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Isolation and Characterization of Extracellular L-Asparaginase Producing *Bacillus* Species from *Morinda citrifolia* Phyllosphere

Research Article

Meghana NK, Navya MN, Harsha K and R. Aswati Nair*

Department of Biochemistry and Molecular Biology, Central University of Kerala (CUK), India

***Corresponding author:** Nair AR, Department of Biochemistry and Molecular Biology, Central University of Kerala (CUK), Kasaragod, Kerala- 671 320, India, Telephone: +91 467 2309343, Fax Number: +91 467 2232402; E-mail: aswati@cukerala.ac.in

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Abstract

Bacterial isolates were identified from phyllosphere of the medicinal plant, *Morinda Citrifolia*, a source for the anti-neoplastic L-Asparaginase used as a chemotherapy drug in lymphoblastic leukaemia. Amongst the isolates with significant anti-oxidant activities, seven were identified as L-Asparaginase producers. Quantitative estimation of L-Asparaginase activity by the seven phyllospheric isolates revealed maximal specific activity for isolates designated, *McTTL3* (2.98 U. μg^{-1} protein) and *McTUF8* (2.94 U.μg^{-1} protein). Molecular characterization of the selected phyllospheric isolates using 16S rDNA identified isolate *McTUF8* to *Bacillus subtilis* strain BcX1 (97.19% identity) and *McTTL3* to *Bacillus amyloliquefaciens* subsp. *plantarum* strain Hk3-1 X030 (99.26% identity). Further precipitation of L-Asparaginase from *McTTL3* using $[(NH_4)_2SO_4]$ (20- 80% w/v) yielded 100-fold increase in specific activity (331.55 U.μg^{-1} protein) at 20% saturation. The phyllospheric isolate designated *McTTL3* identified in present study thus constitutes a potent source for commercial production of the anti-neoplastic L-Asparaginase.

Keywords: *Morinda citrifolia*; L-Asparaginase; Phyllosphere; *Bacillus*