

Pumin Nutaratat 2012: Isolation and Characterization of Phyllospheric Methylo-trophic Bacteria and Test for Indole-3-Acetic Acid Producing Ability. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology.
Thesis Advisor: Assistant Professor Nantana Srisuk, Ph.D. 156 pages.

Isolation and collection of phyllospheric methylo-trophic bacteria from 125 plant leaf samples was carried out using leaf-imprinting technique onto 1% methanol AMS agar. Two-hundreds and seventy-two bacterial isolates were obtained. Results of molecular taxonomic study by 16Sr DNA analysis revealed that the majority of bacterial population as many as 50.36% belong to the genus *Methylobacterium*, 13.87 and 11.68% of total bacteria found are in the genus *Sphingomonas* and *Pseudomonas*. The genera *Acinetobacter*, *Anoxybacillus*, *Aurantimonas*, *Cellulomonas*, *Cellulosimicrobium*, *Curtobacterium*, *Enterobacter*, *Gordonia*, *Klebsiella*, *Leclercia*, *Luteibacter*, *Mesorhizobium*, *Mycobacterium*, *Ochrobactrum*, *Pantoea*, *Rhodococcus*, *Rhizobium*, *Roseomonas* and *Staphylococcus* were also obtained as minority. Among these, two isolates appeared to be new species. Further investigation was therefore performed and the species name was then proposed as *Roseomonas musaphylla* PN1 and *Roseomonas phyllosphaerae* PN2.

All the bacterial isolates were tested for indole-3-acetic acid (IAA) production. Almost of them possess IAA production within the range of 0.13-145.50 µg/ml but only four isolates namely *Enterobacter* sp. T13-4, *Enterobacter hormaechei* T14-2, *Klebsiella variicola* T32-1.1 and *Klebsiella pneumonia* T39-2 that showed high IAA productivity as 103.60, 145.50, 132.90 and 130.10 µg/ml, respectively. Moreover, test for siderophore production as well as phosphate solubilization on solid medium was conducted among isolates produced higher than 50 µg/ml of IAA. Results indicated that all isolates could solubilize phosphate on solid media. However, only two isolates namely *Enterobacter hormaechei* T14-2 and *Enterobacter asburiae* T79-1 showed little degree of siderophore production.

Student's signature

Thesis Advisor's signature