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A new butyrolactone from an endophytic fungal strain isolated from marine red alga *Laurencia ceylanica*

M H Haroon[1,2,3*], S R Premaratne[1], M I Choudhry[3] and H R W Dharmaratne[1]
[1]*Natural Products Programme, Institute of Fundamental Studies, Kandy*
[2]*Faculty of Applied Sciences, South Eastern University of Sri Lanka, Oluvil*
[3]*H E J Research Institute of Chemistry, University of Karachi, Pakistan*

As a continuation of our work on endophytic fungi from seaweeds, a fungal strain isolated from red alga, *Laurencia ceylanica,* was cultivated in bulk and extracted with EtOAc to afford a gummy extract. Above extract was subjected to column chromatography followed by PTLC to give a new compound (LC-1) along with 3 known compounds butyrolactone-1 (LC-2), 6-hydroxy mellin (LC-3) and (3R, 4R)-6, 7- dimethoxy -4-hydroxymellin (LC-4).[13]C NMR and DEPT spectra of LC-1 showed 20 carbon signals including one aldehyde, one methoxy, and ten quaternary carbons. Its [1]H NMR spectrum showed signals due to seven aromatic protons, one methylene group, one aldehyde proton and one methoxy group. The positive CI MS of LC-1 showed its molecular ion peaks at m/z 385.0 corresponding to $[M + H]^+$ and the molecular formula was deduced to be $C_{20}H_{16}O_8$. Comparison of the NMR data of LC-1 with butyrolactone-1 (LC-2) isolated from the same extract indicated them to be compounds with similar skeletons. Further analysis, indicated that the isoprenyl group in butyrolactone-1 is replaced by an aldehyde group in LC-1. Hence, the structure of LC-1 was confirmed a new natural product 3-hydroxy-4-(4-hydroxyphenyl)-5-methoxycarbonyl-5-(4-hydroxy-3-formylbenzyl)-2,5-dihydro-2-furanone. Isolates LC-1 and LC-2 showed significant antioxidant activities having IC_{50} (μM) 88.2±0.30 and 132±3.77 respectively, when subjected to free radical scavenging assay.