

Study of the amino acid composition of the field Korostavnik herb
I.L. Drozdova, N.N. Denisova
(SBEE HPE "Kursk State Medical University")

Ministry of Health and Social Development of the Russian Federation, Kursk)

Amino acid composition of the study *Knautia arvensis* (L.) Coult.
IL Drozdova, NN Denisova
GBOU VPO "Kursk State Medical University" Health Minister (Kursk, Russia)

SUMMARY

The article presents the results of a study of the amino acid composition of the field grass (*Knautia arvensis* (L.) Coult.) Of the Teasel family (Dipsacaceae). A total of 15 amino acids were found, of which 7 are irreplaceable. The total content of free amino acids in the test form is 4.62%.

Key words: Field breeder, amino acid composition, *Knautia arvensis* (L.) Coult.

RESUME

In this study, the amino acid composition of the grass field korostavnika (*Knautia arvensis* (L.) Coult.) Family Vorsyankovye (Dipsacaceae) was examined. Totally found 15 amino acids, including 7 essential. The total content of free amino acids in the form under the test is 4.62%.

Keywords: amino acid composition, *Knautia arvensis* (L.) Coult.

Introduction

Amino acids play an important role in modern pharmacology. Being not only structural elements of proteins and other endogenous compounds, they are of great functional importance. In addition to amino acids that make up proteins, living organisms have a constant reserve of free amino acids contained in tissues, which are in dynamic equilibrium with numerous metabolic reactions and are necessary to perform specific tasks.

Thus, glutamic acid performs a special transfer function during transamination, and methionine - during overburden. Glutamic and aspartic acids are central to the processes of binding, transport and excretion of biologically active forms of nitrogen from the body, contributing to the maintenance of the nitrogen balance of living organisms [3]. Aspartic acid has immunoactive properties [3]. Many amino acids play an important role in the pathogenesis of diabetes mellitus; some of them stimulate the incretion of insulin by cells of the pancreas [8]. Methionine and leucine are able to stimulate weakened cardiac activity through the activation of metabolic processes. Glycine and its derivatives have a pronounced

hypolipidemic action [3]. Amino acids regulate the main nervous processes: excitement and inhibition, vigor and sleep, aggression and anxiety, emotions, behavior, memory [5, 7], affect vascular tone [6], are the main building material for the synthesis of specific tissue proteins, enzymes, hormones and other physiologically active compounds [3]. Amino acid derivatives are enkephalins, endorphins, dynorphins and other neuropeptides, as well as releasing factors (releasing factors) of the hypothalamus, pituitary hormones, etc. [1].

However, until now, medicinal plants have not been considered as a source of an easily digestible form of amino acids in combination with other pharmacologically active substances with the aim of using them in the treatment of a number of pathologies.

In this regard, we carried out research on the study of the component composition of amino acids and their quantitative determination in the grass of the field barker.

Field scabbard (*Knautia arvensis* (L.) Coult.) Is a perennial herb of the Vorsyankovye family (Dipsacaceae), widespread in the flora of Central Russia [4].

Purpose of the work: to study the component composition of amino acids and their quantitative content in the grass of the field barker.

The object of the study was air-dry crushed grass. field breeder. Raw materials were procured in 2010–11. in the Kursk region during the period of mass flowering of plants.

Research methods

Qualitative detection of amino acids was carried out in aqueous extracts using the ninhydrin reaction [2].

For this, 5.0 g of air-dry crushed raw materials were poured into 50 ml of distilled water and heated under reflux in a boiling water bath for 1 hour. The extraction was filtered, the raw material was poured again with 50 ml of water and the operation was repeated. Aqueous extracts obtained after three-fold extraction were combined, evaporated under vacuum to 25 ml, and used to carry out qualitative reactions. In a qualitative analysis, equal volumes of the studied extract and 0.1% freshly prepared ninhydrin solution were mixed and carefully heated. Upon cooling, a red-violet coloration developed, which indicates the presence of amino acids in the studied plants. Amino Acid Analyzer-339 (Czech Republic) was used to study the content of free amino acids.

For amino acid analysis, the feedstock was exhaustively extracted with hot water. The extract was filtered, evaporated to dryness in a vacuum. To determine free amino acids, dry residues (accurately weighed) were dissolved in sodium citrate buffer (pH 2.2), the volumes of solutions were brought in a volumetric flask to the mark of 10 ml. Amino acid analysis was performed on an amino acid analyzer under standard conditions commonly used for the separation of protein hydrolysates [9].

For a quantitative assessment, the areas of the peaks of the identified

amino acids (automatically). Quantity each identified amino acids were determined in nanomoles and nanograms in an aliquot directly used for analysis, then the quantitative content of detected free amino acids in% was calculated.

results

The research results are presented in table. 1.

From the data table. 1 shows that the grass of the field barker contains 15 amino acids, incl. 7 irreplaceable. The content of the sum of amino acids is 4.62%. The predominant amino acids are: glutamic acid, leucine, alanine, arginine, phenylalanine, glycine, histidine, tyrosine. In combination with other biologically active substances (polysaccharides, phenolic compounds, organic acids), this emphasizes the therapeutic significance and makes it possible to create new valuable preparations of combined action based on the specified type of medicinal plant material.

Table 1

The content of amino acids in the grass of the field bark,%

№ п/п	Аминокислота	Количественное содержание, %
1	Аланин	0,40
2	Аргинин	0,39
3	Аспарагиновая кислота	0,33
4	Валин*	0,15
5	Гистидин	0,33
6	Глицин	0,35
7	Глутаминовая кислота	0,62
8	Лейцин*	0,41
9	Изолейцин*	0,10
10	Лизин*	0,22
11	Метионин*	0,05
12	Тирозин	0,30
13	Треонин*	0,28
14	Серин	0,29
15	Фенилаланин*	0,39
Сумма аминокислот		4,62

Примечание: * – незаменимые аминокислоты.

conclusions

The component composition of free amino acids in the herb of the field bark was studied. A total of 15 amino acids were found, of which 7 are irreplaceable. The total content of free amino acids in the test form is 4.62%.

LITERATURE

1. Baeva V.M., Murin I.I. Study of the amino acid composition of the powder and infusion of herbs cuff // Traditional medicine. - 2007. - No. 1 (8).
2. Kopytko Ya.F., Kostennikova ZP, Timokhina E.A. Study amino acid composition of homeopathic matrix tinctures of peppermint, lemon balm, oregano and medicinal sage // Pharmacy. - 1997. - No. 6. - S. 31–34.
3. Lukmanova K.A., Ryabchuk V.A., Salikhova N.Kh. Amino acid and the mineral composition of the phytopreparation luceron // Pharmacy. - 2000. - No. 1. - S. 25–27.
4. Mayevsky P.F. Flora of the middle zone of the European part of Russia. - M.: Partnership of Scientific Publications KMK, 2006. - 600 p.
5. Makarova L.M. Search and study of cerebroprotectors in a series of derivatives inhibitory neurotransmitter amino acids: dis ... cand. farm. sciences. - Pyatigorsk, 2002. -- 170 p.
6. Mashkovsky M.D. Medicines. 15th ed., Rev., Rev. and add. - M.: Novaya Volna, 2005. -- 1200 p.
7. Pogorely V.E., Slyunkova N.E., Makarova L.M. Amino acid preparations as neuroprotectors // "Actual problems of creating new drugs of natural origin": materials of the 7th Intern. Congress "Fitofarm 2003" St. Petersburg. - Pushkin, 3-5 July 2003 - SPb., 2003. - S. 244–250.
8. Fehling F., Buketer D., Broadus A. Endocrinology and metabolism. - M.: Mir, 1985. - Vol. 2. - 360 p.
9. Benson JR Some recent advances in amino acid analysis // Instrumentation in amino acid sequence analysis. - London, New York, San-Francisco, 1975. - P. 1-40.

Author's address

D.Pharm.Sci. Drozdova I.L., Dean of the Pharmaceutical and Biotechnological Faculties,
Professor of the Department of Pharmacognosy and Botany
irina-drozdova@yandex.ru

Drozdova, I.L. Study of the amino acid composition of Korostavnik field grass / I.L. Drozdova, N.N. Denisova // Traditional Medicine. - 2012. - No. 4 (31). - S.49-51.

[To favorites](#)