



Bioactivity Studies of some
Sri Lankan Fungi and Isolation of
Integric Acid from the Fungus
Xylaria hypoxylon

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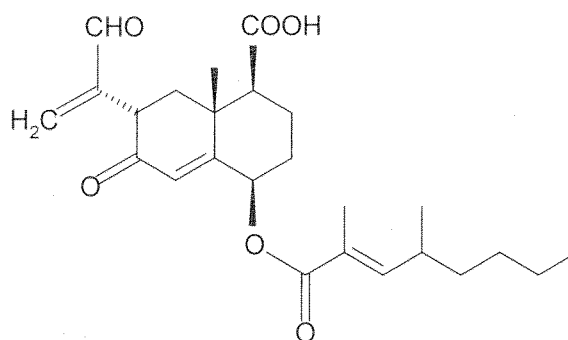
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Abstract

Fungi are an important source of biologically active secondary metabolites with varied chemical structures. A number of clinically useful pharmaceuticals have originated from fungi. Due to their pharmaceutical potential, secondary metabolites of fungi have been studied for more than 70 years, and continue to be an active area of research. However, fungal species from Sri Lanka, so far, have received only scant attention from the natural products chemists and the biomedical potential of Sri Lankan fungi remains largely unknown and unexploited. In a programme developed to evaluate the antimicrobial activity of Sri Lankan fungi, crude extracts of sixteen fungal species collected from the Western Province (Gampaha District) were screened against eight microbial species (four bacteria species: *Escherichia coli*, *Klebsiella aerogenes*, *Staphylococcus aureus*, and *Bacillus* sp. and four fungal species: *Rhizoctonia solani*, *Colletotrichum gloeosporioides*, *Corynespora cassicola*, *Curvularia* sp.). Of the sixteen crude extracts tested all except one (that of *Xylaria hypoxylon*) showed antibacterial activity against all four bacteria tested. *X. hypoxylon* showed selective activity against *K. aerogenes*. Antifungal activity was shown only by two fungal species (an *Auricularia auriculata* and a *Cantharellus* sp.). Based on the bio assay results and TLC studies, two fungal species (*X. hypoxylon* and a *Ganoderma* sp.) were selected for further investigations.

Bioassay guided fractionation of the *X. hypoxylon* extract on silica gel column chromatography led to the isolation of eremophilane sesquiterpenoid integric acid. The structure elucidation of integric acid was done mainly by extensive analysis of 1-D and 2-D NMR data.



Integric acid



Integric acid was previously been isolated from an unidentified *Xylaria* species as an inhibitor of HIV-1 integrase enzyme. However, this is the first time that the antibacterial activity of this compound is reported. In the agar disc diffusion assay against *K. aerogenes*, integric acid gave an inhibition zone of 3 mm at a concentration of 50 µg per disk.

Bioassay guided fractionations were also done for the crude extract of the *Ganoderma* sp. ¹H-NMR spectroscopic investigations of the fractions obtained from silica gel chromatography did not point to any interesting metabolites being present in the fractions. Therefore, further studies were not carried out.