



## ANALYSIS OF THE CHEMICAL COMPOSITION OF THE FOOD ADDITIVE "AS-AN"

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**Abstract.** The health of the population is the most valuable asset of the state. In order to preserve it, the pharmaceutical industry is tasked with providing the population with high-quality medicines. Based on the measures taken in this direction, a number of important practical results are achieved in organizing the development of competitive drugs based on natural raw materials.

The purpose of this scientific work is to determine the chemical composition of the food supplement Ac-AN, developed on the basis of plantago major.

As a result of the study, quantitative indicators of 20 important alpha-amino acids were analyzed and determined by the physicochemical HPLC method.

**Key words:** food supplement "Ac-AN", amino acid, HPLC method, amino group, living organism.

**Introduction.** Today in the Republic of Uzbekistan, issues related to public health are very relevant and inextricably linked with the interests of the state and society. Within the framework of the Concept for the Development of the Healthcare System of the Republic of Uzbekistan for 2019-2025, supporting a healthy lifestyle and increasing the physical activity of the population, providing effective and high-quality medical services in this regard will ultimately lead to a healthy population. Much practical work is being done aimed at forming a healthy lifestyle. [1]

Theoretical part. The study of the biology and chemical composition of the plantago major plant growing in Uzbekistan, the extraction of biologically active substances from its composition, the creation of an initial raw material base for the preparation of cheap and high-quality drugs that can replace local drugs are relevant.

In this scientific work, we developed a new food supplement "As-AN", prepared on the basis of the plantago major plant, and studied its chemical composition using chemical, physicochemical and physical methods of analysis. Plantago major is a plant belonging to the Plantagenacea family, in the flora of the world there are more than 250 species. In Uzbekistan, there are 6 species, 4 of which are used as medicinal plants in pharmaceuticals, cosmetology and folk medicine. [2]

The plantago major has been used for various purposes for 4,000 years. This plant was spread by Europeans, the Indians called the plantago major "the trace of the white man" because this plant grew in the place where the Europeans were. [3,4]

Plantago major is a perennial herbaceous plant with a short and thick rhizome. Long winged rhizomes grow from the upper side of the rhizome (above the ground), and many small roots grow from the lower part (underground). Root lumps are broadly elliptical or broadly ovate, with flat edges, large. Flower axis one or more, hairless, 10-45 cm long. Flowers

are collected in a simple spike. The flower is small and inconspicuous. The calyx is divided into four parts, the corolla is light brown, four-lobed, the male node is 4, the female is two-lobed, located at the top. The fruit is an ovoid multi-seeded capsule. It blooms in May-June. [5].

*Plantago major* is widespread in Central Asia and is found in almost all regions of Uzbekistan, along streams, fields, roadsides, gardens, in all places of the mountains and as a weed. [4]

When analyzing the literature among foreign scientists Akhmed, A.B. Samuelsen, A.G. Gorin, Payler, Haske-Hofmeister, Harborne, D.N. Olennikov, L.M. Tankhaeva and others, from Uzbek scientists Sh.S. Khushmatov, R.R. Rustamov studied the biological activity of alkaloids, flavonoids, iridoid glycosides, lipids, organic acids, phenolic acids, amino acids, carbohydrates, macro- and microelements, which were isolated from the plant.

The *plantago major* plant, known since ancient times, is used for various purposes in countries around the world and scientific research is carried out. [6]

In the scientific work, the natural food supplement "As-AN", obtained from the *plantago major* plant, was adopted as the object of study. The food supplement is made in the form of syrup, alpha-amino acids were determined for the first time - according to the method of Stefan A., Cohen Daviel [7].

#### Material and methods.

**Experiment 1.** High-performance liquid chromatography conditions: Agilent Technologies 1200 chromatograph with DAD detector, Discovery HS C18 75x4.6 mm column. Solution A: 0.14 M CH<sub>3</sub>COONa + 0.05% TEA, pH 6.4, B: CH<sub>3</sub>CN. Flow rate 1.2 mL/min, abs. 269 nm. Gradient %B/min: 1-6%/0-2.5 min; 6-30%/2.51-40 min; 30-60%/40.1-45 min; 60-60%/45.1-50 min; 60-0%/50.1-55 min.

#### Discussion of results.

**Experiment 1.** Separation of free amino acids. Derivatives of amino acids were determined by high-performance liquid chromatography. The precipitation of proteins and peptides from aqueous extracts of samples was carried out in centrifuge tubes. For this purpose, 1 ml (specific volume) of 20% trichloroacetic acid was added to 1 ml of the studied sample. After 10 minutes, the sediment was centrifuged at 8000 for 15 minutes. After separation of a 0.1 ml sample, it was dried. The hydrolysate was evaporated, the dry residue was dissolved in a mixture of triethylamine-acetonitrile-water (1:7:1) and dried. This operation was repeated twice to neutralize the acid. The reaction of amino acids with phenylthioisocyanate according to the method of Stephen A. and Cohen Daviel gave phenylthiocarbamyl derivatives [7].

**Table 2. Qualitative and quantitative analysis of alpha-amino acids in the food supplement "As-AN"**

| №  | Amino acid name | Extract            |
|----|-----------------|--------------------|
|    |                 | Concentration mg/g |
| 1. | Aspartic acid   | 0,097523           |
| 2. | Glutamic acid   | 0,504414           |
| 3. | Serine          | 0,330038           |
| 4. | Glycine         | 1,205977           |
| 5. | Asparagine      | 0,244859           |
| 6. | Glutamine       | 0,321713           |

|       |               |          |
|-------|---------------|----------|
| 7.    | Cysteine      | 0,422951 |
| 8.    | Threonine     | 0,0971   |
| 9.    | Arginine      | 0,139535 |
| 10.   | Alanine       | 0,160939 |
| 11.   | Proline       | 0,357899 |
| 12.   | Tyrosine      | 0,246395 |
| 13.   | Valine        | 1,024628 |
| 14.   | Methionine    | 0,571641 |
| 15.   | Histidine     | 0,438042 |
| 16.   | Isoleucine    | 0,047289 |
| 17.   | Leucine       | 0,083307 |
| 18.   | Tryptophan    | 0,106663 |
| 19.   | Phenylalanine | 0,044094 |
| 20.   | Lysine        | 0,023246 |
| Total |               | 6,468251 |

**Conclusion.** Currently, the sharp increase in population increases the need for food products, as well as the demand for medicines. One of the main tasks of each researcher is the rapid and effective application of the results of scientific research. One of the goals and objectives that we set for ourselves was a qualitative and quantitative analysis of alpha-amino acids of the food supplement "As-AN". Using the research data, it is advisable to conduct a study of the biological activity of the food supplement "As-AN".

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