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Study of Numerical Indications of Elixir Derived from Medicinal Plants

Abdijalilova Zilola Khikmatullaevna 1
Ergasheva Dilafruz Zaripovna 2
Zaynutdinov Khikmatulla Sunnatovich 3
1. Associate Professor, Institute of Pharmaceutical Education and Research, Training and Retraining Center
2 . Assistant Institute of Pharmaceutical Education and Research
3. Uzbekistan Professor, Institute of Pharmaceutical Education and Research, Training and Retraining Center
* Correspondence: zilola.pharm@mail.ru

Abstract
Upper respiratory tract diseases are one of the most common diseases worldwide. Children are particularly susceptible to respiratory tract diseases: 54.2% of all diseases in them are respiratory system diseases. This figure is 33.2% in adolescents and 13.6% in adults. In the treatment of inflammatory diseases of the upper respiratory tract, based on the symptoms of the disease, it is recommended to reduce the swelling of the mucous membrane, use sprays and aerosols in the early stages of the disease, use antibiotics in the late stages of the disease, systemic treatment with antibiotics, as well as the use of mucolytics and combination drugs. The elixir dosage form we offer uses local raw materials, and the article is devoted to the treatment of upper respiratory tract infections. The quality of the elixir used in inflammation of the airways is determined by numerical indicators. As a result of the research, a positive result was obtained.

Keywords: Rhinitis. sinusitis, adenoiditis, goymoritis. frontitis, laryngitis, pharyngitis, bronchitis, pneumonia, bronchial asthma, liquid extract, authenticity, alcohol strength, boiling point, potentiometric.

Introduction

One of the main priorities for the development of pharmaceutical science and industry is to expand the range of local medicines . Today, respiratory infections are one of the most common diseases in the world. As a result of these diseases, a number of acute and chronic inflammatory diseases occur, the body becomes weak, its immunity decreases, and diseases caused by viruses as a result of complications of respiratory diseases can also be observed. These diseases mainly appear with

a sharp change in weather. The main symptoms of this disease are sneezing, fever, cough, runny nose, and sneezing.

There are several types of respiratory diseases, including rhinitis. sinusitis, adenoiditis, goymoritis. diseases such as frontitis, laryngitis, pharyngitis, bronchitis, pneumonia, bronchial asthma. Respiratory diseases are divided into upper and lower respiratory diseases: for example, the flu begins in the nasopharynx with the upper respiratory tract and quickly descends into the lower respiratory tract, and the larynx, trachea sometimes reaches the alveoli (lower respiratory tract) and causes pneumonia

Upper respiratory tract diseases are one of the most common diseases worldwide. Children are particularly susceptible to respiratory tract diseases: 54.2% of all diseases in them are respiratory system diseases. This figure is 33.2% in adolescents and 13.6% in adults. Respiratory diseases mainly occur in winter and spring, that is, the number of cases increases in the cold season and decreases in the warm season. In the treatment of inflammatory diseases of the upper respiratory tract, depending on the symptoms of the disease, it is recommended to reduce the swelling of the mucous membrane, use sprays and aerosols in the early stages of the disease, use antibiotics in the late stages of the disease, systemic treatment with antibiotics, as well as the use of mucolytics and combination drugs [1,2].

The technology of liquid extraction is a complex process consisting of several stages, and the extraction factors affect the quality of the finished product, with the extraction stage being the most important . The plants that make up the elixir are widely used in folk and scientific medicine. The components of the elixir in the recommended proportions are part of many preparations produced not only in the Republic of Uzbekistan, but also in foreign countries. For example: elixirs, tinctures, extracts, preparations, balms, etc.

The importance of extractant concentration in obtaining liquid extracts from medicinal plants.

The separator plays an important role in the extraction process. The separator must ensure the maximum release of the main active substance from the raw material and the minimum release of foreign substances. The plant raw material must be well moistened and well absorbed through the cell wall [3].

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Materials and Methods

The pH value of the elixir drug potentiometric method, authenticity: chemical determination, Alcohol content - determined by the distillation method, the refractive index of the solution was measured using an Abbe refractometer. Microbiological purity - determined according to OFS.1.2.4.0002.18. Category B.

Results and Discussion

The analyzes studied in the development of the specific composition and technology of the Elixir drug were as follows:

Appearance: Elixir is a clear liquid with a characteristic color and odor.

pH indicator **:** pH =5.82±0.02. Potentiometric method.

Density: If mass is measured in grams and volume is measured in cubic centimeters, then density refers to the mass within 1 g / cm ^{3} of a substance and is measured in g/cm ^{3} . The density of the elixir is determined using a pycnometer or hydrometer.

Determination method : A clean and dry pycnometer was taken with an accuracy of 0.0002 g, filled with purified water slightly above the mark using a small funnel, the lid was closed and kept in a thermostat for 20 minutes. The water temperature was maintained at 20 ^{0} C with an accuracy of 0.1 ^{0} C. At this temperature, the volume of water in the pycnometer was taken up to the mark of the pycnometer using filter paper. The pycnometer is held in the thermostat for another 10 minutes and weighed on a laboratory scale.

The pycnometer was emptied of water, dried and filled to the mark with the elixir to be tested. It was then weighed on a laboratory scale as described above.

The density of the elixir is calculated using the following formula:

$$\rho_{20} = \frac{(m_2 - m) \cdot 0.99703}{m_1 - m} + 0.0012$$

In this; m - empty pycnometer mass (g);

m $_1$ – mass of pycnometer with purified water (g);

m $_2$ – mass of pycnometer with tested elixir (g);

0.99703 – density of water at 20 $^{0\,C;}$

0.0012 – density of air at 20 ^{0} C.

pH - was obtained by the potentiometric method given in the XI V DF. The pH is required to be from 5.5 to 7.0.

Refractive index **.** The refractive index of the solution was measured using an Abbe refractometer. The determination was carried out at a temperature of (20±0.3) ^{0} C and a sodium spectrum wavelength of (589.3 nm). The refractive index is denoted by the index $n_D^{20.}$ n_D^{20}=1.3436

Authenticity: Chemical determination. When 10 ml of elixir is taken and 1 ml of diluted sulfuric acid is added to it, a brown precipitate is formed. This precipitate dissolves in ammonia. Reaction for glycyrrhizic acid [2.28; 2.32].

Physicochemical method: High-performance liquid chromatography is used to determine the authenticity and quantity of the "Elixir for the upper respiratory tract". This analysis method was developed in collaboration with B. Okhundayev, a junior researcher at the Laboratory of Chemistry of Terpenoids and Phenolic Compounds of the "Institute of Chemistry of Plant Substances" . In this case, the peak retention time of the tested solution should correspond to the peak retention time in the chromatogram of standard solutions of glyceric acid, flavonoids and caffeic acid prepared for quantitative analysis .

Alcohol strength . Determined by the distillation method. For this, 25 ml of the extract was placed in a 200-250 ml round-bottomed flask, 75 ml of distilled water was added to it, and the flask was slowly boiled. In order for the liquid to boil evenly, the flask was heated by placing glassware in it.

The elixir was boiled and the evaporated liquid was collected in a 50 ml volumetric flask. When 48 ml of liquid was collected in the volumetric flask, it was removed, cooled, and made up to the mark with purified water. The density of the liquid in the volumetric flask was determined using one of the methods given in the DF XI V edition (pycnometer). The concentration of ethyl alcohol in the concentrated liquid was found in the volumetric concentration using alcoholoholometric table 1, and the amount of ethyl alcohol in the elixir was calculated according to the following formula:

$$X= (a \times 50)/6 \ = 17(1)$$

Here: x-alcohol concentration in the tested elixir;

50- the volume of the examined liquid;

alcohol content in α-distillate;

b- alcohol concentration in 50 ml liquid;

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Alcohol content - Determined by the Distillation method, based on alcoholometric table 1, was 16.5%.

Table 1 **Results of determining the potency of ethyl alcohol in an elixir used in inflammatory diseases of the upper respiratory tract**

No.	Amount of extract obtained (ml)	Boiling temperature, t °	Alcohol amount,%	Metrological analysis
1	25	91	16.4	$X_{average}$ =16.5 S^2 = 0.015 S= 0.122 $\Delta \overline{X}$ = 0.152 e_{cr} =0.974
2	25	89.4	16.6	
3	25	89.4	16.5	
4	25	90	16.5	
5	25	89.5	16.3	

The method of determining the biologically active substances in the elixir **.**

Amount of heavy metals. 10 ml of the test liquid extract was evaporated to dryness in a crucible. 1 ml of concentrated sulfuric acid was added to the dry residue and carefully ignited. 5 ml of saturated ammonium acetate solution was added to this residue and filtered through an ash-free filter, the filter was washed with 5 ml of water and made up to 100 ml. 1 ml of dilute acetic acid and 1-2 drops of sodium sulfide were added to 10 ml of this solution, shaken, and after 1 minute, the solution was compared with the ethanol solution. Depending on the concentration of lead salt, a black precipitate or a brown color is formed with sodium sulfide. The color was observed in a test tube with a diameter of 1.5 cm.

The color produced in the test solution should not be more intense than the color of the reference solution. A weak brown color was observed in the standard solution when viewed from the 6th 8 смlayer. The amount of heavy metals in the elixir did not exceed 0.001%.

Dry residue. 5 ml of liquid extract is weighed to the nearest 0.0001 g into a flask previously dried at 100 $^{\circ}C$, evaporated to dryness in a water bath at a constant temperature of 105 + 2.5 °C, dried in an oven for 3 hours at 102.5 + 2.5 $^{\circ}C$, then kept in a desiccator with concentrated sulfuric acid for 30 min, and its mass is measured.

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Dry residue:

a) mass of empty bag-30.0397g;

b) the mass of the bux with 5 ml of elixir is 34.9535 g;

c) the mass of byuks with dry residue - 30.9486;

c) 30.9486-30.0397 =0.9089 g

34.9535g — 100%

0.9089g — X X=2.599%

Table 2 **Results of dry residue determination by numerical indicators (weight g)**

No. T/R	Product weight	Box weight	Bux, dry residue	Dry residue Gr	Dry residue (%)	Metrological analysis
1	4.9138	30.0397	30.9486	0.9089	2,600	$X_{average}$ =2.5962 S^2 = 0.001 S= 0.032 $\Delta \overline{X}$ = 0.198 e_{cr} = 0.76
2	4.9012	30.0396	30 ,9450	0.9054	2, 5 90	
3	4.9184	30.0397	30.9530	0.9133	2,612	
4	4.9078	30.0397	30.9412	0.9015	2,579	
5	4.9001	30.0395	30.9484	0.9089	2,600	

Cleaning from foreign substances **.** On an industrial scale, extracts are obtained by percolation, repercolation, maceration-circulation, vortex and accelerated methods. Extraction methods should have several advantages, namely, not to occupy a large area, consume little extractant and release a large amount of bioactive substance. Extractions were obtained using percolation, repercolation and maceration-circulation methods, using alcohol of various strengths. The obtained extracts were analyzed for their appearance, dry residue, heavy metal content, and alcohol strength. According to the results of the analysis, the extract obtained by maceration-circulation method in 20% ethyl alcohol was considered suitable for the purpose.

Microbiological cleanliness - D F XIV, OFS.1.2.4.0002.18. Category Z must meet the B requirement. In 1 g/ml of preparation, the total number of aerobic bacteria should not be more than 10^4, the total number of yeast and mold fungi should not be more than $2 \cdot 10^2$, there should not be

Pseudomanas aeruginosae, Staphylococcus aureus, Escherichia coli, Salmonella family bacteria, Enterobacteriaceae should not be more than 10^{2}.

Microbiological cleanliness **.** Microbiological purity DF XI V , Category 3 B.

Table 3 **Results of determination of microbiological purity**

Existing dead microorganisms	MTX norm	Current number
Total number of aerobic bacteria (in 1g or 1ml)	No more than 103.	Less than 103 grains
Total number of fungi (in 1g or 1ml)	No more than 102.	Less than 102 grains
Escherichia coli (in 1g or 1ml)	It needs to be silent.	He didn't say anything.

Conclusion

During the study, the appearance of the elixir was: Clear dark brown liquid with a characteristic odor and taste, pH value **:** pH = 5.82±0.02 (potentiometric method), density: p = 1.22 g / cm^{3} , dry residue: X = 2.599%, alcohol content: Determined by the distillation method, based on the 1st alcoholometric table, it was 16.5%, the content of heavy metals was less than 0.01%.

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