



Fatty acids distribution in lipids of orange and tomato seeds of Vidarbha region ((Maharashtra)

D. R. Bhide, V. Y. Karadbhajne, R. R. Khotpal and A. S. Kulkarni

Department of Oils, Fats and Surfactants Technology, Laxminarayan Institute of Technology, R. T. M. Nagpur University, Nagpur, India

ABSTRACT

Seeds such as Orange (*Citrus sinensis*), and Tomato (*Lycopersicum esculentum*), belonging to the Rutaceae and Solanaceae families, were extracted with chloroform: methanol (2:1) (v/v) to yield the total lipids(TL). The total phospholipids (TPL) were extracted from TL by acetone extraction. The TL and TPL were converted to their respective fatty acid methyl esters and subjected to GLC analysis. The fatty acid composition showed the preponderance of palmitic, stearic, oleic, linoleic and linolenic acids. It was observed the fatty acids in TL and TPL remained the same qualitatively but showed some dissimilarities quantitatively.

Key words: Seeds, Total Lipids, Phospholipids, Fatty acids, Vidarbha Region.

INTRODUCTION

Processing residues from various crops have been utilized from time to time as minor sources oil. The citrus processing industry has attracted attention for citrus seeds as a useful oil source due to modernization trends. The extraction and commercialization of orange seed oil will reasonably enhance the profit status of most fruit processing industries, and encourage the sustenance of the cultivation of the seedy species of sweet orange fruits. Also orange seed oil can be used in cosmetics and other personal care items.

Tomato seeds represent a very large waste by-product from the processing of tomatoes into products such as tomato juice, sauce and paste. Tomato pomace, a waste product from tomato processing plants, consists of skins, pulp and seeds. One potential use for these seeds is as a source of vegetable oil.

Tomato seeds can be obtained as a by-product from tomato processing plants.

Tomato Seed Oil is a stable, highly penetrating oil. It is a nutritive addition to facial creams, anti-wrinkle serums, anti-aging formulations, lip care products, hair products, make-up, sun care preparations, shaving products and other cosmeceutical formulations. It is suitable for dry, oily and combination skin.

Some work [1,2,3] on the composition of these two seeds and other seeds [4,5,6] from the Vidarbha region of Maharashtra has been reported by this laboratory. Some work [7,8,9] on seed oils from other regions has also been reported.

This piece of investigation reports on the fatty acid distribution in total lipids and total phospholipids in Orange and Tomato seeds found in the Vidarbha region of Maharashtra.

EXPERIMENTAL SECTION

Seed Materials:

The sweet orange fruit *Citrus Sinensis* seeds were obtained from local fruit canning industries and discards of fruits and prepared for use by decoating, sun drying and grinding.

Extraction of total lipids(TL):

The ground seeds were extracted with the help of a Soxhlet extractor by chloroform:methanol(2:1, v/v) by the method of Folch et al. [10] to yield the total lipids.

Isolation of total phospholipids(PL):

the filtered total lipid extract was extracted with aceone[11]and cooled to -5°C .The phospholipids were then filtered and stored in chloroform-methanol 2;1 v./v for further use.

Fatty acids composition by GLC:

Fatty acid methyl esters(FAME) of the oils were prepared[12] and composition of FAME was determined using gas liquid chromatography unit packed with 5%EGSS 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 conditions of GLC 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 by comparing with authentic standards analyzed under the same conditions. The quantification was carried out by Caroll method[13]

RESULTS AND DISCUSSION

Table1: Fatty acid Composition of Total lipids and Total Phospholipids of Seeds (by wt%)

Fatty acids	Orange Seeds		Tomato Seeds	
	Total lipids	Total Phospholipids	Total lipids	Total Phospholipids
Palmitic	24.7	18.2	15.6	23.4
Stearic	3.6	6.3	6.8	6.0
Oleic	28.5	38.5	26.0	29.2
Linoleic	41.7	35.0	46.5	41.3
Linolenic	0.8	2.0	2.8	0.1
Others	0.7	-	2.3	-

Others means myristic and arachidic acids

The investigation showed that significant dissimilarities in the concentration of individual fatty acids can occur in lipids and between lipid classes of seeds [14].The work on fatty acid composition of TL as well as TPL was largely in good agreement with those reported earlier on various seeds[15-20]

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