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The Institution has several collaborations/linkages for Faculty exchange, Student exchange, Internship, Field trip, On-the- job training, research etc. during the year

Research Collaboration

20. Dr. Deepanwita Deka, Assistant Professor and Head, Department of Botany, S. B. Deorah College, has Research Collaboration with Dr. Dhruva Kumar Jha, Professor, Dept of Botany, Gauhati University.

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Endophytic fungi associated with *Brucea mollis* Wall. ex Kurz.: a hidden source of antimicrobial and antioxidant metabolites

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ABSTRACT

Geosmithia pallida (KU693285) was isolated from *Brucea mollis* an endangered medicinal plant of North-East India. The secondary metabolites, produced by the endophytic fungi, extracted by ethyl acetate were screened for antimicrobial activity. *G. pallida* extract displayed the highest antimicrobial activity against *Candida albicans* with a minimum inhibitory concentration of $80.5 \pm 1.25 \mu\text{g/mL}$. *G. pallida* also showed the highest antioxidant activity which differed insignificantly from *Penicillium* sp. ($P > 0.05$). The *G. pallida* extract also exhibited the highest cellulase activity and also amylase and protease activities. The cytotoxicity assay of the ethyl acetate extract of this endophyte showed negligible effect ($1.93 \pm 0.42\%$) on chromosomal aberration as compared to the control (cyclophosphamide monohydrate) ($7.20 \pm 1.51\%$). The internal transcribed spacer rDNA sequence of *G. pallida* was submitted to the NCBI (Accession number KU693285) from India for the first time. The FT-IR spectrophotometry of the bioactive metabolite of *G. pallida* showed the presence of different functional groups such as alcohol, carboxylic acids, amines, aromatics, alkyl halides, aliphatic amines and alkynes. The GC-MS analysis revealed the presence of acetic acid, 2-phenylethyl ester; tetracosane; cyclooctasiloxane hexadecamethyl; cyclononasiloxane octadecamethyl; octadecanoic acid; phthalic acid, di(2-propylpentyl) ester and nonadecane, 2,6,10,14,18-pentamethyl as the major compounds in the metabolite. The findings of the present work indicated *G. pallida* as a potential source of important biomolecules without mammalian cytotoxic effects, which can be utilized for pharmaceutical purposes.

ARTICLE HISTORY

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Introduction

Endophytes colonize healthy plants' inter-and/or intracellular spaces without causing ostensible symptoms (Singh & Dubey, 2015). Endophytic fungi produce bioactive compounds that have applications in therapeutics, 40