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TECHNOLOGY OF PREPARATION OF DRY EXTRACT FROM "SILYBUM MARIANUM".

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Abstract:

Milk thistle is a biennial plant from the Aster family, which contains a rich complex of 40 most valuable medicinal and nutrients. Among them, a large complex of flavonolignans and flavonoids (a flavonoid substance called silymarin, which includes silybin, silydianin and silicristin, as well as quercitin, taxifolin, phylloquinone), biogenic amines (histamine, tyramine), fatty (up to 32% saturated with high fatty acids) and essential (up to 0.08%) oils, mucous substances [3]. In addition, milk thistle seeds contain macronutrients, mg / g: K 9.2; Ca 16.6; Mg 4.2; Fe 0.085; trace elements, mg / g: Mn 0.1; Cu 1.16; Zn 0.77; Cr 0.15; Al 0.02; V 0.91; Se 22.9; Ni 0.2; Sr 0.08; Pb 0.08; J 0.99; B 22.4; concentrates Cu, especially Se.

Keywords: : Milk thistle, flavonoid substance called silymarin, technology, preparation, dry extract from milk thistle.

However, the existing technology, which provides for the isolation and purification of the sum of flavolignans, does not allow the extraction of the full complex of the most valuable BAS seeds of this plant, because they have different physical and chemical properties, and this reduces the hepatoprotective activity of the drug [4]. Evidence of this is the revealed high hepatoprotective activity of "Milk thistle extract liquid", containing the entire natural complex of compounds of a flavolignan nature, exceeding that of the purified amount of flavolignans (silibinin). Unlike dry extract, it has a higher hepatoprotective activity, because contains the entire natural complex of compounds of a flavolignan nature, surpassing that of the purified sum of flavolignans (silibinin). This circumstance, most likely, can be associated with the co-directional (synergistic) action of the components of the entire native complex of phenolic compounds (flavolignans + flavonoids), in particular dihydroquercetin, which has antioxidant properties [2]. In addition, a new flavolignan, 2,3-dehydrosilybin, was found in the total complex. Isolation of this compound is of great practical importance, since in a comparative study of the antioxidant properties of individual compounds - phenylpropanoid derivatives on a model of acute toxic hepatitis caused by carbon tetrachloride, not only was the presence of hepatoprotective activity characteristic of all flavolignans confirmed, but also the highest antioxidant activity was found in 2, 3-dehydrosilybin (exceeds silybin in its effect on the level of MDA accumulation by 14%) [7]. In addition, existing technologies for obtaining dry milk thistle extract provide for the use of non-polar solvents (carbon tetrachloride, gasoline, etc.) for defatting extracts, the residues of which can adversely affect the hepatoprotective activity of the drug.

The purpose of this study was to develop a new technology for dry extract of milk thistle.

MATERIALS AND METHODS.

The work used known methods of extraction of medicinal plant raw materials and methods for their calculation [9], methods for determining the structural and mechanical characteristics of materials [1], as well as spectrophotometric methods for analyzing raw materials and extracts from milk thistle seeds [5].

RESULTS AND ITS DISCUSSION.

At the first stage, it was necessary to develop an intermediate product - a 1: 2 liquid extract. According to RF patent No. 2102999, obtaining a liquid extract "is carried out with 80% ethyl alcohol by the method of repercolation, first at room temperature, then at 60-85oC" [6], which complicates the technological process and reduces the biological activity of the extract, because flavolignans are thermolabile substances [7].

For the extraction of milk thistle seeds, we have chosen the method of repercolation. With this method, as is known, the number of extraction stages is of great importance, which affects, on the one hand, the duration of the production process, and on the other, the completeness of extraction and the efficiency of using the feedstock.

Taking into account the fact that the extraction will be an intermediate product when obtaining a dry extract, in order to increase the efficiency of extraction, we have chosen the ratio of raw materials and extractant 1: 2. To establish the optimal number of stages of extraction, we investigated the dynamics of extraction with the selected extractant - 80% alcohol, recommended for the extraction of flavonoids and flavolignans from milk thistle seeds [6]. For grinding, we used the rolling method, which well destroys the internal structure of milk thistle seeds and allows you to preserve the filtration characteristics of the raw material layer in the percolator.

STATEMENT OF THE EXPERIMENT

To study the transition of extractable components from milk thistle seeds to the liquid phase, we modeled a system consisting of a battery of percolators. In all percolators, the calculated amount of milk thistle seeds crushed by rolling was loaded in equal portions. The volume of the extractant - 80% alcohol, was measured based on the ratio of the feedstock: finished product 1: 2 and taking into account the absorption coefficient Kp = 1.5 calculated by us.

The experiment was preceded by a chemical analysis of raw materials with the determination of the initial amount of the sum of flavolignans (Sisch. = 2.7%). At each stage of the extraction, we took 1 ml extraction samples, diluted in a 25 ml volumetric flask, and then returned 1 ml of pure extractant to the system.

The content of flavolignans was determined according to the methods described in the literature [5, 10].

Taking the initial content of substances in the raw material (Sisch.) As 100%, we calculated by the formula (1) the yield of the analyzed substances (Ci,%) at each stage of extraction (Table 1).

$$C_i(\%) = \frac{X_i(г)}{X_{исх.}(г)} \cdot 100$$

(one)

where Xi and Xin. - absolute values, the sum of the analyzed substances (g) contained in the liquid phase separated from the raw material and in the mass of the raw material used for extraction.

Dry extract of milk thistle was obtained by adding to 240 parts of liquid extract 1: 2 100 parts of polyplasdone XL-10, thoroughly mixing until smooth. Subsequently, the extract sorbed on polyplasdone was dried under vacuum at a temperature not exceeding 40 ° C and ground in a mortar to particles passing through a 0.25 mm sieve. The obtained dry extract of milk thistle had the appearance of the smallest yellow powder.

Analysis of the obtained dry extract showed that the content of the sum of flavolignans in terms of silybin is 2.44 ± 0.034, which is close to the content in dry milk thistle extract (FSP 42-3879-99) [10] - 2.8-3.8%. Based on the performed analytical studies, it was found that the sorption of the main physiologically active components (flavonoid complex of milk thistle extract) on polyplasdone is reversible. This can be explained by the fact that polyplaslon does not form ionic complexes with substances, which can delay drug release [8].

REFERENCES:

1. Sampiev A.M., Doctor of Pharmaceutical Sciences, Professor, Head. Department of Pharmacy, Kuban State Medical University, Ministry of Health of the Russian Federation, Krasnodar;
2. Pantyukhin A.V., Doctor of Pharmaceutical Sciences, Associate Professor, Head. Department of Pharmacy, Saratov State Medical University named after IN AND. Razumovsky "Ministry of Health of the Russian Federation, Saratov.
3. Akbarov Nurislom Akhtamjon ugli, Aliyeva Nodira, Djurayeva Saida, & Yalgasheva Shirinhol. (2021). OPPORTUNITIES TO USE GOOGLE SERVICES TO ORGANIZE THE LEARNING PROCESS. *European Scholar Journal*, *2*(3), 62-63
4. Akbarov N. TRAFFICKING IN HUMAN BEINGS IS A PROBLEM OF THE TIMES //Available at SSRN 3785273. – 2021.
5. Akbarov N. THE MEANING OF EXTREMISM AND TERRORISM //TJS-Tematics journal of Sociology ISSN. – 2021. – С. 2249-2987.