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NOTE

Fatty Acid Composition of Some New Varieties of Oil Seeds

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Five hybrid samples of oil seeds, *viz.*, sunflower (*Helianths annus*) LSF -11, sunflower (*Helianths annus*) LSF-8, safflower (*Carthamus tinctorius*) PBNS-12, safflower (*Carthamus tinctorius*) PBNS-40 and 5 ground nut (*Arachis hypogea*) JL-24, have been studied for their fatty acid composition using gas chromatography. The JL-24 variety of ground nut has a rich (33.51 %) unsaturated fatty acid content with better storage quality, The percentage of total unsaturated fatty acids in gram samples lies in the sequence sunflower LSF-11 (24.78 %) > sunflower LSF-8 (23.15 %) and in safflower PBNS-40 (20.62 %) > safflower PBNS -12 (10.68 %).

Key Words: Fatty acid composition, Gas chromatogram, Oil seeds, *Helianthus annus* LSF-11, LSF-8, *Carthamus tinctiorius* PBNS-12, PBNS-40 and *Arachis hypogea* JL-24.

Fat is one of the major nutrients which provide energy, promote body growth, maintain and repair body tissue, promote reproduction and lactation and regulate body process. Fats are carriers of fat soluble vitamins. Dietary fat must also provide essential fatty acids (EFA) which are the functional components of membrane lipids and have other important metabolic function[1,2]. Fats are made up of fatty acids which include saturated fatty acids like palmitic and stearic, mono saturated fatty acids like oleic and polyunsaturated fatty acids like linoleic acid and linolenic acid[1,2].

In most cases, so as to have an overall estimated of their nutritive value. Hybrid seeds have been considered important so as to produce seeds with better nutritive value and minimize the possibility of the presence of harmful substances[1-5]. In addition to the nutritive aspects, moderate amounts of fats give desirable staying quality to meals and improve their palatability thereby influencing the intake of other nutrients[4]. The seeds were analyzed for fatty acid composition.

Some new indigenous hybrid seeds *i.e. Helianthus annus* variety LSF-11 and LSF-8 have been procured from oil seeds research station, Latur (Maharashtra)

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where as *Carthamus tinctorious* PBNS-12 and PBNS-40 have been procured from all India Co-ordinate Research Project on Safflower Department of Agricultural Botany, Marathwada Agricultural University, Parbhani (Maharashtra) and *Archis hypogea* variety JL-24 have been procured from Mahatma Phule Krishi Vidyapeeth, Jalgaon (Maharashtra).

Powdered samples of experimental seeds were subjected to solvent extraction in Soxhlet Apparatus for 20 h, using petroleum ether (42-60 ºC) as solvent. Lipids were then estimated gravimetrically by following the procedure reported by Colowick and Kaplan[6]. Methyl esters of the lipids were prepared by the method of Chowdhary *et al.*[7]. There gas chromatogram were recorded in Geo-chem Laboratories Pvt. Ltd., Mulund (West), Mumbai using FID and CHEMITO 8610 gas chromatograph.

The fatty acids present in various seed samples along with there weight, percentage are reported in Table-1.

TABLE-1
FATTY ACID COMPOSITION OF OIL SEEDS (g/100 g)

Fatty acids	A	B	C	D	E	F	G	H	I	J	K	L
Carbon double bond ratio	16:0	18:0	20:0	22:0	24:0	16:1	18:1	18:2	18:3	20:1	–	–
Helianthus annus LSF-11	2.44	2.71	0.39	0.41	0.13	–	10.72	13.78	0.24	–	6.08	24.78
Helianthus annus LSF-8	2.52	1.39	0.18	0.35	0.16	–	13.52	9.44	0.19	–	4.60	23.15
Carthamus tinctiorius PBNS-12	2.02	0.91	0.17	0.10	0.21	–	3.91	6.36	0.23	0.14	3.41	10.68
Carthamus tinctiorus PBNS-40	1.73	0.96	0.09	0.08	0.05	–	4.50	15.89	0.20	0.03	2.91	20.62
Arachis hypogea JL-24	6.20	1.99	0.41	1.82	0.02	–	16.28	16.35	0.88	–	10.44	33.51

A = Palmitic, B = Stearic, C = Archidic, D = Behenic, E = Lignoceric, F = Palmitoleic, G = Oleic, H = Linoleic, I = Linolenic, J = Ecosenoic, K = Saturated, L = Unsaturated.

A perusal of the fatty acid profile (Table-1) show that the saturated (*viz.* palmitic acid) content of the two *Helianthus annus* varieties lies in the sequence LSF-8 (2.52 %) > LSF-11 (2.44 %). However, in both the varieties of the total unsaturated fatty acid content predominant. In the *Archis hypogea* JL-24 the saturated fatty acid *viz.* palmitic acid content (6.20 %) which is greater than LSF-8 and LSF-11, PBNS-12 (2.02 %) and PBNS-40 (1.73 %). However, in this variety the total unsaturated fatty acid content predominant. In the *Archis hypogea* sample these are present to the extent of 65 % by weight which agrees well with the fatty acid composition of the conventional peanut[8]. Lower linolenic acid content (0.88 %) in the *Archis hypogea* seeds should be regarded as a favourable storage factor. It is known that on storage linolenic acid gets readily oxidized producing offlavours[8] of the two *Carthamus tinctiorious* samples studied *i.e.* PBNS-12 and PBNS-40 shows lower content of ecosenoice (0.14 and 0.03 %, respectively). They also shows lower content of oleic acid (9.44 and 6.36 %) and higher content linoleic acid (15.89 %) in PBNS-40 than PBNS-12 (6.36 %). Linoleic acid is lowest (6.36 %) in the variety PBNS-12 and stearic acid is highest (2.71 %) in the variety LSF-11.

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