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The OSMAC effect on the production of secondary metabolites by the endolichenic fungus, *Curvularia trifolii*

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Fungi are a very diverse group of organisms that can produce a vast number of pharmacologically active secondary metabolites. Fungi also have the ability to produce numerous secondary metabolites from a single strain. In this study, the One Strain Many Compounds (OSMAC) approach was used to observe the biosynthetic potential of endolichenic fungus, Curvularia trifolii isolated from Usnea sp. in Sri Lanka. Under the OSMAC approach, the variation of the metabolic profile of the fungus when cultured in different culture media was investigated. Culturing in Potato Dextrose Broth (PDB) medium resulted in the elution of two peaks in High- Performance Liquid Chromatographic (HPLC) study while four major peaks resulted from Yeast Potato Dextrose Broth (YPDB) medium cultures. Five major peaks eluted from Oatmeal extract broth (OEB) medium cultures and two major peaks from Rice-Yeast Broth (RYB) medium cultures. The bioactivities of crude extracts from each culture media were investigated using antioxidant, antibacterial, and anti-inflammatory assays and analyzed using Graph Pad Prism software. The crude extract of OEB showed a comparatively high antioxidant activity with ABTS radical scavenging assay with an IC_{50} value of 0.501 ± 0.036 mg mL^{-1} while the crude extract of YPDB showed a comparatively high anti-inflammatory activity with human red blood cell stabilization assay with an IC_{50} value of 0.151 ± 0.026 mg mL^{-1}. The crude extract of RYB showed the highest antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, and *Bacillus subtilis* bacterial strains upon analysis using agar-well diffusion method. The study confirms the variation of metabolic products and associated bioactivities of *Curvularia trifolii* with the variation of its culture medium.

Keywords: Endolichenic fungus, OSMAC, *Curvularia sp.*, Bioactivities

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