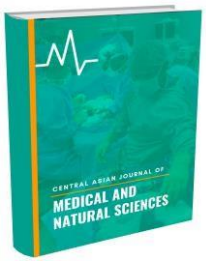

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Article

Studying the Technology of Obtaining a Mixture of Dry Extracts Against Helminths

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Abstract: This study looks into the process of creating a combination of dry extracts with anti-helminthic qualities, emphasizing benefits over chemical medications like less toxicity and extended use. While a lot of study has been done on individual plant extracts, nothing is known about how effective these extracts when combined. In order to extract and evaluate mixtures from wormwood, pumpkin seeds, tansy flowers, and garlic, this study used two procedures. The physiologically active compounds were quantified using high-performance liquid chromatography (HPLC), with a particular emphasis on flavonoids. The first extraction procedure yielded a higher flavonoid concentration, according to the results. These results highlight the need for more study to improve extraction methods and point to the possibility of creating robust, plant-based anti-helminthic therapies.

Keywords: technology, quality analysis, biofaol substances, high-performance liquid chromatography

1. Introduction

Currently, increased interest in the direction of phytotherapy is explained by the widespread use of herbal medicines in the prevention and treatment of various pathological conditions [1,2,3]. There are many advantages over chemical analogues of drug preparations obtained on the basis of plant raw materials. For example, it has a low toxic effect, has the possibility of long-term application, is especially important in cases that need long-term treatment allergic reactions do not call [4]. It is known that our country is rich in reserves of plant raw materials that have an anti-helminthic effect, of which aerial part of wormwood bitter, pumpkin seeds, tansy flowers and garlic were used extensively in folk medicine and medicine as an anti-vomiting agent. Separate dry extracts have been isolated from anti-helminth plant raw materials such as aerial part of wormwood bitter, pumpkin seeds, tansy flowers and garlic [5,6,7]. In scientific research, extracts were extracted from the raw materials of this plant in various ways and quantitative analyzes were carried out. The quantitative composition of the ethanol extract of wormwood bitter has been studied by Platonov and his co-authors. According to him, 41 compound mass spectra and structure formulas contained in the extract were obtained. The composition of wormwood bitter ethanol extract has been found to be composed mainly of cyclic terpenes, cycloalkanes, phenols and glycosides [8]. A technology for the production of a biologically active food

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additive based on pumpkin was developed, from which powder, dried juice and pumpkin oil were obtained, the chemical composition of which was studied [9]. As a result of scientific research by Gryaznov, it was found that the plant of tansy contains - flavonoids and additives from the compounds of shavel, lemon, wine acids, essential oils, phenols. In addition, steroids, coumarin, bitter substances, carbohydrates, alkaloids, lipids and coumarins in its composition have been identified [10].

Also in studies, plant extracts such as A. sativum, A. absinthium, C. regalis, C. carvi, I. helenium, J. regia, S. hortensis and V. officinalis have shown high results on the antihelminthic activity effect [11,12,13]. Studies cite the method and quantitative analysis of obtaining dry extract from garlic [14]. Taking a mixture of dry extracts based on these plant raw materials and carrying out a quantitative analysis of the biologic active substances contained in it determined the relevance of the research work.

The purpose of the work is consists in obtaining a mixture of dry extracts against helminths and conducting a quantitative analysis of the biologic active substances contained in it.

2. Materials and Methods

The mixture of dry extracts was obtained in two different ways. The first method consists of the following technological process:

1) The first method. A separate dry extract was obtained from each selected object. In this:
    1. A dry extract was extracted from the aerial part of wormwood bitter, top by percolation in 70% alcohol;
    2. The crushed pumpkin seeds were first extracted 2 times by percolation in an extractor with extractive gasoline. In this, pumpkin oil was isolated. The post-extraction part (short) was dried in the dryer cabinet at 30-40°C for 2 hours. It was then extracted 3 times in 70% alcohol. All extracts were combined, the alcohol contained in the rotor vaporizer equipment was expelled, and the extract was dried in the dryer SHS-80-01 SPU (Russia) and a dry extract of pumpkin seeds was obtained;
    3. Dry extract was isolated from the flowers of tansy by percolation in 70% alcohol;
    4. The garlic onion is peeled, ground and degreased using chloroform, the degreased part is extracted in 70% alcohol by percolation, then a dry extract is obtained.

Dry extract of wormwood bitter, dry extract of pumpkin seeds, dry extract of tansy flowers and dry extract of garlic are mixed on the recommendation of pharmacologists in a ratio of 1:0.75:0.5:0.25, a mixture of dry extracts against helminths was prepared.

The second method consists of the following technological process:

2) The second method. A separate dry extract was obtained from each selected object. In this:
    1. A dry extract was extracted from the aerial part of wormwood bitter, top by percolation in 70% alcohol;
    2. Pumpkin seeds are ground, degreased using chloroform, the degreased part is extracted in percolation method in 70% alcohol and prepared dry extract. The technological process was carried out as follows: crushed pumpkin seeds are first extracted 1 time in a percolation method with chloroform in an extractor for 24 hours. In this, pumpkin oil was isolated. Then the rest was dried in the air. The dry part was extracted 3 times in 70% alcohol. Then the extracts were combined, the alcohol contained in the rotor vaporizer was expelled, and the extract was dried in the

dryer cabinet (SHS-80-01 SPU, Russia) and the pumpkin seed dry extract was obtained.

3. Dry extract was isolated from the flowers of tansy by percolation in 70% alcohol;
4. The garlic onion is peeled, ground and degreased using chloroform, the degreased part is extracted in 70% alcohol by percolation, then a dry extract is obtained.

Dry extract of wormwood bitter, dry extract of pumpkin seeds, dry extract of tansy flowers and dry extract of garlic are mixed on the recommendation of pharmacologists in a ratio of 1:0.75:0.5:0.25, a mixture of dry extracts against helminths was prepared.

The content of flavonoids in a mixture of dry extracts against helminth obtained in 2 different ways was analyzed in a highly effective liquid chromatography method. The experiments were carried out on a high-performance liquid chromatograph "Agilent 1200". To do this, 50 mg (exact strain) of the drug is placed in a penicillin bottle, 10 ml of 70% ethyl alcohol is added, dissolved, the pores are filtered into chromatographic bottles through a membrane filter measuring 0.45 μm. The experiments were conducted under the following conditions: a 0.1% solution of excitable phase triphthoracic acid and a mixture of acetonitrile (70: 30); an Agilent Eclipse XDB – C18 with a chromatographic column particle size of 5 μm, size 4.6 × 250 mm; total flow rate of the eluent is 1.0 ml/min; sample size for analysis is 10.20 mkl; detection wavelength is 254, 320 nm.

3. Results and Discussion

Chromatograms of a mixture of dry extracts obtained in 2 different ways are given in Figures 1 and 2. The results are shown in Table 1 below.

Table 1. Results of analysis on the method of High-Performance Liquid Chromatography of the average amount of flavonoid sum contained in a mixture of dry extracts against helminths obtained in 2 different ways

Flavonoid	The average amount of the sum of flavonoids in a mixture of dry extracts against helminths (on average mg/g)	
	First method	Second method
Apigenin	-	-
Lyuteolin	-	0,0372
Rutin	0,85	0,366

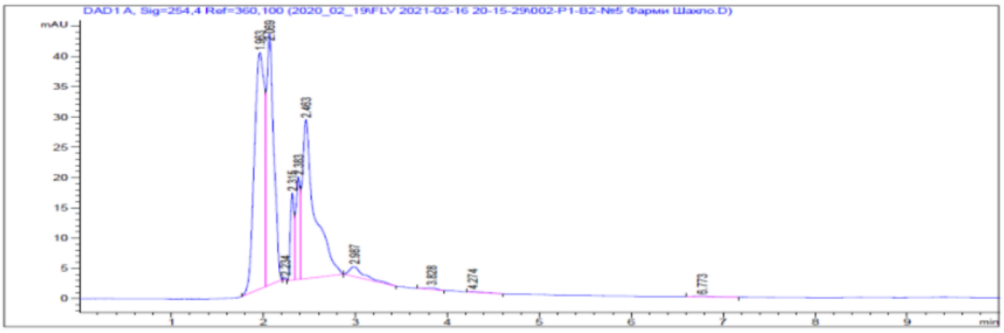

Figure 1. Chromatogram of a mixture of dry extracts obtained in the first method

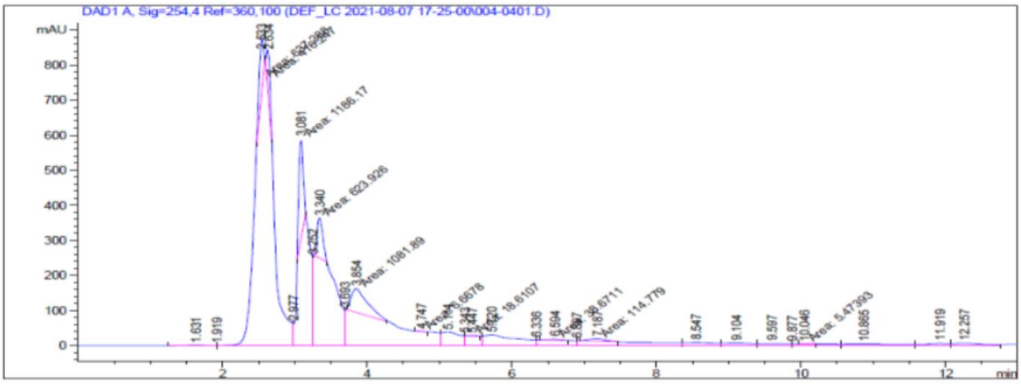

Figure 2. Chromatogram of a mixture of dry extracts obtained in the second method

The amount of the sum of flavonoids in the mixture of dry extracts obtained by the first method was on average 0.85 mg/g compared to rutin. The amount of flavonoids in a mixture of dry anti-helminth extracts obtained through the second method was an average of 0.0372 mg/g compared to luteolin, and an average of 0.366 mg/g compared to rutin.

Qualitative reactions were carried out to a mixture of dry extracts against helminths: a yellow color was formed with a 5% alcohol solution of aluminum (III) chloride, a flavonoid-specific reaction.

4. Conclusion

A mixture of dry extracts was obtained in 2 different ways from plant raw materials with an anti-helminth effect, which is widely used in official medicine and medicine. Quantitative analysis of the biologic active ingredients in their composition was carried out in a highly effective liquid chromatography method. The results obtained and the technological methods carried out are used in subsequent research work.

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