ABSTRACTS FOR POSTER PRESENTATION

PS2-03
New Formulation Of Production Media For Submerged Cultivation Of Aspergillus Niger For Production Of Pectinase

Noorhamizah Suhaimi1, Roslinda Abd Malek1, Siti Zulaiha Hanapi1, Siti Zainah Hayati1, Nor Zalina Othman1, Hesham El Enshasy2,3
1Institute of Bioprocess Development (IBD), Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia.
2Bioprocess Development Department, City for Scientific Research and Technology Applications (CSAT), New Burg Al Arab, Alexandria, Egypt.
3Department of Chemistry of Natural and Microbial Products, National Research Center, Dokki, Giza, Egypt.

Abstract
This study investigates the development of industrial production media and cultivation strategy for the production and secretion of pectinases in a semi-industrial scale by Aspergillus niger. One major problem faced during submerged cultivation using A. niger is the change in morphology which give high impact on the productivity of pectinase secretion that correlated with medium composition and processing condition. In view of this, the effect of medium composition on the production and secretion of pectinase were studied through the optimization using various medium compositions and the addition of external carbon effect (apple pectin, lactose, dry peel citrus pectin, sucrose, glucose, citrus pectin). Medium formulation containing 30 g L⁻¹ sucrose, 1 g L⁻¹ K₂HPO₄ and Capek concentrate (mixture between NaNO₃, KCl, MgSO₄·7H₂O and FeSO₄·7H₂O) resulted in the highest cell mass (6.25 g L⁻¹) and highest total pectinase activity (50.53 U mL⁻¹). Highest total pectinase activity (30.78 U mL⁻¹) was obtained using apple pectin as external carbon source with corresponding cell mass of 540 g L⁻¹ after 96 hours of cultivation at 30 °C.

Keywords: Aspergillus niger, pectinase, submerged, medium composition.

PS2-04
Optimization Of Growth Medium And Processing Condition Of Acinetobacter Sp.As Biological Phosphorus Removal For Wastewater Treatment In Semi-Industrial Scale Bioreactor

Norhafizah Mohammad1, Siti Zulaiha Hanapi1, Roslinda Abd Malek1, Siti Zulaiha Hanapi1, Siti Zainah Hayati1, Syed Yassin Syed Mohamed1, Lim Peik Boon1, Aijah Mohd Aris1, Nor Zalina Othman1, Ramlan Aziz1, Hesham El Enshasy2,3
1Institute of Bioprocess Development (IBD), Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia.
2Bioprocess Development Department, City for Scientific Research and Technology Applications (CSAT), New Burg Al Arab, Alexandria, Egypt.
3Department of Chemistry of Natural and Microbial Products, National Research Center, Dokki, Giza, Egypt.

Abstract
Acinetobacter sp. has been reported previously in their role to enhance the removal of biological phosphorus and heavy metal when introduced in wastewater treatment. This is an important characteristics to be used in remediating the waste water instead of depend on naturally present of microbes. Therefore, high densities of Acinetobacter sp. to function in the bioremediation treatment are needed. The optimization of Acinetobacter sp. was carried out in shake flask for 24 hours cultivation using different carbon sources (glucose, sucrose, maltose, fructose and glycerol), nitrogen sources (yeast extract, soy powder, corn steep liquor, beef extract and peptone from casein) and phosphate salts (potassium monohydrogen phosphate). Total cell mass of 2.14 g L⁻¹ was produced in un-optimized semi-defined medium using glucose as sole carbon source. Replacement of glucose with sucrose resulted in the 62.60% increase of cell mass production (3.48 g L⁻¹). Yeast extract (20 g L⁻¹) was demonstrated as the best nitrogen source based on the 172.89% increase of cell mass (5.84 g L⁻¹). Unfortunately, different concentration of phosphate salts did not show any differences in cell mass production. A combination of the optimized parameters resulted in 7.59 g L⁻¹ of cell mass after 16 hours of cultivation. In conclusion, Acinetobacter sp. showed cell mass production rate of 0.23 g L⁻¹ h⁻¹ under un-controlled pH compared to controlled pH (0.12 g L⁻¹ h⁻¹).

Keywords: wastewater treatment, phosphate, removal, optimization, Acinetobacter sp.