

OIL PALM TRUNK

FUTURE BIOREFINERY FEED STOCK

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Preface

All praise is to Allah, The Most Gracious and The Most Merciful. I would like to express my utmost gratitude to my esteemed co-researchers, Assoc. Prof. Ir. Dr. Shuhaida Harun, Dr. Loh Soh Kheang and Ts. Dr. Abdullah Amru Indera Luthfi for their very generous support, constructive criticism, and valuable guidance and advice. I would like to extend my sincere thanks and appreciation to all the staff and internship students at the Energy and Environment Unit (E&E), Malaysian Palm Oil Board (MPOB). A heartfelt gratitude is given to my family.

This book is from the findings from Nurul Adela's doctoral research under the supervision of Assoc. Prof. Dr. Peer Mohamed and Prof. Dr. Jamaliah Md Jahim which was successfully completed in 2022. This book consists of nine chapters. Chapter 1 provides general introduction to biochemical conversion of biomass and bioconversion of oil palm trunk (OPT) into industrially important succinic acid. Chapter 2 outlines the background of succinic acid, as well as the choice of biocatalyst and feedstock used for its bioproduction. Chapter 3 focuses on the availability and characteristics of OPT as feedstock, as well as the major steps in bioconversion, including pretreatment, hydrolysis, and fermentation.

Chapter 4 gives a complete description of utilising OPT sap for succinic acid production. Chapter 5 describes the process of converting OPT bagasse into sugars using organic acid pretreatment, while Chapter 6 describes different approaches for enzymatic saccharification. Chapter 7 focuses on fermentation strategies for enhanced succinic acid production. Chapter 8 describes the development of the whole succinic acid production process. Finally, Chapter 9 discusses on the potential utilisation of OPT for succinic acid production.

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