

ABSTRACTS

APBioChEC '99

New Era of Biochemical Engineering and Biotechnology



**The 5th Asia-Pacific Biochemical Engineering Conference 1999 and
The 11th Annual Meeting of the Thai Society for Biotechnology**

ISBN 974-7579-93-3



Glycerol and mannitol production from yeasts for *Rhizobium* inoculum cultivation

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For mass cultivation of root-nodule bacteria used as legume inoculants, it is essential to have low cost and high quality of nutrient sources. Bradyrhizobia, the symbiont of many tropical legumes, including soybean, are able to use only glycerol and mannitol which are costlier than other carbon sources such as glucose. The purpose of this research is to produce glycerol and mannitol by converting carbohydrates from agricultural products by microorganisms, especially yeasts. *Rhizobium* growth factors can be obtained from yeast cells. Thus the crude products from yeasts could be directly utilized for the mass culture. To screen yeast strains which are able to produce either glycerol or mannitol from glucose, 100 yeast strains isolated from various sources and 1 type culture strains were tested. The production of glycerol and mannitol was detected on both culture filtrate and cell extracts. In primary screening step, qualitative assay of glycerol and mannitol produced was performed by TLC technique. It was found that 9 out of 101 isolate produced high amount of glycerol in culture broth by compared with colour intensity of standard glycerol on chromatogram. Only a type culture strain, *Kluyveromyces marxianus* also produced high amount of glycerol in its culture filtrate. Ten isolates produced both of glycerol and mannitol when cell extracts were tested. The quantitative assay of both glycerol and mannitol has been detected by HPLC-based technique. When using cassava starch as the carbon source on the growth medium, four yeast isolates which accumulated both glycerol and mannitol in their cells were able to digest and utilize the carbon source. Attempt to produce low cost of nutrient sources for *Bradyrhizobium* cultivation was underway.