ISSN 3060-4567

AMINO ACID COMPOSITION OF SOME PROTEIN FRACTIONS IN COTTONSEED AND THEIR IMPORTANCE IN THE NATIONAL ECONOMY

The University of Economy and Pedagogy
Karshi, Uzbekistan
associate professor ***Togaeva M.A.***
students Xolmatov H.N.
Xudoynazarov J.Sh.
Nurillaeva S.R.

Abstract: *The article discusses the composition of amino acids, which are the main components of common proteins in seeds. Information is provided on the importance of proteins and amino acids in different cotton varieties, their solubility in water, salt, and other solvents.*

Keywords: *cotton, protein, amino acids, globulin, glutelin, oil*

Introduction. Uzbekistan has all the necessary conditions for the transition to a modern model of innovative development. This model is based on the broad and effective use of the scientific and technical potential created, the widespread implementation of fundamental and practical achievements, technologies requiring deep scientific research, and the increase in the number of highly qualified and talented scientific personnel.

Today, there is no industry in the world that does not use cotton and its products. In addition to various refined oils for human consumption, about 300 different consumer goods and technical products are produced from cottonseed [2].

Cotton is the most important crop grown in our country. First of all, cotton fiber is produced, which is a valuable raw material for almost all sectors of

ISSN 3060-4567

industry, and cottonseed oil, which is widely used in the food industry and other sectors, is obtained from it [2]. Cottonseed oil accounts for the majority of vegetable oils produced in our country. Seeds contain a variety of compounds, the most important of which are oils. Albumins constitute approximately 12–15% of the total protein in the seed [3]. The pure individual proteins that make up the albumin content of the seed have not been isolated. According to some reports, albumins in the seed make up 40-45% of the total protein. The main part of the proteins in the seed is made up of globulins. The total amount of globulin proteins isolated from different cotton varieties varies. For example, in the 108-f variety, the amount of proteins soluble in water in salt solutions averages 33.1%, and in the S-4727 variety it reaches 40%. In recent years, several individual proteins have been isolated from the globulins in the seed. The proteins found in the smallest amounts in cottonseed are the glutelins. These proteins have not been well studied because they are difficult to isolate in pure form. There is still no clear information about the glutelins in cottonseed. Some protein fractions extracted from seeds using various solvents consist of mixtures of many proteins.

These proteins can be separated from each other using electrophoresis. Depending on the type of cotton, the number of electrophoretic bands and their mobility vary. According to some studies, the protein of the seed contains about 20 amino acids. Table 1. shows the amino acid composition of some proteins extracted from the seed. As can be seen from the table, certain protein fractions differ slightly in the amount of amino acids they contain - histones differ from other proteins in their amino acid composition. A characteristic feature of these proteins is the large amount of lysine, which is considered the most important amino acid [3].

Amino acid composition of some solid fractions of the seed (mol %. Information from A. Ibrohimov et al.)

№	Amino acids	Albumins	Globulins	Glutelins	Histones

		Mexicanum	C-4727	Mexicanum	C-4727	Mexicanum	C-4727	Mexicanum	C-4727
1	Lysine	4,81	5,62	2,87	2,90	4,96	4,50	5,22	12,15
2	Histidine	1,95	2,02	3,00	3,04	1,91	1,85	3,21	1,76
3	Arginine	6,17	7,92	3,65	12,20	5,88	6,00	4,92	5,82
4	Asp.acid	9,05	8,35	10,00	11,15	9,24	8,50	10,19	10,40
5	Threonine	4,68	3,65	3,65	4,08	3,07	4,86	5,04	5,21
6	serin	5,95	4,45	6,30	5,71	60,5	6,23	6,25	6,87
7	Glutamic acid	21,40	28,25	19,90	25,50	13,05	13,42	12,22	11,76
8	Prolene	5,20	3,42	5,92	4,25	5,82	4,96	4,93	5,33
9	Glycine	6,98	6,58	7,15	7,30	4,16	7,97	7,85	9,20
10	Alanine	6,36	4,96	6,52	4,13	8,40	8,92	10,49	10,70
11	Cysteine	4,00	3,15						
12	Valine	4,60	3,55	5,50	3,32	6,42	6,20	9,75	5,85
13	Methionine	1,49	0,32	0,56	0,76			0,55	0,50
14	Isoleucine	4,84	3,17	3,85	2,68	5,55	5,35	3,43	2,96
15	Leucine	7,36	5,75	8,40	6,11	11,70	11,83	6,86	6,74
16	Triosine	2,71	4,30	2,58	3,11	2,88	3,46	2,65	2,20
17	Phenylalanine	3,06	5,13	6,00	7,30	4,64	5,57	3,56	3,94

The amino acids tryptophan, methionine and lysine occupy a special place in the daily diet of humans and animals. In particular, tryptophan serves as one of the factors ensuring the normal growth of young people. At the same time, it participates in the formation of hemoglobin, the synthesis of nicotinic acid and prevents pellagra. Methionine also has its own unique properties, it participates in the processes of methylation, transmethylation and choline synthesis in the body. Methionine actively participates in the mental and physical development of the body and in the processes of fat metabolism. Lysine serves to maintain the level

of hemoglobin in the blood at a normal level. Therefore, its presence in a certain amount in the daily diet is of physiological importance. Phenylalanine is important in processes related to the activity of the thyroid gland, adrenal glands and is involved in the synthesis of the hormones thyroxine and adrenaline. [5].

Conclusion. Cottonseed oil occupies a special place in the composition of everyday food products. Currently, oilseeds are widely used as raw materials in agriculture. This is especially important in the processing of seeds.

LIST OF USED LITERATURE

1. Karimov I.A. ―Uzbekistan on the threshold of the 21st century: threats to security, conditions of stability and guarantees of development. ―Uzbekistan‖, Tashkent-997.

2. Cotton magazine - Tashkent "Mehnat" 1989

3. A. Zikiryaev. Physiology and Biochemistry of Cotton. - T.: "Science and technology" 2010. - 112 p.

4. Torakulov Yo. H. "General Biochemistry" Textbook T.: Teacher. 1996 - 496 p

5. Щербаков В.Г.«Биохимия растительного сырья» Москва «Колос» 1999.