

Application of Plant Growth-Promoting Rhizobacteria, *Bacillus* Species, on Lettuce in Plant Growth and Stress Tolerance¹

Cheng-En Kuo²

Abstract

Plant growth-promoting rhizobacteria (PGPR) are found in natural environment widely. PGPR affect plant growth through the secretion of secondary metabolites or plant growth hormone. Studies show that protein hydrolysates could act as biostimulant to promote plant growth and enhance tolerance to stress. In this study, growth promotion effect on lettuce induced by *Bacillus* sp. strain D1 (D1) and protein hydrolysates derived from this *Bacillus* sp. (PH-D1) were analyzed. Plants treated with D1 and PH-D1 enhanced growth activity, and increased the phenolic contents and antioxidant enzyme activities. Furthermore, application of D1 and PH-D1 to lettuce increased plant tolerance to drought, salt and heat stress; these treatments reduced the concentration of malondialdehyde (MDA) under stress conditions.

Keywords: PGPR, Lettuce, Protein hydrolysate, Stress tolerance

¹The research bulletin is a part of the master thesis of the author.

²Assistant Researcher of Taitung DARES, COA.