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Structurally diverse secondary metabolites from an endophytic fungi from *Solanum insanum*

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This study focused the chemistry and bioactivity of secondary metabolites produced by endophytic fungi present in fruits of Solanum insanum L. The endophytic fungus Aspergillus fumigatus was isolated from the fruits of Solanum insanum by following standard methods. A. fumigatus was mass cultivated in 1L- Erlenmeyer flasks containing potato dextrose broth medium (400 mL) and incubated at room temperature for 4 weeks with periodical shaking. Then culture was filtered and the filtrate and mycelium were extracted with ethyl acetate (EtOAc). Both EtOAc extracts showed closely similar TLC pattern. Hence, they were combined and screened for bioactivity against Cladosporium cladosporioides using TLC bioautography method, DPPH radical scavenging activity, brine shrimp lethality, phytotoxicity against lettuce seed germination and α-amylase inhibitory activity. The EtOAc extract showed good activity in the antifungal, brine shrimp lethality and antioxidant assays. Chromatographic separation of the EtOAc extract over silica gel, Sephadex LH-20 and preparative thin layer chromatography afforded six structurally diverse compounds, pseurotin A (1), fumigaclavine C (2), monomethylsulochrin (3), tripacidin (4), fumiquinazoline C (5) and guignasulfide (6), which were identified by detailed spectral analysis and comparison with reported data. Compound 2 and 3 showed brine shrimp lethality (LC₅₀ = 53 and 26 ppm, respectively). High antifungal activity of compound 2 was observed. This is the first report on the isolation of the endophytic fungus A. fumigatus from S. insanum. The unique sulfide 6 has been previously reported only from an endophytic fungus Guignardia sp.

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Keywords: Aspergillus fumigatu; endophytes; guignasulfide; Solanum insanum

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