

Acorus calamus L. and *Parthenium hysterophorus* L. plant extracts potential as wood preservative against *Gloeophyllum striatum* decay fungus

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Received 27 March 2025; revised 17 April 2025

This study aimed to assess the antifungal resistance of *Acorus calamus* and *Parthenium hysterophorus* plant extracts. Wood samples were treated with plant extracts at different concentrations: 0.25, 0.50, 1.00, 1.50, and 2%. For a period of 12 weeks, treated wood samples (*Pinus roxburghii*) were tested for resistance to the brown rot decay fungus *Gloeophyllum striatum*. Wood samples treated with petroleum ether extract of *A. calamus* at 2% concentration showed the lowest mass losses (10.75%), and wood samples treated with the methanolic extract of *P. hysterophorus* showed the lowest mass losses (13.61%) at 2% concentration. Plant extracts of *A. calamus* and *P. hysterophorus* showed the highest antifungal activity and percentage fungus growth inhibition at 2.0% concentration. Maximum colonization was noticed for untreated wood samples, and the lowest was noticed at 2.0%. Antifungal properties of *A. calamus* and *P. hysterophorus* extracts were confirmed by a decay index test. After the decay test, chemical properties of wood samples were evaluated to confirm the efficiency of plant extracts, and it was observed that minimum losses of soluble extractives, lignin, and holocellulose of treated wood samples occurred at 2.0% concentration of extract. As per the findings of the present investigation, selected botanicals can be used for wood preservation and reducing the mass losses.

Keywords: Antifungal index, Bio-preservation, Brown rot: fungus, Chemical properties, Decay test, *Pinus roxburghii*