

THE STUDY OF THE CONTENT OF EXTRACTIVES SUBSTANCES OF *V. TEUCRIUM* L. HERB, LEAVES AND FLOWERS

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Introduction. The unpharmacopoeia plant *Veronica teucrium* L. belongs to the *Plantaginaceae* family. The plant has the wide area of distribution on Ukraine territory and in the world flora, grows mainly in meadows and forest clearings. It is grown as an ornamental plant and has many ornamental varieties.

Infusions and tinctures of *V. teucrium* L. herb have been widely used in folk medicine and have been shown the expectorant, the anti-inflammatory and the antiseptic activities. However, the chemical composition of biologically active substances of *V. teucrium* L. is studied poorly. Medicines obtained from it is not available.

Therefore, the development of extracts obtained from *V. teucrium* L. and this standardization are the actual issue.

The aim of our research was study of the content of extractives substances of *V. teucrium* L. herb, leaves and flowers for the selection of the optimum extractant.

Materials and methods. The objects of study were the air-dried herb, that consisting of flowers, leaves, stems; dried flowers and leaves of *V. teucrium* L., that were collected at flowering phase in the summer 2015.

For the quantification of the content of extractives substances a 1 g (d=2 mm) of herbal drug was extracted by 10 ml of the extractant (1:10), with considering of the absorption coefficients. The absorption coefficient for flowers and leaves are 2, for herb – 2.5. Extracts were obtained by the maceration method with stirring for 2 days, $t^{\circ} = 20-23^{\circ} \text{C}$. As extractants were used the distilled water, the ethanol in different concentrations (20 %, 30 %, 40 %, 50 %, 60 %, 70 % and 96 %), and the 95 % methanol. The obtained extracts were filtered and were dried to the constant weight.

The content of extractives had been quantified by the gravimetric method. The study was performed for 5 times. The obtained data were processed statistically.

Results and discussion. In the result of study was found, that the content of extractives substances in *V. teucrium* L. herb extracted by the distilled water was 23.59 %, by the 20 % ethanol – 25.01 %, by the 30 % ethanol – 26.59 %, by the 40 % ethanol – 23.42 %, by the 50 % ethanol – 24.79 %, by the 60 % ethanol – 20.87 %, by the 70 % ethanol – 23.33 %, by the 96 % ethanol – 4.67 % and by the 95 % methanol – 9.29 % (Table 1).

Table 1

The content of extractives substances of *V. teucrium* L. herbal drug (%)

Extragent	Herb	Flowers	Leaves
Distilled water	23.59±0.01	26.69±0.01	25.24±0.01
20 % Ethanol	25.01±0.01	28.58±0.01	24.48±0.01
30 % Ethanol	26.59±0.01	27.23±0.01	23.11±0.01
40 % Ethanol	23.42±0.01	27.86±0.01	22.01±0.02
50 % Ethanol	24.79±0.01	30.30±0.01	22.84±0.02
60 % Ethanol	20.87±0.02	28.93±0.01	23.41±0.01
70 % Ethanol	23.33±0.01	16.63±0.02	22.87±0.01
96 % Ethanol	4.67±0.03	5.30±0.03	3.92±0.03
95 % Methanol	9.29±0.03	12.11±0.02	8.10±0.03

Note: n=5, p<0.95

In *V. teucrium* L. flowers a content of extractives substances extracted by the distilled water was 26.69 %, by the 20 % ethanol – 28.58 %, by the 30 % ethanol – 27.23 %, by the 40 % ethanol – 27.86 %, by the 50 % ethanol – 30.30 %, by the 60 % ethanol – 28.93 %, by the 70 % ethanol – 16.63 %, by the 96 % ethanol – 5.30 % and by the 95 % methanol – 12.11 %.

In *V. teucrium* L. leaves a content of extractives substances extracted by the distilled water was 25.24 %, by the 20 % ethanol – 24.48 %, by the 30 % ethanol – 23.11 %, by the 40 % ethanol – 22.01 %, by the 50 % ethanol – 22.84 %, by the 60 % ethanol – 23.41 %, by the 70 % ethanol – 22.87 %, by the 96 % ethanol – 3.92 % and by the 95 % methanol – 8.10 %.

In the result of study was found, that the 30 % ethanol was the optimum extractant for *V. teucrium* L. herb (26.59%), also the 20% ethanol and the 50% ethanol can be used for extraction.

For *V. teucrium* L. flowers the 50 % ethanol was the optimum extractant (30.30%), also the 20% ethanol and the 60% ethanol can be used.

For *V. teucrium* L. leaves the distilled water was the optimum extractant (25.24%), also the 20% ethanol and the 60% ethanol can be used as extragents for extraction.

Conclusions. The minor difference of the content of extractives substances, extracted by the ethanol in concentrations of the 30%, 50%, 60% and extracted by the 20% ethanol from *V. teucrium* L. herb, flowers and leaves, have been indicated the advisability of using the 20% ethanol as the optimum extractant.

The obtained experimental data can be used to the development the relevant of herbal drug (*V. teucrium* L.) quality control methods and of its extracts.