

## Fatty Acid Profile of Pumpkin and Bael Seed Lipids of Central India Region

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## Short Communication

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Surfactants Technology, Laxminarayan  
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University, Nagpur-440033, India.**Key Words:** Pumpkin Seeds, Bael Seeds,  
Lipids, Fatty acids, Central India Region.**ABSTRACT**

Chloroform: methanol extraction of seeds such as, Pumpkin (*Cucurbita maxima*) and Bael (*Aegle marmelos*) belonging to the Cucurbitaceae and Rutaceae families and found in Central India region, was carried out to yield the total lipids (TL) which were then subjected to acetone extraction to yield the total phospholipids (TPL). Fatty acid methyl esters of TL and TPL were prepared and analyzed by GLC for fatty acid composition which showed the major fatty acids present to be palmitic, stearic, oleic, linoleic and linolenic acids. The TL and TPL contained the same fatty acids qualitatively but their amounts varied quantitatively.

Recently increased attention has been focused on the utilization of under-utilized agricultural products, as well as byproducts and wastes from food processing to produce food and feed. Such utilization would help maximize available resources and minimize waste disposal problems.

Pumpkin seed oil has been produced in Austria, Slovenia, and Hungary. The seeds that remain in large quantities as waste product after the removal of the flesh could be utilized. Although the seeds of pumpkin are rich in oil and protein and the crop could potentially become another source of vegetable oil and protein, detailed studies on their composition and the properties of their oil are limited.

Bael tree was originated in India and is presently growing in most of the countries of Southeast Asia. In India, it grows wild, especially in dry forest, outer Himalayas, Shivaliks and South Indian plateau. Bael has enormous traditional uses against various diseases and many bioactive compounds have been isolated from this plant also. Seeds are beneficial to in treating diabetes, high blood pressure and high cholesterol levels. Seed oil exhibits antibacterial activity against different strains of vibrios.

Lipids of plant origin find applications not only as the nutritive value but also have been used for therapeutic purposes since time immemorial. The main functions of lipids are to supply and transport fatty acids and vitamins, protect vital body organs, insulate warmth and regulate body temperature, assist growth and promote healthy blood, nerves, muscles and skin, transport and breakdown cholesterol, prolong digestion and enhance absorption and flavor, be a source and store of energy.

Pumpkin and Bael seeds are found in abundance in the Nagpur region of Central India. Some work<sup>[1,2]</sup> on the composition of oils from the two seeds and other seeds<sup>[3,4,5,6]</sup> from the Central India region has been reported by this laboratory. Some work<sup>[7,8,9]</sup> on seed oils from other regions has also been reported.

This piece of investigation reports on the fatty acid profile of total lipids and total phospholipids in Pumpkin and Bael seeds found in the Central India region.

The Pumpkin and Bael Seeds were procured from local dealers and from trees around Nagpur City, prepared for use by decorticating, drying in Sun and grinding to powder form. The powdered seeds were extracted in a Soxhlet extractor by the method of Folch et al. [10] using Chloroform: methanol(2:1, v/v) to separate the total lipids. The extract of total lipids was filtered and further treated with Acetone [11] and cooled to -5°C. The phospholipids so isolated, were then filtered and stored in chloroform-methanol for further study. The methyl esters of fatty acids of the lipids were prepared by Christie method [12] and the composition of fatty acids was determined by gas liquid chromatography (GLC). The column was packed with 5%EGSS on Chromosorb-W (40-60 mesh), equipped with flame ionization detector programmed at 280°C with flow rate of 0.8 ml/min and capillary column (30m×0.25mm×0.25mm). The GLC conditions were: chart speed 60 cm/hr; injection port temperature and column temperature 180°C and 250°C, respectively and nitrogen flow rate 30 mL/min. The identification of the peaks was achieved by retention times and comparing with authentic standards analyzed under the same conditions. The fatty acids were quantified by Carroll method [13]

**Table: Fatty acid Profile of Total lipids and Total Phospholipids of Seeds (by wt%)**

Seeds	Lipids	Fatty acids					
		Palmitic	Stearic	Oleic	Linoleic	Linolenic	Unidentified
Pumpkin	Total lipids	20.7	6.0	38.5	34.2	0.3	0.3
	Total Phospholipids	24.0	2.8	27.4	37.1	8.4	0.3
Bael	Total lipids	14.4	0.4	30.0	28.1	27.1	--
	Total Phospholipids	17.1	13.4	35.4	27.3	6.8	--

The present work demonstrated that, although the fatty acids in both the lipids remained the same qualitatively but varied quantitatively in significant amounts. The study also showed that substantial variations in the individual fatty acids concentration can occur between lipid classes of same seeds [14]. This work seemed to agree well largely with similar work reported earlier on various seed lipids [15,16,17,18,19,20].

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