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A COMPARATIVE STUDY OF THE PROCESS OF EXTRACTING VALEPOTRIATES FROM THE RHIZOMES WITH ROOTS OF *Valeriana officinalis* AND *V. alliariifolia*

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The extraction of valepotriates from plant raw material is an extremely important process, since these compounds are very unstable [1]. We have investigated the rhizomes with roots of *Valeriana officinalis* L. (common valerian) grown in the plantations of the Ukrainian zonal experimental station of the ILR [All-Union Scientific-Research Institute of Medicinal Plants] and of *V. alliariifolia* Adams. (Eurasian valerian) collected in the Adzhar ASSR on one of the slopes of Mt. Gomis-Mta. The qualitative compositions of the valepotriates of plants differ [2, 3]. In order to characterize these compounds comparatively, we used as the raw material the types of valerian mentioned and also extracts (1:5) obtained from it on the 1st, 3rd, 5th, 7th, 14th, 21st, 30th, and 60th days of the investigation by extraction with 70% ethanol [4] and chloroform.

The qualitative composition of the valepotriates was studied with the aid of chromatography in a thin layer of silica gel or on Silufol plates. For chromatography we selected the solvent systems toluene—ethyl acetate—methyl ethyl ketone (85:15:5) and hexane—methyl ethyl ketone (7:3). To reveal the thin-layer chromatograms we used a mixture of glacial acetic acid and 25% hydrogen chloride (1:1), and also an ethanolic solution of benzidine with trichloroacetic acid, recording the color of the fluorescence of the spots in visible and UV light.

The comparative chromatographic analysis of the qualitative composition of the valepotriates in the ethanolic and chloroform extracts obtained showed that the valepotriates were more stable in chloroform than in 70% ethanol. As early as the 5th day of extraction, TLC showed the presence of decomposition products of the valepotriates in the ethanolic extracts, while in the chloroform extracts this was the case only on the 60th day. Of the compounds concerned, the most labile was valtrate — the main active agent of common valerian — which had decomposed completely in the ethanolic extract with the formation of baldrinal on the 60th day of the investigation.

The quantitative determination of the valepotriates [5] in the ethanolic and chloroform extracts made it possible to show that their maximum amount was present on the 7th day of extraction.

Below we give the amounts of the valepotriates (% calculated to 1 ml of extract) in the ethanolic and chloroform extracts obtained from the rhizomes with roots of common valerian and Eurasian valerian (means of five determinations):

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Day of investigation	Common valerian		Eurasian valerian	
	70% ethanol	chloroform	70% ethanol	chloroform
1	0,040	0,050	0,450	0,600
3	0,056	0,070	0,580	0,800
5	0,058	0,071	0,660	0,880
7	0,070	0,080	0,620	1,100
14	0,060	0,084	0,520	0,980
21	0,058	0 084	0,460	0,970
30	0,052	0 082	0,400	1,020
60	0,040	0,076	0,350	1,000

As we see, chloroform extracts valepotriates more completely than 70% ethanol, and the amount of valepotriates in the chloroform extracts had fallen insignificantly by the 60th day, while in the ethanolic extracts it amounted to 53-57% of the maximum.

The results of the investigations performed indicate that the extractant has fundamental value both for the completeness of the extraction of the valepotriates from plant raw material and for their preservation in the native form.

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