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Name of the Department/Centre : Department of Biosciences
Topic of Research : Extraction, detection and identification of flavonoids from Cyanobacteria

Finding

Flavonoids are polyphenolic plant secondary metabolites that have various biological activities. Cyanobacteria are photosynthetic microorganisms that produce wide array of secondary metabolites. In the present study 30 cyanobacterial strains *Spirulina* CPCC- 695 showed maximum content of flavonoid. The flavonoids exhibited dose dependent antioxidant, anti-diabetic and anti-inflammatory activity. They showed lowest MIC value *against Bacillus cereus*. During confocal study, increase in fluorescence and cellular damage was seen highest in gram positive bacteria. Time kill assay was also performed for all the microbial strains. Maximum biofilm degradation, secretion of EPS, ROS generation and protein release was also maximum in *B. cereus*. Flavonoids also proved their biocompatibility potential. During anti-cancer study, flavonoid exhibited higher cytotoxicity in H1299 cancer cell line. During purification of PAL enzyme, partially purified PAL exhibited a molecular weight of 66 kDa and at 30 °C and pH 8.0 maximum activity of PAL was observed. For substrate optimization L-phenylalanine was used. Kinetic properties of PAL extracted from *Spirulina* CPCC-695 followed a hyperbolic Michaelis–Menten curve. Our study provides an insight that flavonoids extracted from *Spirulina* CPCC-695 showed prominent antioxidant, antibacterial, antifungal, anti-inflammatory, anti-diabetic, anticancer potential with biocompatible nature and thus can be used in biomedical applications.