

**Thesis Title** Biodegradation of Crude Oil by Soil Microorganisms  
**Name** Manee Palittapongampim  
**Degree** Master of Science (Environmental Biology)  
**Thesis Supervisory Committee**  
Suchart Upatham, Ph.D.  
Manat Pohmakotr, Dr.rer.nat.  
Ladda Tangbanluekal, Ph.D.  
**Date of Graduation** 27 November B.E. 2538 (1995)

### ABSTRACT

Indigenous microorganisms were isolated from oil-contaminated soil in Bangkok, Thailand. Soil enrichment culture was done by inoculating the soil in Mineral Salt Medium (MSM) with 0.5% V/V Tapis crude oil as the sole carbon source. Five strains of pure microorganisms with petroleum-degrading ability were isolated: three (MU8B, MU11B, MU14B) of them were bacteria and the other two (MU7Y and MU14Y) were yeasts. Each strain had different ability to degrade petroleum. The best petroleum degrader, MU15Y, was selected for further study. The yeast degraded effectively petroleum at pH 4-8 but less at pH 3. The yeast could degrade petroleum well in media containing various concentrations of NaCl upto 3%, which is the concentration of salt in sea water. Inadequate amount of nitrogen (less than 0.25 g/l of ammonium nitrate) and phosphorus (less than 1 g/l of dipotassium hydrogen phosphate) source impaired the petroleum-degrading ability of MU15Y. High concentration of ammonium nitrate (32

g/l) impaired the petroleum-degrading ability. The inhibitory effect of high concentration of dipotassium hydrogen phosphate was not found upto the concentration of 32 g/l. MU15Y was biochemically identified as *Candida parapsilosis* which has been reported as a rare pathogen in patients with intravascular devices. Because of the high oil-degrading ability in a wide range of environment and low virulence of the yeast, MU15Y would be a good candidate for being used as an oil-cleaning microorganism in case of oil spill in Thailand.