Relevance of Probiotic Bacteria in Plant Disease Management

Shubhra Singh*, Douglas JH Shyu[1]

*Department of Tropical Agriculture and International Cooperation, National Pingtung University of Science and Technology, Pingtung 912301, TAIWAN

[1]Department of Biological Science and Technology, National Pingtung University of Science and Technology, Pingtung 912301, TAIWAN

Probiotic bacteria are live microorganisms that when administered in adequate amounts confer a health benefit on the host. This definition is perfectly applicable to microorganisms responsible for improving plant protection against pathogens. Therefore, its relevance in plant disease management is important to understand in order to combat bacterial and fungal phytopathogens. The probiotic strains are associated with rhizosphere microbiome, nutrient mineralization, hormone co-regulation, and pathogen suppression. However, the mechanisms for phytopathogen regulation are still unknown, and therefore more research is required to understand the inhibitory effects of probiotics employed against plant pathogens. In addition to that, several theories have proposed that membrane receptors in pathogenic bacteria often respond to quorum sensing (QS) signaling molecules. For example, bacterial quorum-quenching AHL lactonase in the pathogen *Erwinia amylovora* demonstrates the ability to inhibit the progress of fire blight symptoms in immature *Pyrus communis* fruits which indicates the ability of the identified enzymes to act as quorum-quenching lactonase and possess antimicrobial properties. Hence, this review emphasizes on understanding the mechanism of probiotics bacteria against plant pathogens via quorum sensing mechanism.

Keywords: Probiotic bacteria, phytopathogen, plant diseases, mechanism of action, quorum sensing, quorum quenching

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