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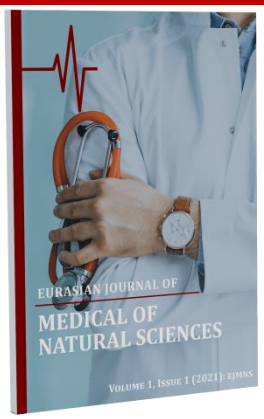

CREATION OF A NEW ANTI-INFLAMMATORY AGENT BASED ON ACHILLEA FILIPENDULINA L.

Khadjimetova Sevara Raupovna
Tashkent Pharmaceutical Institute
sevaraxadjimetova8@gmail.com
Department of Biotechnology associate Professor
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ABSTRACT

In this article entitled technology for obtaining a dry extract of a achillea filipendulina the process of obtaining a dry extract from the aerial parts of these plants is presented In experiments, the effect of extraction time and frequency, process temperature, hydromodule and degree of spray grinding on the yield of flavanoids and extractives was studied. The technological properties of the composite dry extract were also studied, the optimal composition was selected and the technology for the tablet dosage form was developed.

INTRODUCTION

It is known that of the total number of medicines used in medical practice, preparations from plants account for over 40%. The use of herbal preparations in world medical practice has a steady tendency to increase. According to WHO, currently over 65% of the world's population uses the plant as medicines. The main advantage of herbal preparations is the application of active substances to the human body, the practical absence of side effects and the possibility of long-term use.Today, scientific research is underway to develop technologies for obtaining phytopreparations, in particular dry extracts, from medicinal plant materials, their standardization, and the establishment of quality standards.

Infusions and decoctions of common knotgrass and yarrow have long been widely used in traditional medicine. Common knotgrass herb has diuretic, anti-inflammatory, astringent, tonic, hemostatic and choleretic effects. Its preparations are recommended for diseases of the kidneys and excretory tract –– nephritis, pyelonephritis, cystitis, bladder stones and kidney stones, and a number of others. The inflorescence of the meadowsweet yarrow is also widely used in various diseases of the gastrointestinal tract, has a pronounced diuretic, anti-inflammatory, anti-ulcer and hemostatic effect. Such a wide range of biological activity of plant preparations is due to the presence of a large group of various biologically active compounds, macro and microelements in them.

Preliminary pharmacological studies have shown that the extract of a mixture of aboveground parts of bird's yarrow has a higher biological activity than extracts of individual plants, and the best results were obtained for plant extracts. Various forms of galenic

preparations are widely used in medical practice, among which dry extracts of aqueous extracts occupy one of the leading places. This is due to the fact that water, as an extractant, has a good solvent and extractive ability for many groups of physiologically active substances, is biologically harmless, accessible and chemically indifferent. It is easy to obtain a solid, dosed, convenient dosage form from dry extracts.

Materials and methods of research To determine the optimal technological parameters of the extraction process of medicinal plant raw materials, the main group of factors affecting the efficiency of the process has been determined. At the same time, the main technological properties of raw materials, in particular, kinetics and swelling and swelling, have been studied. The optimization parameters were the amount of flavonoids in the extract and the total amount of extractives. The amount of flavanoids transferred to the extract was determined spectrophotometrically, and the amount of extractives was determined by the method of GF XI ed.

In experiments, the effect of extraction time and frequency, process temperature, hydromodule and degree of spray grinding on the yield of flavonoids and extractives was studied. The process was carried out at temperatures of 60, 80, and 100 0C for 30, 40, 60, 80, 100 and 120 minutes. The hydromodule of the process, taking into account the swelling of the raw materials, was 1 : 5; 1 : 10 and 1 : 15.

To study the effect of the degree of grinding of plant material on the yield of dry extract, the raw material was crushed to particles passing through a sieve with a hole diameter of 1.0; 2.0; 3.0; 5.0; 7.0 mm. The extraction of raw materials was carried out with stirring, which significantly accelerated the process. The dry extract was obtained by maceration in 3 stages.

It was found that the best results are obtained by extraction of raw materials at the boiling point of the extractant (1000 C).

Due to the fact that the extraction of plant material with particle sizes of 1 mm or less was obtained with a high yield of ballast substances and highly turbid, which was difficult to lighten, we abandoned this fraction.

Below are the results of experiments to study the effect of extraction time and multiplicity on the yield of extractives. Extraction was performed at a hydromodule of 1 : 15.

Table 1

The yield of extractive substances depends on the time and frequency of extraction.

Extraction time. min	The yield of extractive substances in % contained in the raw material		
	I-phase contacts	II-phase contacts	III- phase contacts
20	3,17	3,05	0,23
40	16,78	10,68	0,81
60	56,39	21,47	1,93
80	66,85	23,16	1,98
100	67,34	23,65	1,98
120	67,55	23,78	1,97

It follows from the experimental results that the optimal time for the first extraction is 80 minutes, and the second 60 minutes. Due to the small yield, it is advisable to abandon the third extraction. The fraction of raw material particles was taken 1.0 - 3.0 mm. The yield of extractive substances was 90% of its content in the raw material.

The dry extract was obtained by spray drying of a pre-partially evaporated extract. It was a dark brown hygroscopic powder with a specific odor.

The technological properties of the composite dry extract were also studied, the optimal composition was selected and the technology for the tablet dosage form was developed. It is proved that, when obtaining tablets, it is necessary to use the wet granulation method, and 96% ethyl alcohol as a binder. Due to the high hygroscopicity, such powders are difficult to tablet. In order to achieve the necessary technological properties of the pressed mass, it was necessary to use appropriate compositions of excipients. The optimal composition of the pressed mass consists of: dry extract – 0.25, starch – 0.095, Mcc (interocel) - 0.090, lactose - 0.060.

The technological properties of the pressed mass were determined according to the methods of GF XI and the corresponding ND.The results are presented in table 2.

Table 2

Technological properties of the yarrow tablet.

The studied indicators	Units of measurement	The results obtained
Qualifying squad+1000 +500-1000 -500+250 250+150 -150	Microns,%	2.7 38.0 22.4 9.0 3.1
Flowability	10^{-3} kg\sec	0.13
Bulk density	Kg\m3	387
Compressibility	N	43
Compaction coefficient	K	3.9
Residual humidity	%	4.8
Angle of natural slope	Degree	

Table 3

Qualitative indicators of tablets yarrow of the meadowsweet.

	The name of indicators	Unit of measurement	The limit	Results
	The ratio of tablet height to diameter	%	30-40	36
	Average mass and deviation from average mass	%	5	0.501∓3.40
	Disintegration	Minuts	до15	10÷12
	Fracture strength	N	30	50
	Abrasion resistance	%	97-100	98.8

	Dissolution	%	75>	84

It should be noted that the results showed that the tablets obtained meet all the requirements of the State Pharmacopoeia. The appearance of the tablet is dark brown, the surface is flat, 0.5 g each.

CONCLUSION

1. The results of the conducted research showed that the aquifer was used as a purified water separator to obtain a dry extract.
2. The optimal values of the technological parameters of the extraction process of plant raw materials were determined.
3. When the total extraction time is 345-360 minutes, it was found that extractive substances in raw materials will not be less than 97%.
4. The quality and quantity indicators of the obtained dry extract were determined. The technological properties of the dry extract were studied. The resulting dry extract was studied for its wet absorption kinetics due to its high hygroscopicity.

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