

DETERMINATION OF ANTOGONISTIC COMPOUNDS TO RUBBER WHITE ROOT DISEASE AMONG DIFFERENT BOTANICALS

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Antagonistic substances obtained from plants can be a potential tool to control some of the difficult to control plant diseases. Controlling the white root disease (WRD) in rubber (*Hevea brasiliensis*) is such, where alternatives for the chemical control are demanded. A laboratory experiment was carried out in the Rubber Research Institute, Agalawatte to identify the antagonistic effect of some locally available plant spp. on *Rigidoporus microporus* (Fr.) Overeem, which causes the white root disease of rubber. Four potential antagonistic plant species; (1) Galangal (*Alpinia galanga* L.), (2) Wild ginger (*Curcuma xanthorrhiza*), (3) Ginger (*Zingiber officinale*) and (4) Garlic (*Allium sativum*), which had shown proven results during previous studies were tested, nonetheless with a different extraction method (Diethyl ether) instead of distilled water as the solvent. Powdered form of selected four plant species and three concentrations (V/V% = 5%, 10%, 25%) of Diethyl ether extracts were tested for their inhibitory effects on WRD in a laboratory study with four replicates. Two additional controls were used with only sterilized distilled water and sole Di ethyl ether. The presence of the white root-inhibiting compounds in the final extract was tested by Poison Food Technique, Soil Fungicide Screening Test and colony growth in a liquid medium. In each test, the percent inhibition of growth in each of the treatment with respect to the control was calculated using a standard equation. Among the four species, Galangal, Wild ginger and Ginger showed significant ($p < 0.05$) inhibitory effects in all the three tests for every concentration. Increasing the concentration increased the inhibition in all species. The percentage inhibition was higher in Wild ginger than others. Garlic did not show a significant inhibitory effect at any test. Under the liquid medium, inhibitory effect of Galangal was significantly higher than that of the other two species. This study confirms the presence of effective compound/(s) in aforesaid species and illustrates the potential of using Diethyl ether for the extraction of effective botanical compound/(s) against white root disease.

Keywords: Antagonistic compounds, Di ethyl ether, Growth inhibition, Rubber, White root disease