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Evaluation of flavonoid catechin from an endophytic fungus Curvularia australiensis FC2AP for treating cervical cancer in female Sprague Dawley rats

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Introduction: There is an increasing emergence of bio products from microbes such as metabolites in the fields of medical and pharmaceuticals. Most of the people in the current world are affected with cancer; especially, women are in major risk of cervical cancer. In this due, this research has been focused to obtain antioxidants or potential metabolites to treat against the cervical cancer. Majorly among the microbes, endophytic fungi have been considered as prospective one which produces novel metabolites substantially. With this in view, the current investigation has been designed for the activity of anti-cancer drug flavonoid catechin in Sprague Dawley rats.

Materials & Methods: The secondary metabolites have been explored from *Curvularia australiensis* FC2AP (KR363626) isolated from *Aegle marmelos* by statistically optimized fermentation conditions, purified (chromatographic techniques) and characterized (HRLC- MS/MS, FT-IR and NMR: ^{1}C & ^{13}C) as a potential secondary metabolite as flavonoid catechin (MM4). The potential product was taken to assess the acute toxicity in albino mice, anti- inflammatory property in Wistar rats and anti-cancer evaluation in Sprague Dawley rats by following the CPCSEA standards. All animal procedures were performed in accordance with Institutional Animal Ethic Committee (IAEC) guidelines, after getting the approval from the Committee for Control and Supervision of Experiment on Animals (CPCSEA) at KMCH college of Pharmacy, Coimbatore, Tamil Nadu, India.

Results: Through this study, we found that the effective dosage for the survival is 1.25 g/kg (Gp V) and the lethal dosage as 1.5 g/Kg (Gp IV) in acute toxicity assessment. Above 1.5 g/Kg of the purified compound MM4 produced hyper sensitivity, righting reflex, tremors and convulsions leading to the death of the animal. The anti-inflammatory analysis resulted with the percentage of inhibition was found to be 41.09% (300 mg/kg) which was found to be twice than the standard drug indomethacin (20.17%) used whereas, the Group IV showed only 12.9% inhibition. This proved that the compound flavonoid catechin was efficient against inflammatory responses. The cervical cancer was induced in female rats using DEN (N-Nitrosodiethylamine) and the treatment was continued with flavonoid catechin for 180 days. After the stipulated days the rats were taken for hematological, biochemical and histopathological studies and the results indicated that the compound MM4 has the ability to reduce the tumor by not affecting the nearby non- tumor cells. Further, the investigation will be carried in higher animals.

Conclusion: This study explores the biomolecule flavonoid catechin from an endophytic fungus to explore the anticancer potentiality through animal models. This is the first report of flavonoid catechin production from an endophytic fungus *C. australiensis* has the anticancer potentiality. This metabolite can be stated as anticancer drug.

Biography

Vellingiri Manon Mani has started up her research on anti-cancer with bioactive microbial metabolites in a passionate aim to achieve the grail for human wellbeing. Her experience gained on research and teaching has been explored to make the students to get higher knowledge on biotechnological fields. The research gained by her had a great impact on treating the cervical cancer and moreover the drugs obtained by her research have been implied on the medicinal fields. She has developed a new technique on the extraction of microbial metabolites and its application as a drug in medicinal fields which is under filed in IPR. The technical approach developed by her will have highest reach on the research field in future biotechnological field.

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