

A study of the quantitative content and qualitative composition of species of the genus *Prunella* L. that grow in Azerbaijan

Mustafayeva L.A., Asadova H.G.

Institute of Botany, Azerbaijan National Academy of Sciences, Baku, Azerbaijan

Abstract. Amino acids of the genus *Prunella* L., *P. vulgaris* L., *P. grandiflora* L and *P. laciniata* L were analyzed in quantitative and quality. As part of the species studied, 13-16 amino acids were identified. Nine of them are essential amino acids, valine, histidine, methionine, leucine, isoleucine, phenylalanine, arginine, and threonine. Amino acids of different species have been found to differ in quantitative and quality

Keywords: *Prunella*, species, amino acids.

The flora of Azerbaijan is rich in many significant medicinal, nutritional, vitamin and other plants [5 c.187-193; 6, pp.159-160; 7, p.61, 8,308 p,136-137]. Among these plants, medicinal plants occupy a special place. Medicinal plants are rich in biologically active substances (BAS), vitamins, proteins, amino acids, aromatic and mineral substances [3, p. 63-68; 4, c.56-63].

Among the medicinal plants there are also species of the genus *Prunella* L.

About the value features of the genus *Prunella* L are found in the works of botany and medicina [13,136-137]. Data on the healing properties of this plant are also available in sources from China, Tibet, Central Asia, the Middle East [12, p.263-273; 15, p. 427-43].

As a result of studying this plant as an object of study, the phytochemical, pharmacological properties of species, the richness of various biologically active substances and the features of medical were discovered. [2, c.54-58;11, p.56-59]

Species of the genus *Prunella* are of great importance, such as medicinal, vitamin, ornamental [9,510 c.,10, 556-561]

Flowers and leaves of the genus *Prunella* contain flavonoids, catechins and other substances that regulate the functioning of the cardiovascular system, have an antibacterial, antimutagenic property, play an important role in the use of vitamin C, have vitamin P activity [14, c. 55-62]. Despite the fact that in recent years new results have been obtained on the study of species of the genus *Prunella*, many issues that are important to solve remain.

The main goal of our study is to eliminate this deficiency, identify and study new important aspects of the *Prunell* genus. Continuing our research on the species of the genus *Prunella* [2, 73-78; 5,p.159-160] the study of the quantitative and qualitative composition of amino acids, which are an important component of this plant, which is the main indicator of its nutritional and therapeutic nature.

Material and Method

For research, the leaves and flowers of the *Prunella* genus were collected from the forest-steppe population (40° 48'0" N 48° 12'7" E) around the village of Talistan in the Ismaili region of the Greater Caucasus.

For research, species of the *Prunella* genus are collected in the phase of mass flowering of plants from the forest-steppe around the village of Talistan (40°48'0"N 48°12'7"E) from Ismayilli region of the Greater Caucasus, a population of meadows from Tangiyalta of the from Guba. The analysis was carried out in fresh plant material, the quality analysis in fresh plant and fer-

mented with alcoholic I. The quantitative and qualitative composition of amino acids is determined by the methods proposed by T. F. Andreeva and O. P. Osipova [1, c. 59-65]. Individual substances were prepared using paper chromatography. Paper FN 16 (Germany) was used for chromatography.

Results and Discussion

Analysis of the quantitative and qualitative composition of the amino acid complex in the flowers and leaves of species of the genus *Prunella* proved the difference between species (Table). As follows from the table, the amino acid composition of *P. grandiflora* *P. laciniata* and *P. vulgaris* species is not identical, but the composition of the growths amino acid of each species remains unchanged regardless of the place of its place of growth. The amino acid composition of *P. grandiflora* and *P. vulgaris* consists of 16 amino acids - histidine, asparagine, serine, proline, glutamic acid, methionine, alanine, tyrosine, valine, phenylalanine, leucine, isoleucine, arginine, threonine, glycine. The amino acid composition of *P. laciniata* consists of 13 amino acid lysine, histidine, asparagine, serine, proline, glutamic acid, tyrosine, valine, phenylalanine, leucine, isoleucine, threonine and glycine.

The species studied differ from each other in the number of individual amino acids. The main part of the amino acid complex in all species is aspartic acid, glutamic acid, leucine. Amount of glutamine as *P. grandiflora* varies in flowers from 0.65 to 0.70%, leaves from 0.52- to 0.84%. This component in the growing Girdman population is larger than in plants from the Valvalachay population. In the amino acid complex, histidine and methionine account for the least.

Comparative chromatographic analysis of different species shows that amino acids are unevenly distributed among the leaves and flowers of the plant. Most components are more in flowers than in leaves. Some components are twice as more in flowers. For example, in *P. vulgaris* flowers from the valval population, the amount of lysine in the flowers is 0.25%, and in the leaves - 0.13%. Usually, there is a greater accumulation of amino acid components in the flowers. This is most likely due to their synthesis mainly in flowers

Since assays are carried out in the mass flowering phase, it can be assumed that in the mass flowering phase amino acids are synthesized more often in colors. From plant samples taken for study in various populations, it follows that more amino acids accumulate on plants from the Talistan in forest Girdmanchay population in the Ismayilli region than on plants of the Valvalachay population (Table).

Table. The qualitative composition and amount of amino acids and amides (% Ia) of the species of the genus *Prunella* L

Amino acids	Lip. glade Tangiyalti, Valvalachay population				Talistan forest of the in Ismayilli Girdmanchay population					
	<i>P. vulgaris</i>		<i>P. grandiflora</i>		<i>P. vulgaris</i>		<i>P. grandiflora</i>		<i>P. laciniata</i>	
	1	2	1	2	1	2	1	2	1	2
Lysine (Lys)	0,25	0.13	0.38	0.27	0.34	0.23	0.41	0.29	0.22	0.14

Histidine n (His)	0,19	0.10	0.40	0.11	0.24	0.21	0.53	0.32	0.34	Izi
Asparagine's (Asp)	0,56	0.33	0.62	0.43	0.88	0.75	0.64	0.45	0.52	0.38
Serine (Ser)	0,25	0.23	0.35	0.27	0.31	0,28	39.9	0,33.	0.28	0.21
Proline (Pro)	0,37	0,34	0.45	0,39	0.41	0,36	0.39	0,30	0.33	0.30
Glutamic acid (Qlu)	0,65	0,52	0.71	0.65	0.70	0,84	0.76	0.67	0.70	0.63
Methionine (Met)	0,04		0.10	0,03	0.10	0.09	0.13	0,06	-	-
Alanine (Ala)	0,31	0.27	0.43	0.36	0,39	0.21	0,48	0.34	-	-
Tyrosine (Tyr)	0,15		0.34	0.30	0.18	0.03	0.52	0.43	0.24	0,14
Valine (Val)	0,28	-	0.55	0,42	0.30	-	0.61	0,45	0.33	0,22
Phenylalanine (Phe)	0,23	0,15	0.44	0,20	0.29	0.18	0.47	0.24	0,31	0.19
Leucine (Leu)	0,41	0.35	0,87	0.66	0.79	0.68	0.93	0.81	0.51	0.35
Arginine (Arg)	0,28	0,14	0.31		0.31	0.18	0.46	Izi	-	-
Isoleucine n (Ile)	0,21		0.33	0,14	0.32	Izi	0.40	0.18	0.35	0.28
Threonine (Thr)	0,22	0,16	0,23		0.41	0.23	0.32	Izi	0.19	0.10
Glycine (Gly)	0,29	0.20	0,36		0.32	0.19	0.39	Izi	0.31	0.09

Note: 1 flower, 2 leaves

The quality of nutrition and the therapeutic value of plants depend not only on the number of amino acids in them, but also on their qualitative content, especially on the presence of essential amino acids with therapeutic effect. Analysis of the qualitative composition of the amino acid complex of various species of populations shows that, regardless of the population, species contain essential amino acids, such as lysine, valine, histidine, methionine, leucine, isoleucine, phenylalanine, arginine and threonine.

Result

1. In the floristic region of the Greater Caucasus of Azerbaijan, in the populations of Valvalachay and Girdimanchay, 13-16 amino acids were identified respectively on the leaves and flowers of species of the genus *Prunella* L.

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