

Antioxidative and Radioprotective properties of glycosylated flavonoid xanthorhamnin from radio-resistant bacterium Bacillus indicus strain TMC-6

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Abstract

A radio-resistant bacterium labelled as strain TMC-6 was isolated from Thal desert, Pakistan and identified through 16S rRNA gene sequencing as *Bacillus indicus* strain TMC-6 (MN721293). The isolate was found to be resistant to UV radiation dose of 6.780×10^3 J/m² and showed 50% survivability to mitomycin C (6µg/ml) and H₂O₂ (30mM). The bacterium showed yellowish orange coloration when grown on tryptone yeast glucose (TGY) medium. The cellular metabolite was extracted in methanol and purified through solid phase extraction with C18 column cartridge. The compound was characterized through UV/Visible spectrophotometry, Fourier Transform Infra-Red (FT-IR) spectroscopy and Liquid Chromatography Mass Spectrometry (LC-MS). The LC-MS analysis of the compound revealed a molar mass of 769 [m/z]-that matched the chemical formula C₃₄H₄₂O₂₀ and identified as a glycosylated flavonoid xanthorhamnin. The compound showed significant antioxidant (77.05%) and metal chelation (79.8%) activities. Xanthorhamnin showed promising oxidative damage inhibitory actions in bovine serum albumin (65.32%) and mice liver lipids (71.61%) and prevented DNA strand breaks from oxidative stress. Cytotoxicity in brine shrimp larvae was observed when compared with mitomycin C indicating its effect toward cancerous cells. These findings concluded that xanthorhamnin from radio-resistant *Bacillus indicus* strain TMC-6 has high antioxidant, radioprotective and antitumor properties against UV-mediated oxidative damages.

Biography:

Ayesha Ahmed Chaudhri has completed her master's in philosophy (M.Phil.) in microbiology at the age of 24 years in 2019 from Quaid-i-Azam University under the supervision of Associate professor Dr. Aamer Ali Shah at the department of Microbiology at Quaid-i-Azam University.

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