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ORGANIC COMPOSITION OF VIGNA SINENSIS, PHASELOUS AYREUS, ARACHHIS HYPOGAEA PLANT GRAINS AND STEMS

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Annotation. Comparative analysis of the quantitative composition of proteins, amino acids, vitamins and fatty acids in samples taken from legumes - peanuts, beans, legumes and stalks. Proportions and differences in the organic composition of plant grains and stems were studied. All comments were given according to utilizing from them

Keyword. Proteins, aminoacids, vitamins, fatty acids, chromatography, neutron activation analysis.

Introduction. Leguminous plants are grown as the main food products. Their stems and grains have a rich chemical composition. The presence of macro and micro elements, proteins, amino acids, fats and fatty acids, vitamins and many useful components has led to their wide use in folk medicine, as well as in animal husbandry. Therefore, serious attention is paid to their chemical analysis [].

Legume products are directly related to their chemical composition. The chemical composition depends on their species, soil and climatic conditions. Therefore, it is important to study the chemical composition of the grains and stems of legumes grown under different conditions.

In 2020-2023, the stems and grains (fruits) of legumes such as mung bean, beans and peanuts grown in "Soy bo'yi mahalla" of Besharik district of Fergana region were taken as the object of research.

Samples taken from the stalks and grains of legumes planted in this soil after ripening were determined as follows: Sample of peanut stalks -2021 BYP; bean stem

sample -2021 BLP; mung bean stem sample -2021 BMP; peanut grain sample -2021 BYD; bean grain sample -2021 BLD; mung bean grain sample -2021 BMD.

Study of the amount of total proteins, amino acids and vitamins in samples taken from the stems and grains of legumes Proteins and peptides, lipids and fatty acids S.Yu. and in the laboratory of lipid chemistry of the Institute of Plant Chemistry named after Yunusov.

Lipids. Moisture and volatile matter content in the grains were determined based on the method [6]. For neutral lipids, the grains were air-dried, pulverized, and extracted in an Soxhlet apparatus with extraction gasoline (q, tem. 72–80 oC). The characteristics of the isolated lipids are given in Table 4.

Table 4

Description of lipids in legumes

Index name	Quantitative indicators		
	BYD 2021	**BMD 2021**	**BLD 2021**
Moisture and volatile matter % of grain mass	7,73	6,45	8,60
Separation of neutral lipids at effective humidity is effective % of grain mass	46,36	1,44	1,67
Separation of neutral lipids in relation to absolutely dry matter is effective % of grain mass	50,24	1,53	1,82

The moisture content in the grains of legumes is close to each other under normal conditions, the value is 6.5-8.5%. The amount of neutral lipids is 46%, taking into account the moisture content of peanuts, and in absolute terms it is more than 50%. In mosh and beans, the value is 1.4-1.8%.

The composition of the components of neutral lipids was found using a thin-layer chromatography method on a silufol plate. Hexane for separation of neutral lipids: consisting of a mixture of ether 4: 1; 3: 3 and 7: 3 ratio systems were used. The results of the analysis showed that the neutral lipids in grain samples consist mainly of triglycerides (esters of fatty acids with glycerin) and free fatty acids and their accompanying carbohydrates, phytosterols and triterpenols.

To determine the fatty acid content in the neutral lipids, the lipids obtained from the grain samples were hydrolyzed in an alcoholic solution of alkali, and the resulting

fatty acids were methylated with freshly prepared diazomethane. Methyl esters of fatty acids were purified from additives in a system of solvents in a ratio of 4: 1 in preparative thin-layer chromatography in slikagel. The zones belonging to the methyl esters of the fatty acids on the plate were scraped off and eluted several times with chloroform from the sligagel. Collecting the chloroform eluates, the chloroform was driven in a rotor evaporator. The methyl esters of the fatty acids separated from the solvent were dissolved in hexane on an Agilent 1890 N chromatograph with a flame ionization detector, HP-5 stationary phase, 30m * 0.32 mm capillary column gas-carrier-helium and programmed at a temperature of 150-270 ^{o} C. were analyzed. The results of the analysis are presented in table 5.

Table 5

Quantitative composition of neutral lipids and fatty acids in legumes (% of total fatty acids)

№	Name of fatty acids	Quantity		
		BYD 2021	BMD 2021	BLD 2021
1	Myristic, 14:0	Сл.	0,35	0,19
2	Palmitic, 16:0	11,25	24,58	24,31
3	Palmitoleic, 16:1	0,06	-	-
4	Margarine, 17:0	0,15	-	0,30
5	Stearic, 18:0	3,20	5,54	5,38
6	*Oleic, 18:1ω9 Linolenic, 18:3ω3	36,73	26,39	31,97
7	Linoleic, 18:2ω6	39,99	39,42	30,93
8	Araxinovaya, 20: 0	1,60	1,26	1,59
9	Eykozenovaya, 20: 1ō11	1,18	0,43	0,49
10	Begenovaya, 22: 0	3,78	1,32	2,95
11	Lignotserinovaya, 24: 0	1,85	0,71	1,11
12	Tserotinovaya, 26: 0	0,21	-	0,78
	∑ Unsaturated fatty acids	22,04	33,76	36,61
	∑ Unsaturated fatty acids	77,96	66,24	63,39

These fatty acids do not decompose under the conditions tested on a gas chromatograph and come out with a single peak.

According to the results of the analysis, the content of unsaturated fatty acids in the grains of legumes studied (79.09-63.39%) is higher than that of saturated fatty acids (20.91-36.61%).). Most of these unsaturated acids are essential fatty acids such as 18: 2 ō 6 - linoleic and oleic + linolenic 18: 1 ō9 + 18: 3 ō3. Palmitolein fatty acids were not detected in moss and beans, and margarine fatty acids were not detected in moss. Residues of myristic acid were recorded in peanuts, and the content in mosh and beans was very small (0.35 and 0.19%).

Fatty acids in the stems of legumes.

Lipids. Total lipids in air-dried plant stems were isolated according to the Foil method [7]. The plant stems were ground in a mortar until homogeneous and treated with a 2: 1 volume chloroform-methanol mixture according to the Foil method. Extract additives were removed by treatment with 0.04% $CaCl_{2\ solution.}$ The yield of the extract relative to the dry mass of the stem was 2.72% for BMP 2021, 2.50% for BYP 2021, and 2.49% for BLP 2021. An analytical thin-layer chromatogram of lipids in a system of hexane-diethyl ether was obtained. Chromatograms obtained in a 4: 1 and 3: 2 ratio solvent system were opened at 50% H_2SO_4 and J_2 vapors. The results obtained showed that the lipid extract consists of carbohydrates, carotenoids, triacylglycerols, free fatty acids, aliphatic and cyclic alcohols.

The free lipids in the extract were hydrolyzed and the fatty acids in it were converted to methyl esters and isolated, and a capillary column with a flame ionization detector, HP-5 stationary phase length 30 m, programmed temperature 60 to 250 ^{o}C, gas the carrier was identified on an Agilent Technologies 6890N gas chromatograph with a helium movement of 30ml / min. The results of the analysis are presented in table 6.

Table 6

Quantitative content of fatty acids in the total lipids of legumes (% of total fatty acids)

№	Fatty acids	Quantity		
		BMP 2021	BYP 2021	BLP 2021

1	Kaprinovaya, 10: 0	0,17	0,38	-
2	Laurinovaya, 12: 0	0,65	2,75	0,88
3	Miristinovaya, 14: 0	1,76	2,93	2,04
4	Pentadekanovaya, 15: 0	0,54	0,62	1,21
5	Palmitinovaya, 16: 0	30,55	38,47	29,03
6	Palmitoleinovaya, 16: 1	0,46	1,43	-
7	Margarinovaya, 17: 0	1,01	1,37	1,38
8	Stearinovaya, 18: 0	9,70	12,81	7,41
9	*Oleinovaya,18:1ō9 Linolenovaya, 18: 3ō3	22,40	18,19	20,97
10	Linolevaya, 18: 2ō6	22,90	14,79	22,60
11	Araxinovaya, 20: 0	3,01	1,90	4,99
12	Begenovaya, 22: 0	2,20	1,65	3,54
13	Lignotserinovaya, 24: 0	2,55	1,94	3,73
14	Tserotinovaya, 26: 0	2,10	0,77	2,22
	∑ Unsaturated fatty acids	54,24	65,59	56,43
	∑ Unsaturated fatty acids	45,76	34,41	43,57

The amounts of saturated and unsaturated fatty acids in the stems of legumes have an inverse order relative to their grains. The amount of unsaturated fatty acids in grains is higher than in saturated ones. On the stems, the opposite is true. Saturated acids make up 54.24% in mung beans stalks, 65.5% in peanut stalks and 56.43% in beans.

13 fatty acids were found in the grains, and the content in their stems was 15, and caprin, laurine, pentadecane are not present in grain lipids. Eikozan detected in the grains was not recorded in the stems.

Studies of fatty acids in legumes and stalks of legumes such as mung beans, peanuts, beans show differences in the composition of fatty acids and the content of unsaturated fatty acids in the grains, and high content of saturated fatty acids in the stalks. .

Conclusion. A study of the mineral and organic composition of legumes, beans, grains and stalks of legumes grown in Besharik district of Fergana region

revealed that they are rich in proteins, amino acids and vitamins. Fatty acids in grains and stalks differ in content, and the amount of unsaturated fatty acids in grains is higher than in saturated fatty acids, and vice versa in stalks. The results confirm that the grains and stalks of legumes can be used as a basis for the preparation of various composite feed products.

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