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# PROXIMATE COMPOSITION OF SOME LEGUMES AND OIL SEEDS

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## ABSTRACT

Legume seeds (Glycine max NRC–37, Vigna radiata LGG–460 and Phaseolus mungo LBG–20) and oil seeds (Sesamum indica JTS–8 and Guizatia abyssinic JNC–6) were studied for their moisture, crude fibre, lipid content, crude protein, ash (and its analysis) and calcium contents.

**Key words :** Legumes, oil seeds.

## INTRODUCTION

Legumes are important source of plant proteins for human consumption. These are used extensively in developing nation of the world as a source of dietary protein in view of high cost and less production of animal protein. Their role, however, is limited by several factors including low protein digestibility, antinutritional factors and poor cooking quality. Legume contain twice as much protein as cereal grain and minerals. The protein of cereal and food legume supplement each other nutritionally because each is comparatively rich in amino acid in which other is deficient[1, 2].

Oil seeds are also rich source of energy and nutrients. India has wide variety of oil seeds and these seeds are used as quality food and feed material[15]. In the developing countries, where protein caloric malnutrition is widespread, legumes and oil seeds can solve the problem of malnutrition to greater extent, if the seeds of these crop have ample quantity of protein, lipids and minerals. So the present study was taken up to investigate the proximate composition of these five improved varieties of legumes and oil seeds.

## MATERIALS AND METHOD

The seeds under investigation were procured from Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur. Randomly selected healthy and matured seeds of Glycine max variety NRC–37, Vigna radiata LGG–460, Phaseolus mungo variety LBG–20, Sesamum indicum

variety JTS–8 and Guizatia abyssinic variety JNC–6 were analysed in triplicates for moisture, total lipid, crude fibre, crude protein, ash (and its analysis) and calcium content.

Moisture content, calcium and total ash (its analysis) content were determined by the method as described by Pearson[3]. Crude fibre content was determined according to procedure recommendation in Fertilizers and Feeding Stuff's Regulations[4]. Total lipids were estimated by the method as given by Colowick and Kaplan[5]. Semi–micro Kjeldahl method (N x 6.25) and method of Long et al.[6] was used in the estimation of crude protein.

## RESULTS AND DISCUSSION

The data given in Table 1 and 2 represent the general composition of the whole seeds which were powdered to 100 mesh in a grinder.

From the perusal of the data, it appears that the proximate constituents of the different varieties under study exhibit variation in some of their constituents. Moisture content of the seeds of Glycine max variety NRC–37 was observed to be 8.93 percent, which is found to be in general agreement with other varieties of Glycine max[7, 8]. In the seeds of Vigna radiata variety LGG–460 and phaseolus mungo variety LBG–20 were found to be 9.03 and 10.7 percent of moisture content, respectively. These values were observed to be higher than the values reported earlier[2,15]. However, these value were found to be in close proximity of other legumes[8–14]. Seeds of Sesamum indicum variety JTS–8 was reported to have 4.47 percent moisture content, which is found to be higher than the moisture content of other varieties of Sesamum indicum[15,16]. Seeds of Guizatia abyssinic variety JNC–6 was reported to have 4.40 percent moisture content, which is found to be in general agreement with other varieties of Guizatia abyssinic[17].

The total lipid content in the seeds of Glycine max variety NRC–37 was 20.3 percent, which was found to be in close proximity with other varieties of Glycine max[7]. Seed of Vigna radiata variety LGG–460 and Phaseolus mungo variety LBG–20 have 1.34 and 1.43 percent of lipid content, respectively, in which LBG–20 has higher value of lipid content than other variety (1.23 percent) of Phaseolus mungo[18]. Seeds of Sesame and Niger are rich sources of oil and other nutrients. Sesamum indicum JTS–8 and Guizatia abyssinic JNC–6 were observed to have 48.5 and 40.6 percent of oil content, respectively, which is found to be in close accordance with other varieties of Sesame and Niger[15, 16].

Crude fibre content in the seeds of Glycine max variety NRC–37 was found to be higher (7.54 percent) than the other varieties[19] of Glycine max (4.6 percent). Seeds of Vigna radiata variety LGG–460 was found to be less (8.5 percent) of crude fibre content than other varieties of vigna radiata[20]. The crude fibre content in the seeds of Phaseolus mungo variety LBG 20 was found to be higher (5.6 percent) than the value (1.96 percent) reported by other workers[18]. The crude fibre content in the seeds of Sesamum indicum variety JTS–8 (11.0 percent) and Guizatia abyssinic variety JNC–6 (24.3 percent) was found to be higher than the reported value[15, 16].

The crude protein content was estimated to be 39.8 percent in the seeds of Glycine max variety NRC–37, which is in close accordance with the value (38.7 and 40.2 percent) reported by Harsha et al.[8] and also higher than some other varieties of Glycine max (Kumar et al.)[7] 29.3 and 21.8 percent crude protein was estimated in the seeds of Vigna radiata variety LGG–460 and Phaseolus mungo variety LBG–20, respectively was found to be higher than other varieties of Vigna radiata[2] and Phaseolus mungo[18]. The seeds of Sesamum indicum variety JTS–8 and Guizatia abyssinic (JNC–6) were reported to have 24.9 and 28.4 percent of crude protein content, respectively. It is in close proximity with other varieties of Sesame and Niger[15,16].

**Table 1 : Proximate composition of air dried seeds (g/100g)**

| Constituents variety | Moisture content | Total lipid | Crude fibre | Crude protein |
|---|---|---|---|---|
| Glycine max NRC–37 | 8.93 | 20.3 | 7.54 | 39.8 |
| Vigna radiata LGG–460 | 9.03 | 1.34 | 8.5 | 29.3 |
| Phaseolus mungo LBG–20 | 10.72 | 1.43 | 5.6 | 21.8 |
| Sesamum indicum JTS–8 | 4.47 | 48.5 | 11.0 | 24.9 |
| Guizatia abyssinic JNC–6 | 4.40 | 40.6 | 24.3 | 28.4 |

Total ash content of the seeds under study has been found to be 4.6 percent in the seed of Glycine max variety NRC–37, which was found to be less than other varieties of Glycine max[7]. Ash content of the seeds of Vigna radiata variety LGG–460 was observed to be 3.41 percent, which is found to be in general agreement with other varieties of Vigna radiata[20]. In the seeds of Phaseolus mungo variety LBG–20, the total ash content was reported to be higher (3.42 percent) than other seeds (2.76 percent) of Phaseolus mungo[18]. In the seeds of Sesamum indicum variety JTS–8 and Guizatia abyssinic variety, the total ash content was observed to be 5.38 and 4.38 percent, respectively. However, the ash content of Guizatia abyssinic (JNC–6) was found to be in close proximity with other varieties of Guizatia abyssinic[17].

The proximate analysis of the seed of these variety show that total calcium content present in the seeds of Glycine max variety NRC–37 was found to be less (248.8 mg/100 g) than the other varieties of Glycine max[8] and it is also observed to be in close accordance with some other Glycine max varieties[19]. Vigna radiata variety LGG–460 and Phaseolus mungo variety LBG–20 were reported to have 168.0 and 121.6 mg/100 g of calcium content, respectively[2]. 456.8 mg and 160 mg/100 g calcium content was estimated in the seeds of Sesamum indicum variety JTS–8 and Guizatia abyssinic variety JNC–6, respectively. These values were found to be higher than other varieties of Sesamum indicum and Guizatia abyssinic[15, 16].

**Table 2. Mineral and ash content of air dried seeds (g/100g)**

| Constituent varieties | Ash content | Water soluble ash | Water insoluble ash | Acid soluble ash | Acid insoluble ash | Alkalinity of water soluble ash (m.eq.) | Calcium content (mg) |
|---|---|---|---|---|---|---|---|
| Glycine max NRC–37 | 4.6 | 2.60 | 2.06 | 4.54 | 0.10 | 30.0 | 248.8 |
| Vigna radiata LGG–460 | 3.41 | 2.04 | 1.21 | 3.24 | 0.10 | 22.4 | 168.0 |
| Phaseolus mungo LBG–20 | 3.42 | 1.65 | 1.64 | 32.20 | 0.10 | 17.6 | 121.6 |
| Sesamum indicum JTS–8 | 5.38 | 0.20 | 5.34 | 4.92 | 0.60 | 3.2 | 456.8 |
| Guizatia abyssinic JNC–6 | 4.38 | 0.66 | 3.96 | 4.30 | 0.10 | 4.0 | 160.0 |

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