

Abstract

Quest for a next generation lipopeptide bio-control agent from the fish commensal bacterium '*Bacillus tequilensis* PP1'

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Abstract: Nearly all the vegetation in our planet earth is susceptible to invading pathogens, which significantly affect the crop and its yield. The chemical bio-control agents are the wide spread tool to get rid of plant pathogens. However, the excessive use of such chemical bio-control agents has the potential to wipe-out entire humanity. In this situation, advanced research in the development of eco-friendly bio-control agents is an absolute necessity. The present study put forward a novel strain *Bacillus tequilensis* PP1 (accession number MK648314) from the gills of an estuarine water fish *Chelon parsia* with the potential to counterfeit most relevant phyto-pathogenic fungi. An unknown molecule with m/z 1018.54 was found as the key molecule of antifungal activity, primary structural investigation revealed that the molecule comes under lipopeptide class. The isolated lipopeptide is efficient enough to inhibit the growth of phytopathogens such as *Aspergillus niger*, *Trichoderma viride*, *Mucor racemosus* and *Fusarium oxysporum* with minimum inhibitory concentration range (MIC) of 6 to 12 µg/ml. The derived lipopeptide exhibits tremendous surfactant property with an emulsification index of 32.21 %, which opens up extended application of the molecule in various fields. It is expected that, with further research, the molecule may serve as a replacement for chemical-biocontrol agents