



PROXIMATE COMPOSITION OF SOME NEW VARIETIES OF OIL SEEDS

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ABSTRACT

Five new varieties of oil seeds, i.e., *Arachis hypogaea* JGN-3, *Brassica campestris* VARUNA, *Carthamus tinctorius* JSF-1, *Glycine max*-JS-90-41, *Helianthus annuus* KBSH-1, were analyzed for their proximate principles.

Key words: Composition, Oil seeds.

INTRODUCTION

Fats and fatty oils are widely distributed in the vegetable kingdom occurring along with proteins, amino acids and carbohydrates. The fats and oils are of great biochemical importance because of their role as chief storage form of energy, which serves as a building stone. In addition to edible purpose, they are also commercially important in medicine, soap, detergents, lubricants, and greases and in various paint and varnish industries^{1,2}.

The seed under investigation were procured from Department of Plant Breeding and Genetics, Jawaharlal Nehru Krishi Vishwavidhalaya, Jabalpur.

EXPERIMENTAL

In the present investigation, all the seeds were analyzed for moisture, total ash and its components (acid soluble and acid insoluble ash, water soluble and water insoluble ash and alkalinity), crude protein, total lipids, total carbohydrates, reducing sugar and non-reducing sugar, phosphorous, calcium and crude fibre content.

Moisture, ash (and its components) and calcium contents were determined by the method as described by Pearson³. Crude fiber content was determined by the method recommended in the fertilizers and feeding stuff's regulation⁴. Phosphorous was determined according to the procedure of Sumner⁵. Total lipids were determined by the method of Colowick and Kaplan⁶. Carbohydrates, reducing and non-reducing sugar were estimated by the method of Nelson⁷. Crude protein was estimated by "Micro Kjeldhal" method (NX6.25).

RESULTS AND DISCUSSION

The results of proximate analysis are shown in Tables 1 and 2.

Moisture contents of *Arachis hypogaea* JGN-3, *Brassica campestris* VARUNA, and *Carthamus tinctorius* JSF-1, *Glycine Max*-JS-90-41 and *Helianthus annuus* KBSH-1 were found to be 4.81, 3.10, 4.91, 5.80 and 18.04%, respectively. *Helianthus Annus* KBSH-1 has maximum (18.04 percent) moisture content whereas *Brassica campestris* VARUNA has lowest (3.10 percent) moisture content.

The crude fiber contents of *Arachis Hypogaea* JGN-3, *Brassica campestris* VARUNA, *Carthamus tinctorius* JSF-1, *Glycine Max*-JS-90-41 and *Helianthus annuus* KBSH-1 were found to be 5.37, 5.96, 9.66, 4.87 and 8.74%, respectively. *Carthamus tinctorius* JSF-1 has highest (9.66%) and *Glycine Max*-JS-90-41 has lowest content (4.87%). However, these seeds exhibit general agreement with other varieties of oils seeds⁸⁻¹⁴.

The total lipid contents are – *Arachis Hypogaea* JGN-3 (43.84 percent), *Brassica campestris* VARUNA (38.86 percent), *Carthamus tinctorius* JSF-1 (31.62 percent), *Glycine Max*-JS-90-41 (16.28 percent) and *Helianthus annuus* KBSH-1 (41.45 percent). *Arachis hypogaea* JGN-3 (43.84 percent) has high lipid content whereas *Glycine Max*-JS-90-41 has lowest (16.28 percent). However, these seeds exhibit general agreement with other varieties of oils seeds⁸⁻¹⁴.

The crude protein contents are – *Arachis Hypogaea* JGN-3 (23.89 percent), *Brassica campestris* VARUNA (23.25 percent), *Carthamus tinctorius* JSF-1 (30.47 percent), *Glycine Max*-JS-90-41 (40.42 percent) and *Helianthus annuus* KBSH-1 (11.48 percent). *Glycine Max*-JS-90-41 (40.42 percent) has highest crude protein contents while *Helianthus annuus* KBSH-1 (11.98 percent) has lowest, which is in general accordance with other varieties of oils seeds⁸⁻¹⁴.

The total carbohydrate contents are – *Arachis hypogaea* JGN-3 (22.8 percent), *Brassica campestris* VARUNA (10.8 percent), *Carthamus tinctorius* JSF-1 (14.4 percent), *Glycine Max*-JS-90-41 (22.8 percent) and *Helianthus annuus* KBSH-1 (20.4 percent). *Arachis hypogaea* JGN-3 (22.8 percent), *Glycine Max*-JS-90-41 (22.8 percent) and *Helianthus annuus* KBSH-1 (20.4 percent) which are in close proximity with each other whereas *Brassica campestris* VARUNA (10.8 percent) has lowest. However, these oil seeds exhibit general agreement with other varieties of oil seeds⁸⁻¹⁴.

Arachis hypogaea JGN-3 have ash content (2.38 percent), *Brassica campestris* VARUNA (4.26 percent), *Carthamus tinctorius* JSF-1 (2.28 percent), *Glycine Max*-JS-90-41 (4.64 percent) and *Helianthus annuus* KBSH-1 (3.39 percent), which are in close proximity with each other and also in general agreement with other varieties of oil seeds⁸⁻¹⁴.

Calcium contents are – *Arachis hypogaea* JGN-3 (0.135 percent), *Brassica campestris* VARUNA (0.26 percent), *Carthamus tinctorius* JSF-1 (0.0928 percent), *Glycine Max*-JS-90-

Table 1. Proximate Principles of Air Dried Seeds (g/100 g)

S. No.	Seeds	Moisture	Crude Fiber	Total Lipid	Crude Protein	Total Carbohydrates	Reducing Sugar	Non-reducing Sugar
1.	Arachis Hypogaea JGN-3	4.81	5.37	43.84	23.89	22.8	2.1	20.7
2.	Brassica compestris VARUNA	3.10	5.96	38.86	23.25	10.8	0.9	9.9
3.	Carthamus tinctorius JSF-1	4.91	9.66	31.62	30.47	14.4	1.2	13.2
4.	Glycine Max-JS-90-41	5.80	4.87	16.28	40.42	22.8	1.8	21.0
5.	Helianthus annuus KBSH-1	18.04	8.74	41.45	11.48	20.4	0.9	19.5

Table 2. Minerals and Ash content of Air Dried Seed (g/100 g)

S. No.	Seeds	Ash	Water Insoluble Ash	Water Soluble Ash	Acid Insoluble Ash	Acid Soluble Ash	Alkalinity of water Soluble Ash	Calcium Content	Phosphorous Content
1.	Arachis Hypogaea JGN-3	2.388	1.2	1.188	0.344	2.044	11.8 meqn Na ₂ CO ₃	0.135	0.685
2.	Brassica compestris VARUNA	4.268	2.668	1.600	0.404	3.8640	15 meqn Na ₂ CO ₃	0.264	1.125
3.	Carthamus tinctorius JSF-1	2.28	2.004	0.276	0.062	2.212	8.4 mean Na ₂ CO ₃	0.0928	1.500
4.	Glycine Max-JS-90-41	4.644	2.1800	2.464	0.528	4.116	56 meqn Na ₂ CO ₃	0.27	1.250
5.	Helianthus annuus KBSH-1	3.398	2.84	0.588	0.256	3.142	116 meqn Na ₂ CO ₃	0.121	1.000

41 (0.27 percent) and Helianthus annus KBSH-1 (0.121 percent) Glycine Max-JS-90-41 has higher (0.27 percent) calcium content than other oil seeds while Carthamus tinctorius JSF-1 has lower (0.0928 percent) calcium content. Glycine Max-JS-90-41 were found to be in close proximity with other varieties of Glycine max^{8, 9, 13}.

Phosphorus contents are – Arachis hypogaea JGN-3 (0.685 percent), Brassica compestris VARUNA (1.125 percent), Carthamus tinctorius JSF-1 (1.500 percent), Glycine Max-JS-90-41 (1.250 percent) and Helianthus annus KBSH-1 (1.000 percent) Arachis hypogaea JGN-3 has lower (0.685 percent) phosphorous content than other oil seeds. Carthamus tinctorius JSF-1 has higher (1.500 percent) phosphorous content than those reported in wealth of India¹⁴.

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