

**CURRENT RESEARCH
AND DEVELOPMENT IN
BIOTECHNOLOGY
ENGINEERING
AT IIUM**

VOLUME I

Editors:

Suleyman Aremu Muyibi
Mohammed Saedi Jami
Zaki Zainudin



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(VOLUME I)

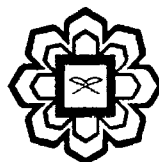
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CONTENTS

| | | |
|------------|--|--------------------|
| PREFACE | | v |
| CHAPTER 1 | SELECTION OF POTENTIAL FUNGAL STRAINS FOR THE PRODUCTION OF GLUCOAMYLASE USING NON-FOOD CASSAVA <i>Md Zahangir Alam, Hamzah Mohd Salleh, Juwairiyah Abd Karim, and Altyu Salihu</i> | 1 (4157/20570) |
| CHAPTER 2 | WATER QUALITY MODELING TO ASSESS THE IMPACTS OF PALM OIL MILL EFFLUENT (POME) IN SG. KALUMPANG BASIN <i>Zaki Zamudin</i> | 7 (6601/20573) |
| CHAPTER 3 | WATER QUALITY CHARACTERIZATION STUDIES ON SPRING WATER FOR USE IN PONDS FOR KELAH FISH BREEDING IN KELAH SANCTUARY <i>Suleyman Aremu Muyibi, Siti Hatyah Binti Mortan, and Mohamed Ismail Abd Karim</i> | 13 (4164/20576) |
| CHAPTER 4 | THE SOLID WASTE MANAGEMENT SYSTEM ISSUES ON POLLUTION AND WASTE DISPOSAL PROBLEMS <i>Nassereldeen Kabbashi, Najla Shuhud, and Mohammed Saedi Jamil</i> | 19 (4286/20578) |
| CHAPTER 5 | SETTLING COLUMN ANALYSIS FOR WATER TURBIDITY REMOVAL USING CHITOSAN <i>Nassereldeen Ahmed Kabbashi and Muhammad Fazil B Anotar</i> | 26 (4286/20584) |
| CHAPTER 6 | PROCESS DEVELOPMENT OF REMOVING LOW TURBIDITY WATER USING CHITOSAN AS A BIOCOAGULANT <i>Nassereldeen Ahmed Kabbashi and Muhammad Fazil B Anotar</i> | 32 (4286/20588) |
| CHAPTER 7 | OPTIMIZATION OF PROCESS CONDITIONS FOR GLUCOAMYLASE PRODUCTION USING NON-FOOD CASSAVA <i>Md. Zahangir Alam, Hamzah Mohd Salleh, Radhiah Ariffin, and Noor Mohammad</i> | 38 (4157/20590) |
| CHAPTER 8 | DEVELOPMENT OF RAPID ENZYMATIC PROCESS FOR ACID OIL PRODUCTION FROM SLUDGE PALM OIL <i>Md Zahangir Alam, Hamzah Mohd Salleh, and Noraini Mohd Yusof</i> | 44 (4157/20596) |
| CHAPTER 9 | OPTIMISATION OF CHROMATOGRAPHY CONDITION FOR BIOPHENOLS SEPARATION FROM OIL PALM FRUIT FIBER <i>Parveen Jamal, Shahrul Yahaya, Md Zahangir Alam, and Azlin Azmi</i> | 51 (2937/20598) |
| CHAPTER 10 | MORINGA SEED OIL EXTRACTION AND CAKE PROCESSING FROM BENCH TO COMMERCIAL PRODUCTION OF ALTERNATIVE WATER TREATMENT CHEMICALS FOR DEVELOPING COUNTRIES <i>Suleyman A Muyibi and Idris M Bugaje</i> | 60 (4146/20603) |
| CHAPTER 11 | INVESTIGATION OF ANTIBACTERIAL ACTIVITY OF MORINGA OLEIFERA SEEDS FOR APPLICATION IN WATER TREATMENT <i>Suleyman A Muyibi and Farhana Aina Bt Ahmad Nazir</i> | 66 (4164/20605) |
| CHAPTER 12 | SCREENING OF LIGNOCELLULOSIC MATERIALS FOR THE PRODUCTION OF FERMENTABLE SUGAR <i>Md. Zahangir Alam, Abdullah-Al-Mamun, Hikmah Mohd Noor, and Noor Mohammad</i> | 72 (4151/20606) |
| CHAPTER 13 | LOCAL SOURCING FOR RENEWABLE AND SUSTAINABLE REPLACEMENT FOR WATER AND WASTEWATER TREATMENT CHEMICALS: ACTIVATED CARBON FROM AGRO-WASTES <i>Suleyman Aremu Muyibi, Mohamed Ismail Abdulkarim, Md Zahangir Alam, Emad S M Ameen, and Nassereldeen A Kabbashi</i> | 77 (4164/20610) |
| CHAPTER 14 | EVALUATION OF THE PERFORMANCE OF WATER TREATMENT SYSTEM FOR KELAH BREEDING IN FISH PONDS <i>Suleyman Aremu Muyibi, Siti Sara Binti Ghazali, and Mohamed Ismail Abd Karim</i> | 85 (4164/20612) |

| | | |
|------------|--|---------------------|
| CHAPTER 15 | DESIGN OF TERTIARY TREATMENT SYSTEM FOR EFFLUENT FROM STP AT IUM FOR HORTICULTURAL USES <i>Suleyman A Muyibi and Tamrin Tajari</i> | 91 (4164/2063) |
| CHAPTER 16 | COMPARATIVE STUDIES OF MORINGA OLEIFERA AND ALUMINIUM SULPHATE AS COAGULANTS IN TURBIDITY REMOVAL FROM SURFACE WATER <i>Suleyman A. Muyibi, Eman N Ali, Md Zahangir Alam, and Hamzah M Salleh</i> | 96 (4164/20618) |
| CHAPTER 17 | AN EXPERT SYSTEM FOR DESIGN OF WATER TREATMENT PLANT <i>Nassereldeen Kabbashi, Anwar Bin Mohamad, and Suleyman A Muyibi</i> | 101 (4286/20619) |
| CHAPTER 18 | ISOLATION AND SCREENING OF POTENTIAL MICROORGANISM FOR BIOREMEDIATION OF HYDROCARBON CONTAMINATED SITES <i>Parveen Jamal, Md Zahangir Alam, and Nur Aneem Fadza</i> | 106 (2937/20625) |
| CHAPTER 19 | SLUDGE PALM OIL AS A POTENTIAL SOURCE FOR EMULSIFIER PRODUCING STRAIN <i>Parveen Jamal, Md Zahangir Alama, and Nur Fathiah Abd Sama</i> | 113 (2937/20631) |
| CHAPTER 20 | MICROBIAL FERMENTATION FOR PRODUCING SURFACE ACTIVE AGENT BY USING PALM OIL MILL EFFLUENT ISOLATE <i>Parveen Jamal, Md Zahangir Alam, Nur Aneem Fadza, and Wan Mohd Fazli Wan Nawawi</i> | 119 (2937/20632) |
| CHAPTER 21 | A BATCH PROCESS PRODUCTION OF COMPOST AND KINETICS ORDER OF REACTION STUDY BY ISOLATED FUNGAL STRAINS <i>Nassereldeen A Kabbashi, Optakun Suraj, and Md Zahangir Alam</i> | 126 (4286/20635) |
| CHAPTER 22 | ANALYSIS OF ELECTROFORCED SEDIMENTATION OF ZINC OXIDE <i>Mohammed S Jami, Masashi Iwata, Ma an Alkhatib, and Mujeli Mustapha</i> | 137 (5545/20639) |
| CHAPTER 23 | PRODUCTION OF BIODIESEL BY ACID-BASE CATALYZED TRANSESTERIFICATION OF WASTE COOKING OIL IN A BATCH REACTOR <i>Md Zahangir Alam, Parveen Jamal and Nor Rashid Bin Mohamad</i> | 143 (4157/20641) |
| CHAPTER 24 | FRACTIONATION, IDENTIFICATION AND QUANTIFICATION OF BIOPHENOLS FROM OIL PALM FRUIT FIBER <i>Parveen Jamal, Shahrul Yahaya, Md Zahangir Alam, and Azlin Azmi</i> | 150 (2937/20644) |
| CHAPTER 25 | CELLULASE PRODUCTION FROM RICE STRAW AND CORN COB BY SOLID STATE BIOCONVERSION <i>Md Zahangir Alam, Mazlinor Mohd Awal, and Aliyu Salihu</i> | 158 (4157/20646) |
| CHAPTER 26 | NATURAL DISINFECTANTS FOR WATER TREATMENT <i>Mohamed E S Mirghani, I A Ahmed, S A Muyibi, J I Daoud and M A Mikail</i> | 164 (4971/20649) |
| CHAPTER 27 | REMOVAL OF WATER TURBIDITY BY USING FABA BEANS <i>Mohamed E S Mirghani, Nasereldin A Kabbashi, and Fasehah Abdul Kadir</i> | 173 (20653) |
| CHAPTER 28 | WASTE TO WEALTH: DATE SEED PITS <i>Mohamed E S Mirghani, M A Mikail, I A. Ahmed, M I Abdul Karim and J I Daoud</i> | 180 (4971/20656) |
| CHAPTER 29 | EFFECT OF HYDROGEN PEROXIDE ON SETTLEABILITY AND FILTERABILITY OF SLUDGE FROM DRINKING WATER TREATMENT PLANT <i>Mohammed Saedi Jami, Suleyman Aremu Muyibi, and Mohd Shahril Bin Kamaruddin</i> | 188 (5545/20659) |
| CHAPTER 30 | ENHANCING THE DEWATERABILITY OF SLUDGE FROM WASTEWATER TREATMENT PLANT <i>Mohammed Saedi Jami, Suleyman Aremu Muyibi, and Nur Salihah Embong</i> | 194 (5545/20661) |
| CHAPTER 31 | EVALUATION OF AMMONIA NITROGEN REMOVAL IN AN EXISTING SEQUENTIAL BATCH REACTOR <i>Mohammed Saedi Jami, Suleyman Aremu Muyibi, and Nur Fatmah Bt Ismail</i> | 200 (5545/20664) |
| CHAPTER 32 | PRODUCTION OF GLUCOAMYLASE FROM RICE BRAN USING | 206 (4157/20666) |

| | | |
|------------|--|---------------------|
| | POTENTIAL FUNGAL STRAINS | |
| | <i>Md Zahangir Alam, Hamzah Mohd Salleh, and Nurhidayah Binti Ahmad Hassan</i> | |
| CHAPTER 33 | OPTIMIZATION OF PROCESS CONDITIONS FOR GLUCOAMYLASE PRODUCTION USING RICE BRAN | 213 (4157/20668) |
| | <i>Md. Zahangir Alam, Hamzah Mohd Salleh, and Siti Najilaa Othman</i> | |
| CHAPTER 34 | MEMBRANE PROCESS FOR REUSE OF TREATED PALM OIL MILL EFFLUENT (POME) | 219 (5545/20672) |
| | <i>Mohammed Saedi Jami, Suleyman Aremu Muyibi, Siti Noor Hayati Abdul Kudus, and Munirat Idris Oseni</i> | |
| CHAPTER 35 | PRODUCTION OF FERMENTABLE SUGAR FROM LIGNOCELLULOSIC MATERIALS USING STATISTICAL DESIGN | 225 (4157/20674) |
| | <i>Md. Zahangir Alam, Abdullah-Al-Mamun, and Hikmah Mohd Noor</i> | |
| CHAPTER 36 | STUDY OF THE DEWATERABILITY OF KAOLINE AS A MODEL SUBSTANCE FOR SLUDGE | 231 (5545/20676) |
| | <i>Mohammed Saedi Jami, Tariq Jameel, Mardhiah Farhanah Bt Noor Izan, and Jabir Hussain</i> | |
| INDEX | | 237 |

FRACTIONATION, IDENTIFICATION AND QUANTIFICATION OF BIOPHENOLS FROM OIL PALM FRUIT FIBER

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ABSTRACT

In this study, oil palm fruit fiber extracts was fractionated, identified and quantified for their phenolic contents and antioxidant activities. Fractionation divided sample extracts into three fractions. Free biophenol fractions, free biophenol, esterified and bound. Then each three was test its total phenolics contents to determine which have the highest for further experimental process. Free biophenol showed the highest total phenolic contents; 4.3 GAE (mg/g) and scavenging activities; 21%. Isolation, quantification and optimization were done using HPLC. Five biophenols were identified; Cinnamic acid, Vanilin, Curcumin, Ferulic Acid and O-Coumaric acid. For each of them were quantified to determine their concentration in the sample.

Keywords: palm fruit fiber, extraction, fractionation, biophenol

INTRODUCTION

Malaysia is one of the major palm oil producers in the world. However in palm oil industry, oil is generated from only 10% of the total biomass and the remainder consists of huge amount of lignocelluloses materials. Malaysia generates 6.0 million tonnes of palm fruit fiber (PFF) every year as wastes.

The PFF is a leftover produced after extraction of palm oil from pericarp portion of oil palm fruit. Currently it is used as fuel for milling boiler (Ellis and Paszner, 1994), production of particle board and as substrate for mushroom cultivation, an organic fertilizer (Kittikun et al., 2000).

Most natural antioxidants are from plants (e.g. fruits, vegetables, herbs, beans, tea and coffee) and are primarily polyphenols such as simple phenolic acids, cinnamic acid derivatives and flavonoids. These polyphenolic substances have gained much attention, due to their antioxidant capacity as reducing agents, as free-radical scavengers, as metal chelators and their beneficial implications in human health (Summa, 2006). Simple phenols and flavonoids represent the vast majority of plant phenolics. Most of these compounds are of relatively low molecular weights and are soluble according to their polarity and chemical