

Nampueng Koowadjanakul 2011: Diversity of Phylloplane Yeasts and Their Ability to Produce Plant Growth Promoter. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Professor Savitree Limtong, D.Eng. 176 pages.

Diversity of phylloplane yeasts was studied by isolation and identification of yeasts from surface of leaves collected from various areas. A total of 137 yeast strains and 9 methylotrophic yeast strains, were respectively isolated by an enrichment technique using yeast extract-malt extract broth supplemented with 0.025% sodium propionate and 0.02% chloramphenicol and by three-consecutive enrichment in 0.5% methanol-yeast nitrogen broth from 97 leaf samples. Identification the basis of analysis of the D1/D2 domain of the large subunit ribosomal RNA gene revealed that most of them (99 strains) were belonging to known ascomycetous species in 14 genera, 35 species i.e. *Candida amphixiae*, *C. apicola*, *C. etchellsii*, *C. glabrata*, *C. jaroonii*, *C. maltosa*, *C. metapsilosis*, *C. nivariensis*, *C. nodaensis*, *C. parapsilosis*, *C. potacharoeniae*, *C. rugosa*, *C. sorboxylosa*, *C. stigmatis*, *C. tropicalis*, *C. trypodendroni*, *Clavispora lusitaniae*, *Debaryomyces nepalensis*, *Hanseniaspora guilliermondii*, *H. opuntiae*, *H. thailandica*, *Hyphopichia burtonii*, *Kazachstania siamensis*, *Kluyveromyces marxianus*, *K. thermotolerans*, *Kodamaea ohmeri*, *Metschnikowia koreensis*, *Meyerozyma guilliermondii*, *Pichia galeiformis*, *P. kudriavzevii*, *P. rhodanensis*, *Starmerella meliponinorum*, *Torulaspora delbrueckii*, *T. pretoriensis* and *Wickerhamomyces edaphicus*. While 8 strains were identified to be 5 known basidiomycetous species i.e. *Pseudozyma aphidis*, *Sporidiobolus ruineniae*, *Trichosporon asahii*, *T. mucoides* and *T. mycotoxinivorans*, and 12 strains were known species of yeast-like fungi, *Aureobasidium pullulans*. The other 5 strains were similar to undescribed species, 10 strains could be known or new species and 3 strains were found to be 2 new species that were studied and proposed as *C. sakaeoensis* sp. nov. and *C. sirachaensis* sp. nov. Among 9 strains of methylotrophic yeast, 1 strains was identified to be *Ogataea polymorpha*, 2 strains could be known or new species and 6 strains were found to 4 new species, which were studied as proposed as *C. chumphonensis* sp. nov., *C. mattranensis* sp. nov., *O. phyllophila* sp. nov. and *Ogataea* sp. LN18.

Investigation on indole-3-acetic acid (IAA) production of all 137 strains revealed that 51 strains of 25 species could produced IAA and 9 strains yielded 84.3-314.3 mg/l of IAA when cultivated in test tube. They were *C. amphixiae* (1strain), *C. maltosa* (5 strains), *C. rugosa* (2 strains) and *Sp. ruineniae* (1 strain). By shake flask cultivation *Sp. ruineniae* LM015 showed the highest IAA production of 436.4 mg/l.

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Thesis Advisor's signature