

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam
Ahmed Tariq Jameel
Azura Amid



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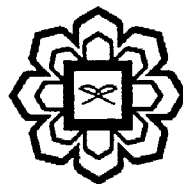
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**Department of Biotechnology Engineering
Faculty of Engineering
International Islamic University Malaysia**



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CHAPTER 11

SEEDS' OIL AS BIOLUBRICANT

Mohamed E. S. Mirghani, I. A. Ahmed, N. A. Kabbashi, S. A. Muyibi, J. I. Daoud
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ABSTRACT

The increasing demands for oils both for human consumption and for other industrial applications has culminated into an increasing need to search for oils from non-conventional sources to augment the available ones and also to meet specific applications. Environmental concerns about synthetic non-biodegradable polymers have also encouraged efforts towards their substitution with fully or partially biodegradable polymers of semi-synthetic or bio-origin. The physic-chemical properties of vegetable oils and their structures were discussed in terms of their potentially future use as base oils biolubricants and additives.

INTRODUCTION

Efforts are being encouraged towards the substitution of synthetic non-biodegradable polymers by fully or partially biodegradable polymers of semi-synthetic or bio-origin due to several environmental concerns (Suvangshu et al., 2010). Most vegetable oils are obtained from beans or seeds, which generally furnish two valuable commodities—an oil and a protein-rich meal. Seed extraction is achieved by pressing and/or by solvent extraction (Gunstone, 2002). Generally, the three major and common methods of oilseed extraction are; full press, pre-press and solvent extraction.

There is a great demand for renewable sources of raw materials that have nutritional and industrial potential. To meet the increasing demand for vegetable oils, improvements are being made with conventional crops as well as with selected plant species that have the ability to produce unique, desirable fats and oils (Lin, 2009).

The depletion of world oil pool, rising price of crude oil and increased environmental concerns are pressurizing the scientists for the use of renewable natural resources in different fields of applications as they are eco-friendly and cost effective materials. In this regard, vegetable oils have a number of excellent properties, which could be utilized in production for variable polymeric materials such as alkyd, epoxy,