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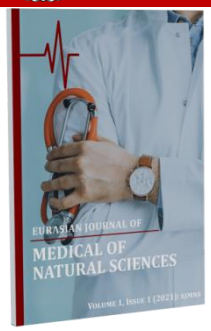

STUDY OF VITAMIN COMPOSITION OF DRY EXTRACT OBTAINED BASED ON VARIOUS SOLVENTS FROM LEAVES OF OFFICINAL SAGE – *SALVIA OFFICINALIS* L., CULTIVATED IN UZBEKISTAN

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ABSTRACT

The paper presents the results of a study of the vitamin composition of a dry extract obtained on the basis of various solvents (80% ethanol, butanol) from the leaves of medicinal sage - Salvia officinalis L., cultivated in Uzbekistan. The samples were found to contain vitamins C, B_1, B_2, B_3, B_6, B_9, which play an important role in the body. Among them, the most quantitatively dominant are riboflavin (B_2) and folic acid (B_9), the deficiency of which can cause a deterioration in the general condition of the body, depression, deterioration of the nervous system, as well as dry skin, burning eyes and photosensitivity, anemia, fatigue and irritability.

The obtained data will be in demand for the chemical characterization of dry extracts and their subsequent standardization.

Vitamins are organic substances that are necessary for the normal functioning of the body. They enter the human body mainly with food. Vitamins are necessary for the synthesis of proteins that make up cells and for maintaining the immune system, as well as for stimulating the growth and development of the body. They also improve the ability of the immune system to resist pathogenic factors, reduce the predisposition to the development of various pathological conditions, which was of interest to study the vitamin composition of sage leaves and annual wormwood herb [1,2].

Objective of the study. This research is aimed at studying the chemical composition of the dry extract obtained on the basis of various solvents (purified water, 90% ethanol, chloroform) from the leaves of *Salvia officinalis* L. The obtained data will serve for the chemical characterization of the raw material, necessary for subsequent standardization. We studied the composition of its vitamins.

Materials and methods. The object of the study was a dry extract obtained on the basis of various solvents from the leaves of sage, cultivated in Uzbekistan. The analysis was carried out on average samples of raw materials, selected in accordance with the instructions that meet the requirements of the General Pharmacopoeia Monograph “Sampling of medicinal plant raw materials and medicinal plant preparations” [3].

Experimental part. The study of the vitamin composition was determined by high-performance liquid chromatography on an Agilent-1200 chromatograph equipped with a gradient pump, a thermostatic column and a UV detector with a changing wavelength [4,5].

Chromatography conditions:

Exlipse XDB C 18 column (reversed-phase), 4.6x250 mm, filled with Zorbax Eclipse sorbent with a particle size of 5 μm;

UV detector wavelength - 250 nm;

thermostat column temperature - 25°C, eluent feed rate - 1.0 ml/min, injected sample volume - 5 μl, chromatography duration - 17 min.

The analysis was carried out in the gradient elution mode. A two-component eluent system was used as the mobile phase: acetonitrile: 0-5 min 96:4, 6-8 min 90:10, 9-15 min 80:20, 15-17 min 96:4.

Preparation of the test solution: about 5-10 mg (accurately weighed) of crushed raw material was placed in a 300 ml measuring flask, 50 ml of purified water was added and heated with vigorous stirring for 1 hour, equipped with a magnetic stirrer, reflux condenser, and then stirred at room temperature for 2 hours. The mixture was cooled and filtered. 25 ml of purified water was added to the remaining part and the mixture was extracted again 2 times. The filtrates were combined and filled to the mark with purified water (5-10%) in a 100 ml volumetric flask. The resulting solution was centrifuged at 7000 rpm for 10 minutes. The top of the resulting solution was collected for analysis.

Solutions of working standards of water-soluble vitamins were prepared with a concentration of 1 mg/ml. For this purpose, 50.0 mg of each vitamin standard were carefully taken on an analytical scale, dissolved with purified water in a 50 ml measuring flask and filled up to the mark.

Results and discussion. The results of the analysis are presented in Fig. 1.2.3.4 and in Table 1.

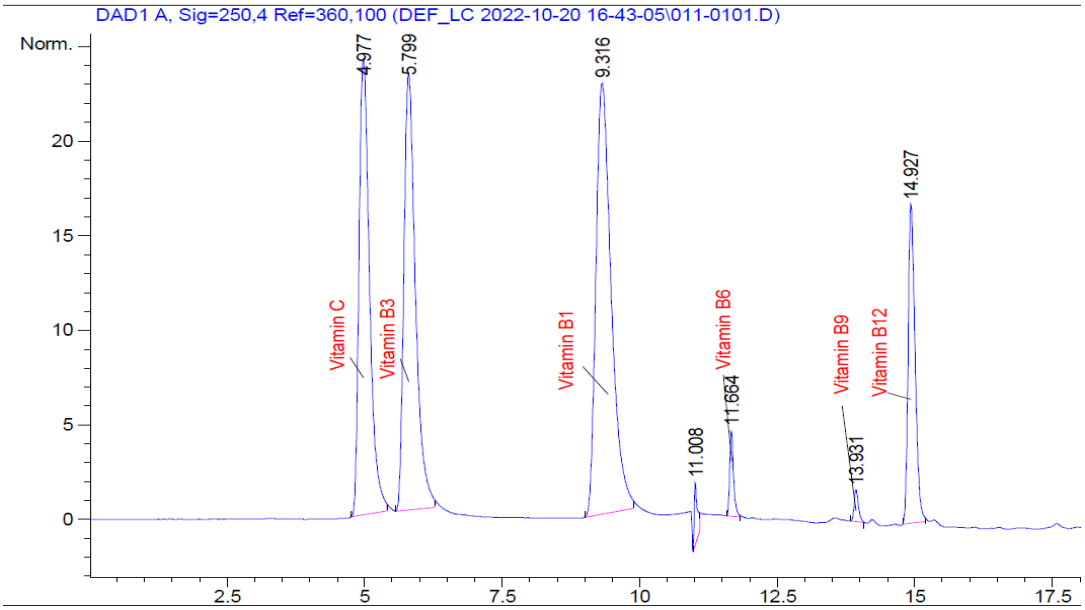

Fig.1. Chromatogram of a standard sample of vitamins

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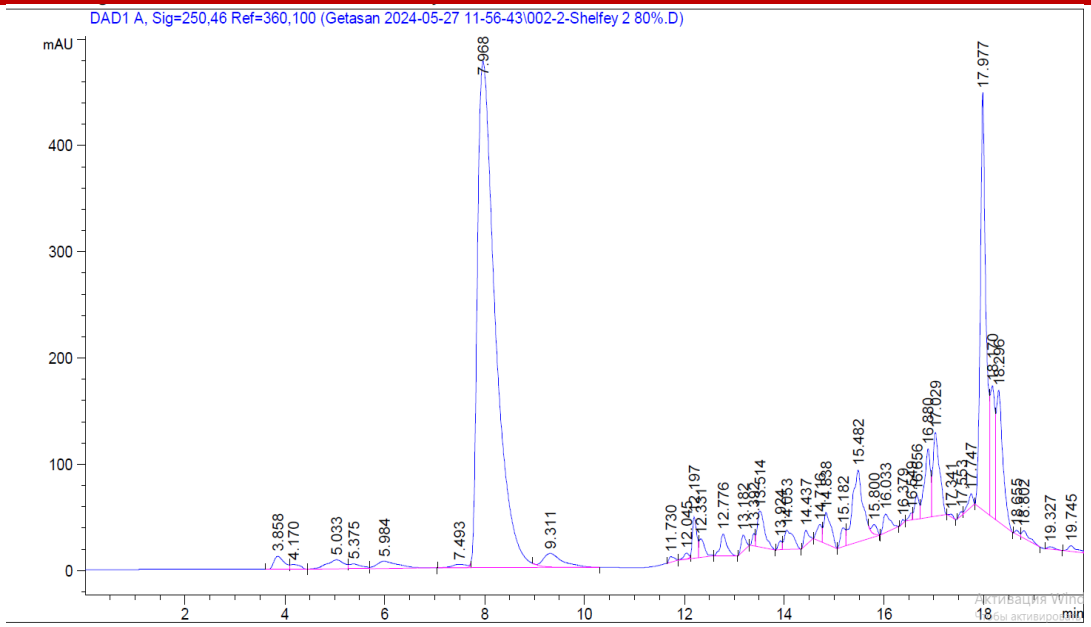

Fig. 2. Chromatogram of vitamins of dry extract based on 80% ethanol from leaves of common sage – Salvia officinalis L.

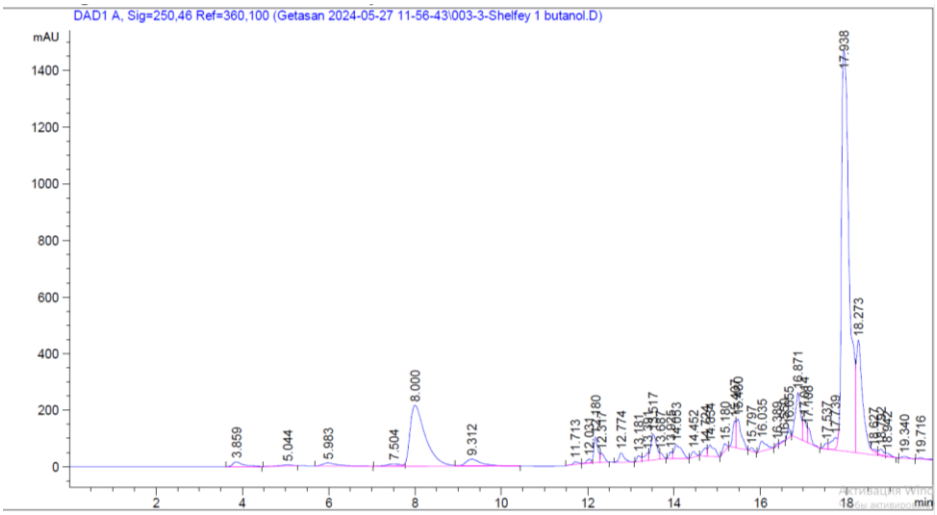

Fig. 3. Chromatogram of vitamins of dry extract based on butanol, obtained from leaves of common sage – Salvia officinalis L.

As can be seen from the data given in Table 1, in the dry extract based on 80% ethanol - B_2, B_9, B_1, B_3, as well as in the dry extract based on butanol - B_2, B_9, B_6,C, B_1, which play an important role for the body. Among them, riboflavin (B_2), folic acid (B_9) predominate in quantitative terms.

Table 1

Vitamin composition of sage leaves (*Salvia officinalis* L.)

Identified vitamins	*Salvia officinalis L. (80% ethanol)*	*Salvia officinalis L. (butanol)*
	Concentration mg/g	
Thiamine hydrochloride (B_1)	2.12	3.76
Riboflavin (B_2)	27.46	39.14
Pyridoxine (B_6)	5.13	9.92
Folic acid (B_9)	11.53	32.65
Nicotinic acid (B_3)	1.76	2.33
Ascorbic acid (C)	0.00	4.21

Conclusion. For the first time, the vitamin composition of the dry extract obtained on the basis of various solvents from the leaves of sage officinalis cultivated in Uzbekistan was studied by high-performance liquid chromatography. Six vitamins were identified in the analyzed samples. The obtained data will be in demand for the chemical characterization of the dry extract obtained on the basis of various solvents from the leaves of sage officinalis and the subsequent creation of medicines based on it.

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