Journal of Engineering and Applied Sciences 14 (Special Issue 3): 6135-6138, 2019
ISSN: 1816-949X

Fatty Acid Profiles in the Kernel Oils of *Artocarpus odoratissimus* and *Litsea garciae*

[1]Firus Musfirah Poli and [2]Zaini Bin Assim
[1]Faculty of Applied Sciences, Universiti Teknologi MARA Cawangan Sarawak Kampus Mukah,
KM 7.5 Jalan Oya, 96400 Mukah, Sarawak, Malaysia
firusmusfirah@gmail.com
[2]Department of Chemistry, Faculty of Resource Science and Technology,
Universiti Malaysia Sarawak, Jalan Datuk Mohammad Musa, 94300 Kota Samarahan,
Sarawak, Malaysia

Abstract: Kernels of *A. odoratissimus* and *L. garciae* fruits collected from different areas in Sarawak were extracted and the fatty acid profiles in their kernel oils were studied. Proximate analysis of the kernels such as moisture content, ash content, crude fat and crude fiber were determined. The kernels were extracted using Soxhlet extraction apparatus and the Fatty Acid Methyl Esters (FAME) composition in the kernel oils were analysed using Gas Chromatography-Mass Spectrometry (GC-MS). The number of FAME components found in *A. odoratissimus* kernel oil was higher in comparison to *L.garciae* kernel oil. The major compound in kernel oil of each fruit sample also differs from each other; C12:0 (lauric acid) (28.75±0.09-34.12±1.02%) was the main FAME in *L.garciae* while C18:2n6c (linoleic acid) (37.30±4.62-40.74±6.19%) was the dominant compound in *A. odoratissimus*. This study is significant as it has revealed that the kernel oils of these underexploited indigenous fruits have a great potential to be developed for the applications in nutrition, industrial and cosmetics.

Key words: *Artocarpus odoratissimus*, fatty acid, *Litsea garciae*, kernel oil, proximate analysis, crude fiber

INTRODUCTION

In recent years, there is growing interest in searching for newer sources of edible oils, for example, plant seeds which offer oils with high nutritional, industrial and pharmaceutical importance (Shah *et al*., 2004). Kernel oils generally have broad range of utilization as foods, lubricants, fuel for paraffin lamps, additives for paint formulations, soup ingredient and also in medicinal applications. Some kernel oils have the potential to be developed for oleochemical industries (Ahmad *et al*., 2007). The depletion of world petroleum reserves as a result of increasing energy demands together with environmental concerns has prompted the efforts to discover various alternative sources of petroleum-based fuels. In this context, biodiesel has gained substantial position in public, over the world (Ahmad *et al*., 2007; Shah *et al*., 2004).

Typical vegetable oil feedstock for biodiesel production includes the commodity seed oils, such as soybean, sunflower, rapeseed and canola. These oils are readily converted to the corresponding alkyl esters by base catalyst and offer acceptable fuel properties in modern diesel engines (Schwab *et al*., 1987; Van Gerpen, 2005). Nevertheless, the usage of conventionally grown edible oils leads to alleviate food versus fuel issue. Consequently, the process economics may be improved by exploration of newer and lower cost feedstock, not only due to the high oil costs but also due to their ever-increasing demand (Azam *et al*., 2005).

L. garciae is native to Borneo Island. The English name of *L. garciae* is bagnolo/wuru lilin and the common name differs according to the local language: engkala (Malay Sarawak), Madang enkala/pedar (Iban), Ta'ang (Bidayuh) and pengolaban (Sabah) (Johnny *et al*., 2011; Kueh *et al*., 2000). The fruit of *L. garciae* is round in shape with a unique green stem cap about 4.0- 6.0 cm in length (with the stem cap) and 3.0-6.0 cm in diameter. The thin skin turns to pinkish, bright pink or greenish white when it is ripe, depending on the variety. *A. odoratissimus* on the other hand is in the same genus with jackfruit and breadfruit but it is less popular because the species is native to Borneo and Philippines only (Jagtap and Bapat, 2010). The synonyms of *A. odoratissimus* are *Artocarpus tarap* Becc. and *Artocarpus mutabillis* Becc.. Some local people not only consume the pulp but they also consume the kernel. The kernels are boiled or roasted and are eaten as a snack as they have nutty taste.

Corresponding Author: Firus Musfirah Poli, Faculty of Applied Sciences,
Universiti Teknologi MARA Cawangan Sarawak Kampus Mukah, KM 7.5 Jalan Oya, 96400 Mukah,
Sarawak, Malaysia, firusmusfirah@gmail.com