time. Exposure lasted four hours around bedtime. Larger studies are needed to establish reliable sleep benefits. [3]

Immune activity. A study of 12 men exposed to a plant-derived essential oil over three hotel nights reported increased natural killer cell activity and related immune markers. Changes in these markers do not establish fewer infections or cancer prevention. [4]

Inflammatory responses. A randomized crossover study of forest-air terpenes found lower levels of the inflammatory marker IL-6 during exposure. Most measured outcomes, including the primary heart-rate-variability outcome, did not differ significantly. [5]

Antimicrobial activity. Selected compounds show antibacterial effects in laboratory testing. This does not demonstrate that ambient phytoncide exposure disinfects indoor air or prevents illness. [6]

Alaskan yellow cedar

Our selected wood and its natural defensive compounds

We will build our sauna using Alaskan yellow cedar (Callitropsis nootkatensis), also known as Alaska cypress. Its heartwood contains naturally occurring defensive compounds that are relevant to the study of phytoncides and the durability of the wood. [7,8]

Documented compounds. Research on distilled heartwood essential oil identifies carvacrol, nootkatone, nootkatin, valencene, methyl carvacrol and nootkatol among its constituents. These findings describe compounds recovered from the wood; they are not measurements of what a sauna user inhales. [7]

Natural biological activity. Laboratory studies have found antimicrobial activity against a plant pathogen in yellow-cedar heartwood extracts and selected compounds, including nootkatin and carvacrol. These results help explain interest in the wood's natural defenses. They do not establish that a sauna disinfects its air or surfaces. [8]

Phytoncide content in the finished sauna. No chemical assay or airborne concentration measurements are available for our finished sauna. We therefore identify the compounds documented in the species without assigning a percentage, inhaled dose or therapeutic effect to our lumber. The human studies on the first page concern other preparations and selected compounds; their findings have not been demonstrated for Alaskan yellow cedar sauna exposure.

Where budget saunas can fall short

A low price stops being a bargain when the design sacrifices the fundamentals. Inadequate heat retention, a heater mismatched to the room and glazing, poor ventilation, and benches placed too low can leave users with slow warm-up, stale air and uneven heat. A wood scent proves neither construction quality nor a useful phytoncide dose. Judge a sauna by its materials, heater sizing, airflow and seating layout, not a staged photograph or a list of wellness claims. [9]

Research references

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3. Yamamoto Y et al. The effects of cedrol on sleep. Japanese Journal of Physiological Anthropology. 2003;8:69-73. Read study.

4. Li Q et al. Effect of phytoncide from trees on human natural killer cell function. Int J Immunopathol Pharmacol. 2009;22:951-959. Read study.

5. Levy CM et al. Forest terpenes and stress: Examining the associations of filtered vs. non-filtered air in a real-life natural environment. Environmental Research. 2025;276:121482. Read study.

6. Evaluation of the antibacterial potential of liquid and vapor phase phenolic essential oil compounds against oral microorganisms. 2016. Read study.

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9. Harvia. Sauna ventilation guidance and heater installation instructions. Read study.