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NON-CYTOTOXIC, NON-GENOTOXIC AND NON-MUTAGENIC PHENOLIC EXTRACT OF CYANOBACTERIA *OSCILLATORIA* SP. SI-SA WITH CHEMOTHERAPEUTIC PROPERTIES AGAINST BREAST CANCER CELL-LINES

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The 70% methanolic extract of Cyanobacterial strain; *Oscillatoria* sp. SI-SA containing phenolic compounds; Tannic acid, Orcinol, Pholoroglucinol, Salicylic acid, Acetyl Salicylic acid and Protocatechuic acid, was evaluated for its non-cytotoxic, non-genotoxic and non-mutagenic activities along with its anticancer potential against two (MCF-7 and MDA-MB-231) breast cancer cell-lines in order to study their chemotherapeutic effects without causing damage to normal cells. The strain was isolated from Kallar Kahar Salt Lake, Pakistan. It was identified by polyphasic approach including both morphological and molecular methodologies. The extract showed very low cytotoxicity against normal lymphocytes only at highest concentration of 1000 µg/ml with high IC50 value of 1088 µg/ml. Comet assay also showed low genotoxicity only at highest non-cytotoxic concentration of 1000 µg/ml with 15.37% DNA damage. Ames fluctuation *Salmonella typhimurium* test against four mutant strains TA100, TA98, TA97a and TA102 also showed significant non-mutagenic effects of the extract with and without metabolic activation. Finally, the extract was evaluated for its anticancer potential which showed significant anticancer activities in dose-dependent manner against MCF-7 and MDA-MB-231 cell-lines giving low IC50 values of 61.75 and 82.75 µg/ml respectively. It was further observed that after three days of treatment with the extract, 19.29 and 26.81 % cell viability remained of MCF-7 and MDA-MB-231 cell-lines respectively at highest concentration of 250 µg/ml. The phenolic extract of Oscillatoria sp. SI-SA indeed showed promising anticancer activities without causing severe damage to normal cells and thus could be used as an alternative bioresource for anticancer therapeutics against breast cancers.

Biography

Saadia Ijaz is a Young Researcher. She has just completed her PhD in April, 2017 from The University of the Punjab, Lahore Pakistan. Currently she is working as Assistant Professor in The Women University, Multan Pakistan. Her main research interest is in the role of Cyanobacteria in biotechnology including but not limited to nutraceutical, pharmaceutical, biofuel production, environmental biosensors, cosmetics, biomedical research applications and harmful aspects of cyanobacteria. She has published 2 research papers in impact factor journals and also won Rs. 0.5 million Start-up research grant from Higher Education Comission of Pakistan for her work with anticancer carotenoids from Cyanobacteria.

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