

# **EXTRACTION OF MORINGA OLIEFERA SEED OIL USING SOLID STATE FERMENTATION AND ENZYME-ASSISTED THREE PHASE PARTITIONING**

**BY**

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**CUGP100343**

**JULY 2013**

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USING SOLID STATE FERMENTATION AND  
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COLLEGE OF SCIENCE AND TECHNOLOGY  
CONVENANT UNIVERSITY,  
OTA OGUN STATE**

**SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE AWARD OF MASTER OF  
ENGINEERING (M.ENG) DEGREE IN CHEMICAL  
ENGINEERING**

**JULY 2013**

## Certification

This is to certify that this project was carried out by Abatan Olubunmi Grace (CUGP100343) of the department of Chemical Engineering College of Science and Technology Covenant University, ota ogun state.

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Professor F.K. Hymore  
(project supervisor/head of department)

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Date

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External supervisor

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Date

## **Dedication**

This work is dedicated to God Almighty, who made it possible for this work to be done even during unfavorable circumstances.

I will also dedicate to the memory of late Dr. M. A. Obande. Your memory will forever stay with us.

## **Acknowledgement**

I gave all the praise and thanks to God first of all who provided all that was needed for this program.

I will like to use this medium to thank my husband Mr. Joshua Abatan for all his support both emotionally, financially.

I will also like to thank my children Amioluwa and Araoluwapo Abatan who were able to bear with me during this period and showed me their love.

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I will appreciate my sibling ( Oluwaseun Akande, Oluwatoyin Akande Opeoluwa Akande and Joshua Akande), for their love, care and support at all time, Toyin thank so much for accommodating us of me and my children. Thanks to my Husband`s siblings ( Mr & Mrs Deji John, Mr & Mrs Ekundayo, Mr & Mrs Shittu, Mr & Mrs Ajaiyeoba, Mr & Mrs Oguntade and Emma Abatan)

I will like to appreciate Mr. and Mrs. Akintayo, Pastor and Dr (Mrs) Afolabi for the support you gave me during this period of this program, God will reward you.

Thanks to Mrs Sopein and Shola Showunmi for taking good care of my children during this period.

## ABSTRACT

The increased awareness of the nutritional value of moringa seed oil has engendered the need for increase in the yield of moringa seed oil. This study was carried out using different seed conditions (whole dehulled, crushed dehulled and unde-hulled), solid state fermentation using Pectinase, alpha-amylase and *Aspergillus niger*. The extraction of oil from the fermented was done using three phase partitioning at different temperatures of 28°C, 40°C and 60°C. The crushed seed had the maximum yield of 3.5% on the seventh day using *Aspergillus niger*. For the unde-hulled seeds and had it highest yield on 3.35% was on the fifteenth day using alpha-amylase. Pectinase had no effect on the partial yield of whole seeds, little effect on crushed seeds with partial yield value of 0.4% and it had a significant partial yield value of 1.4% on unde-hulled seeds on the 15<sup>th</sup> day.