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Anticancer potential of the endophytes of *Datura inoxia* Mill

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ABSTRACT

Cancer kills many people in the world and almost six million new cases of it are reported yearly. Plants based compounds have played an important role in the development of several medically important anticancer compounds like camptothecin, podophyllotoxin, taxol, vinblastine and vincristine. However, Plants produce these compounds at low level during a particular stage of development or particular season, are slow growing and take lot of time to attain a suitable growth for accumulation and extraction of products. Considering the limitations of the plants in the production of metabolites, microbes are readily available, inexhaustible and ultimate source of novel bioactive secondary metabolites. Endophytes that resides in the plants without causing clear symptoms of disease are a rich source of anticancer, antimicrobial and antioxidant compounds. Endophytes are attractive source of tremendous chemical diversity and new molecules. Endophytic fungi is already a known source of many medically important compounds like cyclosporine, lovastatin and penicillin, taxol and camptothecin. Number of compounds have been reported from endophytes that were originally reported from the host plants in which endophytes resides. In this study, I have isolated and identified 53 endophytes from *Datura inoxia* on the basis of morphology, Internal Transcribed Spacer (ITS) sequence amplification and Basic Local Alignment Search Tool (BLAST) analysis. Thereafter, cytotoxic studies were carried out against HCT-116 (Colon cancer) and Mia-pa-ca (Pancreatic cancer) at 100 µg/ml by using MTT assay. Paclitaxel was used as a positive control. Extracts of the twenty out of the fifty-three fungal endophytes were having cytotoxic activity ≥80% at 100 µg/ml. DIE-38 and DIE-48 were found to have a very excellent anticancer activity. DIE-38 showed 100% inhibition of Growth for the HCT-116 (Colon cancer) and Mia-pa-ca (Pancreatic cancer) at 100 µg/ml. Moreover, DIE-48 displayed 100% inhibition of Growth (IG) for the HCT-116 (Colon cancer) and 99% IG for Mia-pa-ca (Pancreatic cancer) at 100 µg/ml concentration.