

Determination of Anti-Fungal Activity of Cedrus deodara Oil against Oligoporus placentus, Trametes versicolor and Xylaria acuminata on Populus deltoids

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Abstract : Populus deltoides is a hardwood used predominantly for the manufacturing of plywood, matchsticks, and paper in India and hence has a higher economical significance. Wood-decaying fungi cause serious damage to Populus deltoides products, as the wood itself is perishable and vulnerable to decaying agents, decreasing their aesthetic value which in return results in significant monetary loss for the wood industries concerned. The aim of the study was to determine the antifungal activity of Cedrus deodara oil against three primary wood-decaying fungi namely white-rot fungi (Trametes versicolor), brown-rot fungi (Oligoporus placentus) and soft-rot fungi (Xylaria acuminata) on Populus deltoides samples under optimum laboratory conditions. The susceptibility of Populus deltoides samples on the fungal attack and the ability of deodar oil to control colonization of the wood rotting fungi on the samples were assessed. Three concentrations of deodar oil were considered for the study as treating solutions, i.e., 4%, 5%, and 6%. The Populus deltoides samples were treated with treating solutions, and the ability of the same to prevent a fungal attack on the samples were assessed using accelerated test in the laboratory at Biochemical Oxygen Demand incubator at temperature ($25 \pm 2^\circ\text{C}$) and relative humidity $70 \pm 4\%$. Efficacy test and statistical analysis of deodar oil against Trametes versicolor, Oligoporus placentus, and Xylariaacuminataon P. deltoides samples exhibited light, minor and negligible mycelia growth at 4 %, 5% and 6% concentrations of deodar oil, respectively. Whereas, moderate to heavy attack was observed on the surface of the control samples. Statistical analysis further established that the treatments were statistically significant and had significantly inhibited fungal growth of all the three fungus spp by almost 3 to 5 times.

Keywords : populus deltoides, Trametes versicolor, Oligoporus placentus, Xylaria acuminata, Deodar oil, treatment

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