

## ABSTRACT FOR PARALLEL SESSIONS

S2-G02

**Enhanced Biomass Production Of *Pseudomonas Fluorescens* For Waste Water Treatment In Shake Flask And Semi Industrial Scale Bioreactor****Azuan Abdul Latif<sup>1</sup>, Siti Zulaiha Hanapi<sup>1</sup>, Roslinda Abd Malek<sup>1</sup>, Sasidharan Velayutham<sup>2</sup>, Syed Yassin Syed Mohamed<sup>2</sup>, Lim Pek Boon<sup>2</sup>, Alijah Mohd Aris<sup>2</sup>, NorZalina Othman<sup>1</sup>, Ramlan Aziz<sup>1</sup>, Hesham El Enshasy<sup>1,3</sup>**<sup>1</sup>Institute of Bioproduct Development (IBD), Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia.<sup>2</sup>Indah Water Konsortium Sdn Bhd, Level 1-4, Block J, Pusat Bandar Damansara, 50490 Kuala Lumpur, Malaysia.<sup>3</sup>Bioprocess Development Department, City for Scientific Research and Technology Applications (CSAT), New Burg Al Arab, Alexandria, Egypt.**Abstract**

*Pseudomonas fluorescens* is a biological denitrification bacterium that able to transform of oxidized nitrogen compounds (nitrate and nitrite) into harmless nitrogen gas. Nitrification followed by denitrification is a reliable and economical method for removing nitrogen from wastewater. However, the process is slow and affected by limitation of organic sources. Therefore in order to increase efficiency *P. fluorescens* as nitrogen removal in the waste water treatment, it is recommended to study medium composition that affects the growth of *P. fluorescens* for industrial scale cell mass production. Moreover, little information on cell mass production is available. Therefore, the objective of this research is to develop an industrial culture medium and a cultivation strategy for the mass production of *P. fluorescens* in a semi-industrial scale. At beginning of research, several medium formulations were tested for their cell growth potential. The best medium yielded a cell mass of only 2.08 g L<sup>-1</sup> in shake flask cultures and was optimized using a classical approach (changing factors one by one). Sucrose and yeast extract were selected as the best carbon and nitrogen source respectively for the new medium composition. Only 10 g L<sup>-1</sup> for sucrose concentration and 3 g L<sup>-1</sup> of yeast extract concentration required for cell growth and no significant increase in cell mass for both concentration above than that. Thus, the final cell mass of optimized medium from classical method achieving a maximum of 3.02 g L<sup>-1</sup> increased up to 45.19 %. Then optimized medium was applied in bioreactor for batch cultivation by controlled and uncontrolled pH condition. It is found that controlled pH showed 39.56 % more of cell mass compared to uncontrolled pH yielded a cell mass of only 2.78 g L<sup>-1</sup>. As a result, fermentation with controlled pH gives higher potential of production of cell mass at industrial scale.

**Keywords:** *Pseudomonas fluorescens*, denitrification, medium optimization, processing condition, semi scale bioreactor.

## ABSTRACT FOR PARALLEL SESSIONS

S1-E01

**Isolation of Natural PPAR-γ Ligands from *Rourea mimosoides*****Ban Chung Chuah<sup>1</sup>, R. Mohd Afq Aizuddin<sup>1</sup> and Mohd Ilham Adenan<sup>1,2</sup>**<sup>1</sup>Malaysian Institute of Pharmaceutical and Nutraceutical (IPharm), Blok 5A Halaman Bukit Gambir, 11700 Pulau Pinang,<sup>2</sup>Forest Research Institute Malaysia (FRIM), Kepong, 52109 Selangor.**Abstract**

Type II diabetes mellitus (T2D) or non-insulin dependent diabetes mellitus (NIDDM) is a metabolic disorder disease due to insulin resistant and defects. PPAR-γ belongs to the nuclear hormone receptor super family, which activation is triggered upon binding to substrates. The activators of PPAR-γ could either be natural occurring ligand or synthetic agonists such as Thiazolidinediones (TZDs). In the present study, we report on our efforts to isolate PPAR-γ activators from a Malaysian forest species, *Rourea mimosoides*. Our finding indicates that the natural compounds isolated from *Rourea mimosoides* leaves are shown to activate PPAR-γ expression. The natural compounds isolated designated as CBC-1, CBC-2 and CBC-3 are capable of increasing the expression of PPAR-γ up to 14 fold at a very low concentration. The chemical investigation to identify the chemical structure of the active compounds is ongoing.

**Keywords:** Anti Type II Diabetes Mellitus, peroxisome proliferator-activated receptor –gamma (PPAR-γ), Thiazolidinediones, transactivation, *Rourea mimosoides*