Environmental Engineering and Management Journal *March 2012, Vol.11, No. 3, Supplement, S146*
http://omicron.ch.tuiasi.ro/EEMJ/

"Gheorghe Asachi" Technical University of Iasi, Romania

P76
QUORUM QUENCHING BACTERIAL ENRICHMENT CULTURES ISOLATED FROM TOBACCO PHYLLOSPHERE

Di Lv, Anzhou Ma, Guoqiang Zhuang

Key Laboratory of Environment Biotechnology, CAS, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China

Abstract

N-acylhomoserine lactone (AHL)-based quorum sensing (QS) systems were armed by many bacterial plant pathogens to regulate their virulence, which has been attentive in recent years. Various biocontrol strategies aimed at disrupting QS have been developed. Among these methods, using bacterial quencher to control plant diseases might be practical. However, bacteria isolated from other habitat are not easy to inhabit on leaf surfaces for their adverse environment conditions. We screened and highlighted the diversity of bacterial quenchers from the leaves of tobacco, which was genetically modified to producing AHL.
A total of 274 bacterial quenchers from leaves were screened using AHL biosensor *Chromobacterium violaceum* CV026 by producing the purple pigment violacein. At least 39% of the culturable quenchers can synthesize quenching enzyme to degrade AHL molecules, while most abundant quenchers might use other QS inhibitors to interrupt the chemical communication. Moreover, 86% of AHL-degrading bacteria have the ability to disrupt the QS system by producing AHL-lactonase. Further phylogenetic analysis based on 16S rRNA revealed that the leaf-associated quorum quenching bacteria can be classified as *Bacillus* spp., *Acinetobacter* spp., *Lysinibacillus* spp., *Serratia* spp., *Pseudomonas* spp. and *Myroides* spp.. The naturally occurring diversity of bacterial quenchers provides opportunities and the safety to use them for suppressing plant diseases *in situ*.