DETERMINATION OF QUANTITATIVE CONTENT OF ACTIVE SUBSTANCES IN SCUTELLARIA ISCANDERI L. HERB

M.G.Ismailova, N.A.Abzalova, A.A.Abzalov.
The Tashkent Pharmaceutical Institute, Tashkent city, Uzbekistan.
e-mail: akmal.38@yandex.ru

Abstarct. This study investigates the quantitative content of flavonoids and tannins in the Iskander skullcap herb and its dosage form. In determining the amount of flavonoids was used spectrophotometric method, and the tannins are studied according to the procedure given in SP XI.
Key words: Scutellaria Iscanderi L., tannins, flavonoids, spectrophotometry.

Objective of research. Scutellaria iscanderi L.-perennial herbaceous plant, of Lamiaceae family. Scutellaria L. genus comprises 360 species of flora of the world, of which 148 species grow in the CIS. The chemical composition of plants of the genus Scutellaria L. is diverse and represented by phenolic acids, iridoids, di- and triterpene compounds cardenolides, coumarins, tannins and flavonoids. Among a variety of classes of natural compounds, notably the group of polyphenols, due to abnormally high content and their considerable structural diversity. According to the literature data, special attention is paid to the study of the roots of Baikal skullcap. On the territory of the Republic of Uzbekistan grows such kind of Scutellaria genus, as Scutellaria iscanderi L. By chromatography of flavonoids amount of skullcap Iskanderi were isolated in individual form five aglycones which were identified by baicalein, wogonin, oroxilin, apigenin and luteolin.
Method of research. The quantitative content of tannins in the aboveground part and the dosage form of skullcap Iskanderi was determined by permanganometry of SP XI. In the above-ground part of the plant the amount of tannins was 2.64%. Quantification of flavonoids was performed by spectrophotometry method. For this purpose, about 1.0 (accurately weighed) crushed to a value of 1 mm and dried medicinal plant raw material was placed in a 100 ml volumetric flask, extracted with 50 ml of 70% alcohol. Колбу нагревали на водяной бане от 80^0C до кипения. Then alcoholic extract was cooled, filtered through filter paper into a volumetric flask of 250 ml. The extraction was repeated 3 more times with 50 ml of 70% alcohol by heating to boiling. The resulting extracts were combined, filtered and the volume was adjusted to the mark with the same solvent to 250 ml (solution A). 2.0 ml of solution A was placed in a volumetric flask of 25 ml, adjusted with 70% alcohol to the mark and mixed. The optic density of the resulting solution was measured spectrophotometrically at a wavelength of 277 nm in a cuvette with a layer thickness of 10 mm. 70% alcohol is used as a reference solution. In parallel, the optical density of the working standard solution of apigenin is measured.
Preparing of working standard apigenine solution. About 0,025g (accurately weighed) of the standard sample of apigenin dried to constant weight at 130ºC, was dissolved in 40 ml of 70% ethyl alcohol in volumetric flask of 50 ml, dissolved on a water bath, adjusted to the mark with alcohol and stirred. 1 ml of the resulting solution was placed in a volumetric flask of 50 ml, adjusted to the mark with 70% alcohol and stirred.
Results. The results showed: the content of flavonoids sum in the plant in terms of apigenin was at 2.42%. The relative error in spectrophotometric analysis does not exceed 1.03.

The metrological description of the quantifying method results of flavonoids sum (n=5; P=95%; t (p,f)=2,78; λ=277 nm)

X_i, %	X , %	f	S^2	S	ΔX	∑, %
X_1=2,4278 X_2=2,4160 X_3=2,4641 X_4=2,4210	2,4289	4	0,000408	0,020220	0,025136	1,0349

X_5=2,4160						

The metrological description of the quantifying method results of tannins (n=5; P=95%; t (p,f)=2,78)

№	Tannins amount, %	Metrological description
1	2,64	X=2,626
2	2,66	S=0,051768
3	2,64	S^2 =0,002680
4	2,68	ΔX=0,06435
5	2,55	∑=2,45%

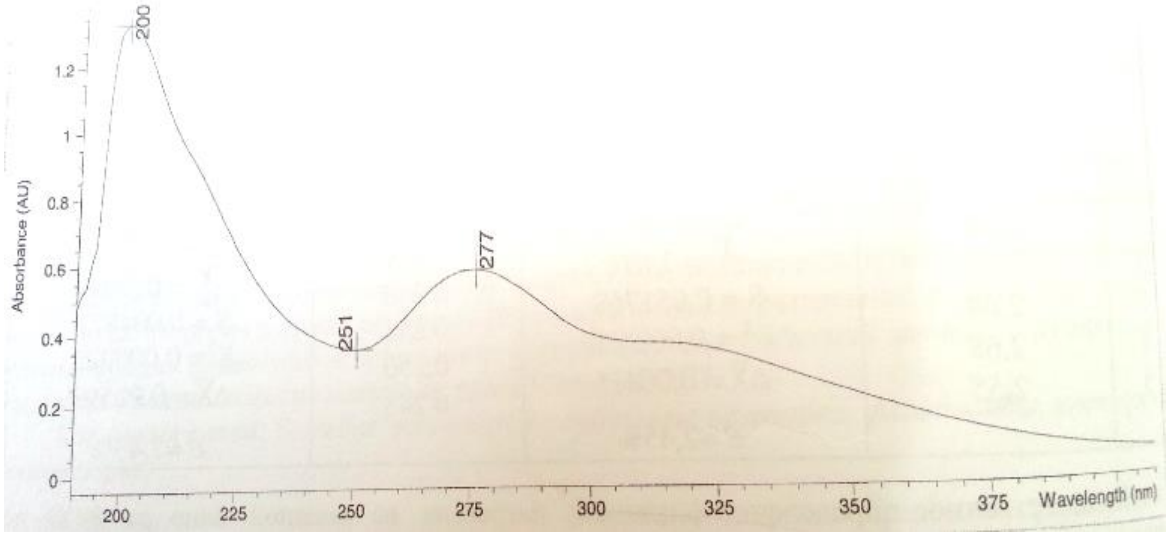

Fig.1. UV spectrum of hydroalcoholic extract of Scutellaria iscanderi L. herb

Conclusion. For a quantitative analysis of above-ground parts of Iskanderi skullcap herb (Scutellaria iscanderiL.) was proposed the spectrophotometric method in terms of apigenin. The amount of tannins was determined, which was 2.64% in the herb. The content of flavonoids, determined by SP-method, was 2.42% in the herb.

References:

1. Malikov V.M., Yuldashev M.P. Phenolic compounds of plants of рода ScutellariaL. Distribution, structure and properties // Chemistry of natural compounds. 2002. №4. p.299-324; 2002. №5. pp.385-409.
2. Goldberg Y.D., Digay A.M., Litvinenko V.I., Popova T.P., Suslov N.I. Scullcap baikal. Phytochemistry and pharmacological properties.Tomsk, 1994. P.222.
3. Ismailov A.I., Karimdjanov A.K., Khudayberganov T., Litvinenko V.I., Popova T.P. Phenolic compounds of Scutellariaiscanderi // Chemistry of natural compounds.1995.-№3-p.500-501
4. State pharmacopoeia of the USSR.- XI ed.- M.:Medicine, 1987.- Edition 1.- p.33.