

Defence of a Doctoral Thesis

Some approaches to Eco-Friendly Products from Natural Matrices

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Thesis for Doctoral Degree in Chemistry

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Abstract

Since the onset of the industrial and chemical revolution, humans have caused immense damages to our surrounding flora and fauna on a global scale. Effective methods for wood protection measures proved to be toxic; fossil fuels contribute to global warming and pesticides traces can be detected in air, water and soil. It has never been clearer that efforts to find non-toxic and eco-friendly products while simultaneously providing the necessary incentives for sustainable worldwide development are needed. Instead of relying on dead matter such as fossil fuels, renewable resources play a critical role in this shift towards circular economies.

Wood has a long history as a renewable resource in high demand, but its susceptibility to attack by wood-decaying fungi require most European wood to be protected for outdoor use. We showed that fractionating turpentine, a pulp and paper mill by-product, increased antifungal efficacy by concentrating bioactive oxygenated sesquiterpenes and diterpenes. Based on this result, recombinations of the fractions were shown to exhibit synergistic effects that enable a more efficient product utilisation. In addition, this approach enabled identifications of previously unknown *Picea abies* turpentine constituents present in low levels.

Read the whole abstract on miun.se



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