

Study of the amino acid composition of the powder and infusion of the herb cuff
V.M. Baeva, I.I. Murin
(GOU VPO MMA named after I.M.Sechenov, Moscow)

Currently, herbal preparations are becoming more and more in demand on the domestic market.

Cuff herb is a traditional traditional medicine used in the treatment of hypertension, diabetes, tuberculosis, skin diseases, various bleeding and inflammation; used as an astringent, hemostatic, diuretic, wound healing, expectorant and bactericidal agent [4]. The use of the cuff in domestic scientific medicine seems to be very promising.

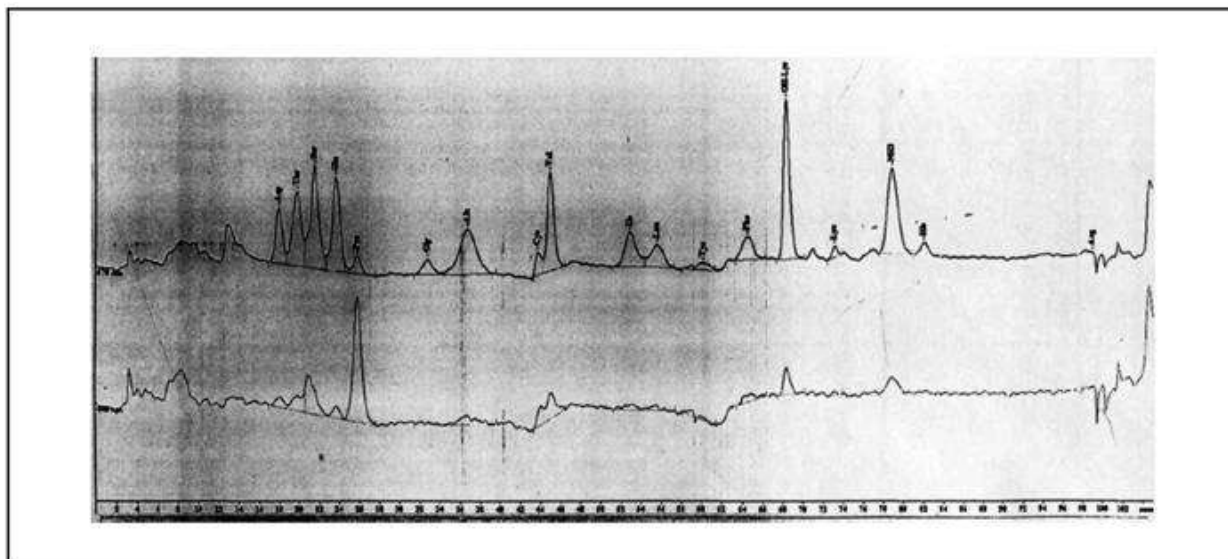
The cuff herb is an independent drug included in the pharmacopoeias of Germany, France, Yugoslavia, Bulgaria, etc., in addition, it is actively used in homeopathy, in particular in the form of a matrix tincture in the "Sandra" preparation [4, 5, 6].

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. Some of them act as neurotransmitter substances (glutamic, aspartic acids, glycine, taurine, g-aminobutyric acid, etc.). Amino acid derivatives are enkephalins, endorphins, dynorphins and other neuropeptides, as well as releasing factors (releasing factors) of the hypothalamus, pituitary hormones, etc. [3].

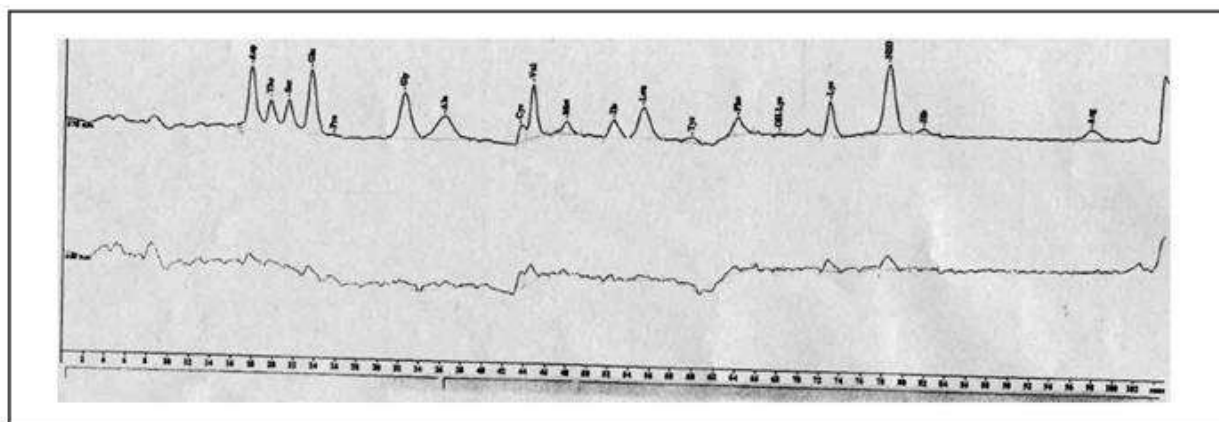
In the literature there are fragmentary data on the chemical composition of various types of cuff herb [4]. Therefore, the study of the amino acid composition of the cuff herb and infusion is necessary for a complete understanding of the complex of active ingredients of promising domestic raw materials.

Chromatographic study of aqueous extracts of cuff herb revealed a significant amino acid content. Chromatography on FN-11 paper in the butanol-acetic acid-water system with ninhydrin revealed 9 spots of amino acids. Therefore, we carried out a more thorough study of the amino acid composition according to the method [2] on an amino acid analyzer model 835 of the Hitachi company (Japan) of cuff herb and water extract from it prepared in a ratio of 1:10 according to GF X1 [1].

Figures 1 and 2 show chromatograms of infusion and cuff herb powder, table 1 shows the quantitative content of amino acids.



Rice. 1. Chromatogram of the amino acid composition of the herb cuff infusion 1:10



Rice. 2. Chromatogram of the amino acid composition of the cuff herb powder

Amino acid composition of cuff preparations

Table 1

Аминокислота	MW	мг/моль в анализе:		мкг в анализе:		мг на 1 мл экстракта:		мг на 100 мг препарата:	
		9170 водный экстракт	9171 сухой препарат	9170 водный экстракт	9171 сухой препарат	9170 водный экстракт	9171 сухой препарат	9170 водный экстракт	9171 сухой препарат
аспарагиновая кислота +									
аспарагин	133,1	1,40	1,67	0,19	0,22	0,04		1,41	Asp
треонин	119,1	2,33	0,91	0,28	0,11	0,06		0,69	Thr
серин	105,1	3,17	0,90	0,33	0,09	0,07		0,60	Ser
глутаминовая кислота +									
глутамин	147,1	2,26	2,00	0,39	0,29	0,09		1,87	Glu
пролин	115,1	17,57	1,25	2,02	0,14	0,45		0,91	Pro
глицин	75,1	0,54	2,16	0,04	0,16	0,01		1,03	Gly
аланин	89,1	2,76	1,51	0,25	0,13	0,05		0,85	Ala
цистин	240,3	0,46	0,33	0,11	0,08	0,02		0,50	Cys
валин	117,2	2,43	1,51	0,28	0,18	0,06		1,12	Val
метионин	149,2	0,00	0,25	0,00	0,04	0,00		0,24	Met
изолейцин	131,2	1,49	0,67	0,20	0,09	0,04		0,56	Ile
лейцин	131,2	1,06	0,71	0,14	0,09	0,03		0,59	Leu
тирозин	181,2	0,34	0,28	0,06	0,05	0,01		0,32	Tyr
фенилаланин	165,2	0,93	0,90	0,15	0,15	0,03		0,94	Phe
оксилизин	162,2	3,54	0,20	0,57	0,03	0,13		0,21	OH-Lys
лизин	146,2	0,20	1,12	0,03	0,16	0,01		1,04	Lys
гистидин	155,2	0,40	0,31	0,06	0,05	0,01		0,31	His
аргинин	174,2	0,17	0,64	0,03	0,11	0,01		0,71	Arg
Сумма		41,41	17,32	5,13	2,19	1,14		13,90	

Проба, мкл: 300,0 2,1 - **Навеска, мг**
Разведение: 0,0150 0,0075 - **Разведение**
Внесено мкл: 4,504504505 0,01575 - **Внесено мг**

As a result of the analysis, 20 amino acids were identified, of which 7 are essential (valine, leucine, isoleucine, threonine, methionine, lysine and phenylalanine). In an infusion of herb cuff 1:10, an increased content of proline and oxylysine was determined (0.45 mg / ml and 0.13 mg / ml, respectively), and in the powder - aspartic acid, glutamic acid, glycine, valine and lysine (1, 14 mg / ml, 1.87 mg / ml, 1.03 mg / ml, 1.12 mg / ml and 1.04 mg / ml, respectively).

It is obvious that free native amino acids of the herb cuff infusion have high bioavailability and determine, along with other biologically active substances, the breadth of the spectrum of pharmacological action.

It is known that proline and oxylysine are contained in the connective tissue protein - collagen. Therefore, the use of cuff preparations for fractures, diseases of the skin, tendons and muscles is promising. In addition, collagen is part of the walls of blood and lymphatic vessels, thus. cuff preparations can be used as anti-atherosclerotic and vasoconstrictor agents.

Some amino acids (glutamic, γ -aminobutyric, methionine, glycine, etc.) have found independent use as medicines.

It has been established that glutamic acid plays an important role in life

organism: participates in protein and carbohydrate metabolism, stimulates oxidative processes, promotes neutralization and removal of ammonia from the body, increases the body's resistance to hypoxia. It also promotes the synthesis of acetylcholine and adenosine triphosphoric acid, the transfer of potassium ions. As part of the protein component, myofibrils play an important role in the activity of skeletal muscles.

Recently, particular importance has been attached to the central neurotransmitter role of glutamic acid. It is referred to as a neurotransmitter amino acid that stimulates the transmission of excitation in the synapses of the central nervous system.

In medical practice, glutamic acid is mainly used in the treatment of diseases of the central nervous system: epilepsy (mainly small seizures with equivalents), psychosis (somatogenic, intoxication, involuntal), reactive states that occur with symptoms of exhaustion, depression, etc.

In pediatrics, its drugs are used for mental retardation of various etiologies, cerebral palsy, Down's disease, poliomyelitis in the acute and recovery periods.

Glycine is a nonessential amino acid. According to modern data, it is the central neurotransmitter of the inhibitory type of action and has a sedative effect, improving metabolic processes in the brain tissues, in addition, a positive effect has been noted in muscular dystrophies.

Its preparations are also recommended for use as a means of weakening the craving for alcohol, reducing withdrawal symptoms, depressive disorders, increased irritability, normalizing sleep, as well as for other phenomena in patients with chronic alcoholism [3].

Table 2 shows the content of amino acids in the powder and infusion of the herb cuff and also calculated the daily intake of amino acids with cuff preparations.

Thus, a daily intake of 1/2 cup of cuff herb infusion 1:10 replenishes the daily rate of proline by 22.5%, and oxylysin by 13%. A daily intake of 1 teaspoon of dry cuff herb powder replenishes the daily intake of asparagine and aspartic acid by 1%, glutamine and glutamic acid by 1%, glycine by 3.44%, valine by 5.6% and lysine by 10.4% (when calculating the daily rate, the daily rates of glycine and glutamic acid were used [32]). That is, cuff herb preparations are also available sources of valuable amino acids.

Conclusions:

1. Studied the amino acid composition of the powder and infusion of the herb cuff.
2. Determined 20 amino acids, of which 7 are essential (valine, leucine, isoleucine, threonine, methionine, lysine and phenylalanine).
3. The daily intake of amino acids with preparations of the herb cuff has been calculated.

table 2

The daily rate of amino acids obtained by taking cuff preparations.

Аминокислота	Настой				Порошок травы манжетки			
	Количество АК в 1мл, мг	%АК в сумме АК	Количество АК 1/2 стакана (100 мл), мг	Суточная норма потребления АК, г	Количество АК в 100мг, мг	%АК в сумме АК	Количество АК 1 чайной ложке (1 г), мг	Суточная норма потребления АК, г
пролин	0,45	39,47	45	0,2	-	-	-	-
оксализин	0,13	11,40	13	0,1	-	-	-	-
аспарагиновая кислота	-	-	-	-	1,41	10,14	14,1	1,5
глутаминовая кислота	-	-	-	-	1,87	13,45	18,7	2-3
глицин	-	-	-	-	1,03	7,40	10,3	0,3-0,4
валин	-	-	-	-	1,12	8,06	11,2	0,2
лизин	-	-	-	-	1,04	7,48	10,4	0,1

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