

“SILYBUM MARIANUM” PLANT ITS MEDICAL SPECIES AND EXTRACTION TECHNOLOGY”

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ANNOTATION:

Relevance and goals. Milk thistle fruit *Silybum marianum* fructus -plant raw materials used for the production of drugs and biologically active additives (BAD) hepatoprotective and antitoxic action. Various qualitative composition of flavolignans in raw materials creates certain difficulties in its standardization. The purpose of the work was improvement of approaches to standardization of fruits of milk thistle, comparative characteristics and harmonization of methods of qualitative and quantitative analysis of the determination of flavolignans.

Keywords: *Silybum marianum*, flavolignans, quantification, spectrophotometry, powerful antioxidants, to standardization, substance.

INTRODUCTION:

Silybum marianum L. - one- or two-year-old plant from the Aster family. *Silybum marianum* is a fairly tall plant, its straight stem, covered with a mealy bloom, grows to a height of 80-150 cm.

The leaves of the root rosette are very large, shiny, wavy, dark green in color with white streaks and spots that seem pearlescent. The beautiful leaves of *silybum marianum* just like a magnet attract the eye.

Stems, leaves, inflorescences of *silybum marianum* are covered with long yellow spines. The flowers are numerous, tubular, crimson-purple, purple, violet, less often pink or white,

collected in large round inflorescences-baskets and are located at the ends of the shoots.

Milk thistle is one of the most effective antioxidant medicinal plants with the most pronounced effect. It starts a process in cells that neutralizes free radicals and reduces oxidative stress. A significant plus is that milk thistle is not only a self-antioxidant agent, but it stimulates the production of its own antioxidant in the body, helping to increase the level of glutathione. Glutathione is one of the most powerful antioxidants in the body. In addition, the herb activates the body's own ability to remove toxins from the liver.

A small list of what functions and processes are beneficially affected by milk thistle and beneficial to the human body.

This is the creation of powerful protection for the cells of the human body. Antihepatotoxic, natural drug that neutralizes and removes toxins from the liver Protects liver cells from free radicals Milk thistle is also an antimycotic (it has an antimicrobial effect, for example, it destroys *Candida albicans*) Reduces insulin resistance Regulates blood cholesterol levels Suppresses the growth of cancer cells in the cervix and prostate gland Milk thistle is useful in the treatment of liver diseases (hepatitis, liver failure, cirrhosis of the liver, chronic liver intoxication), bile (gallstones, biliary dyskinesia) Digestive system (difficulty in digestion, constipation) Alcohol intoxication Helps Fight Psoriasis with mental and nervous exhaustion. Stomach and intestines

MATERIALS AND METHODS:

The object of the study was herbal medicinal raw materials - milk thistle fruits and milk thistle meal. The moisture content of raw materials was determined using a Wile-65 device. Extracting flavolignans from milk thistle fruit was carried out by two- and three-fold extractions of 95% ethanol when heated in a boiling water bath. Registration of spectra in UV regions were measured on an SF104 spectrophotometer. The complexation reaction of flavolignans was carried out with an AlCl₃ solution (2% in ethanol 96%). Silybum marianum was used as a standard.

RESULTS:

Identified and quantified flavolignans in milk thistle fruits and milk thistle meal by spectrophotometric method. The analytical wavelengths used were 289 nm (intrinsic absorption of flavolignans) and 380 nm (absorption complex of flavolignans with AlCl₃).

Findings. A method for the identification of flavolignans in milk thistle fruits using spectrophotometry at two wavelengths - 289 and 380 nm. Comparative characteristics of the methods of quantitative determination of flavolignans in milk thistle fruits, it was found that the highest indicators are obtained when using the GF13 method (calculation by standard).

Milk thistle is a part of recipes that are indicated for use in irritable bowel syndrome. In tinctures and teas, along with cumin, mint, chamomile, ant tree bark and lemon balm, milk thistle has an antispasmodic and tonic effect and, according to studies, leads to the relief of symptoms (bloating, fermentation, constipation) in 90% of cases.

For stomach ailments, milk thistle (along with chamomile) is used to protect the liver from substances that have damaged the stomach.

Skin diseases:

In 2002, it became known that milk thistle could become an important candidate for a place in the therapy and prevention of skin cancer treatment.

Since oxidative stress is one of the key factors in the development of skin cancer, researchers are looking for effective febrile antioxidants that can be used effectively in this area. Silymarin, the main active ingredient from milk thistle, is an effective antioxidant.

In model experiments, it was shown that the plant compound reduces the oxidative stress of the skin, prevents the division of skin cancer cells, blocks cancer-promoting triggers, and has a powerful stimulating effect on the antioxidant system of the human body.

The cardiovascular system:

Milk thistle has a positive effect on all areas of health that relate to vascular health. Especially diabetics are more likely to suffer from cardiovascular disease due to a violation of the vascular wall (endothelial dysfunction). However, milk thistle lowers ADMA values. It is a substance that, in high doses, can damage vascular function.

Diabetes:

Inflammatory processes in the body and oxidative stress also contribute to the development of diabetes and, in existing diabetes, its complications. A 2015 study in Iran found that supplementing with milk thistle oil for type 2 diabetes improved the antioxidant system and thereby reduced inflammatory markers.

Milk thistle effectively helps to improve the condition of diabetics. It is recommended to take it for at least two months, every day.

The Immune System:

Milk thistle is famous for its action - to stimulate the immune system and strengthen the body's defenses.

Homeopathy also uses milk thistle extensively. The area of application of homeopathic remedies, as in traditional medicine, is the regeneration and detoxification of supporting cells in liver diseases. Liver

The effect of milk thistle on liver health has been particularly well proven. When taken with antibiotics and medications, milk thistle can protect the liver from harmful effects. But the plant can also protect to some extent from the side effects of alcohol and radiation therapy. Milk thistle also supports liver detoxification. It is recommended to take milk thistle for two months, one teaspoon of oil cake or milk thistle seed meal three times a day with plenty of water. However, repairing a damaged liver takes time. After all, alcohol, which usually has a negative effect on the liver, has been consumed for many years.

Milk thistle should be taken as a supplement in a complex therapy cycle. The patient achieves the greatest effect with a simultaneous diet, which is combined with the use of milk thistle preparations, vitamins and minerals. Milk thistle tea

As explained above, the amount of active ingredient in milk thistle tea or decoction is sometimes very small. Although tea can be beneficial for an upset stomach (flatulence, bloating), short-term infusions of decoctions and tea are not enough for regeneration and tangible benefits for the liver.

In any case, the seeds of the plant must be very finely chopped or ground in a mortar before pouring them with hot water (1-2 tablespoons of ground seeds (3-5 g) (for 1 glass of water) 150-200 ml)) can be infused about ten minutes, and then pour. Tea is taken 3-4 times a day, 30 minutes before meals.

Since it does not always have a pleasant taste, it can be mixed with an infusion of currant leaves, mint, lemon balm or rose hips. As the last active ingredient, it contains glycyrrhizic acid, which is characterized by hepatoprotective properties and therefore harmonizes well with milk thistle. For other indications (eg liver problems, diabetes, cancer), it is better to use milk thistle oil or capsules that contain a high concentration of active ingredients. Milk thistle. Butter Milk thistle oil is a valuable medicine and one of the healthiest plant oils. The oil is obtained by cold pressing from the seeds of the herbaceous weed, milk thistle. This thorny plant with vibrant purple flowers is also known as thistle.

DISCUSSION:

Milk thistle oil has a pleasant aroma of dried nuts and does not have a pronounced taste. Milk thistle. Application in cosmetology

Milk thistle oil is an excellent antioxidant. It is an excellent assistant in the struggle for the beauty and youthfulness of the skin of the face and body, has a rejuvenating, cleansing, wound healing and tonic effect, therefore it is widely used in cosmetology.

The oil improves the condition of the skin, promotes the regeneration of cell membranes and stimulates the process of tissue renewal. It protects the skin from flaking, protects the skin from drying out, maintains elasticity and firmness, and improves complexion. The oil is suitable for all skin types, but it is simply necessary for dry, flaky, problematic, irritated and inflamed skin. Milk thistle oil normalizes the activity of the sebaceous glands in oily skin. Unsaturated fatty acids perfectly cleanse the skin from various rashes, acne and prevent pore enlargement.

The oil can also be used for daily care of lips, hands and feet. It promotes healing of cracks, small wounds, relieves irritation and itching.

This oil is also successfully used for anti-cellulite massage. It is able to enhance blood circulation in the subcutaneous fat layer, which prevents the accumulation of cellulite deposits. Milk thistle oil is one of the most effective hair strengthening products. It prevents hair loss, actively combats baldness, and gives a healthy look and shine to hair. In case of hair loss, it is recommended to rub oil heated in a water bath into the scalp. The oil strengthens your nails, so rub the oil into your nails and nail rollers. 1. Proof of the authenticity of the milk thistle fruit. The quality of milk thistle fruit is regulated by the pharmacopoeial article FS.2.5.0035.15 (ГФ13). Usually, the regulatory documentation for plant raw materials provides a determination of the quantitative content of biologically active substances that determine the pharmacological effect of medicinal plant raw materials. For milk thistle fruits in GF13, the norms for the content of groups of biologically active substances are given: the sum of flavolignans in terms of silybin is not less than 2.4%, fatty oil is not less than 15%, extractives extracted by 80% alcohol is not less than 4%. Silybin (Fig. 1) is a mixture of two diastereomers - silybin A and silybin B - in a ratio close to 1: 1. Sididian is an isomer of silybin. The empirical formula of silybin and silydianin: C₂₅H₂₂O₁₀, molecular weight - 482.44. Flavonoids are sparingly soluble in water and relatively thermostable. Extraction of flavolignans from milk thistle fruit was carried out 95% ethanol by boiling for 30 min in a water bath. The new State Pharmacopoeia requires two stages for the identification of flavolignans in milk thistle fruits - spectrophotometric analysis, which is based on the determination of the maximum absorption of flavolignans (289 nm) and a relatively laborious method of thin layer chromatography with witness silybin. We offer a modified spectrophotometric analysis of alcoholic extract from milk thistle fruit-absorption at two wavelengths - 289 and 380

nm. It is known that flavonoids in the UV spectrum are characterized by their own intense absorption bands in the region of 240–290 nm. In the reaction with AlCl₃, complex compounds are formed due to phenolic hydroxyls, the chromophore system of flavolignans changes, which leads to a bathochromic shift of the main absorption maxima.

CONCLUSION:

A method for identification of flavolignans in milk thistle fruits is proposed using spectrophotometry at two wavelengths - 289 and 380 nm. Comparative characteristics of the methods of quantitative determination of flavolignans in milk thistle fruits, it was found that the most high indicators are obtained when using the GF13 method (calculation by herbal raw materials correspond to the pharmacopoeial quality).

It has been shown that a special technology for processing milk thistle fruits. Problems with skin, hair, nails are most often caused by internal problems of the whole body, therefore it is recommended to combine external and internal use of milk thistle oil.

There are two groups of pharmacologically active compounds of milk thistle. The first group is a plant flavonoid complex with hepatoprotective activity. The hepatoprotective effect of flavonoids is due to their antioxidant, membrane stabilizing properties. Flavonoids stimulate protein synthesis, which is of great importance for the regeneration processes in the liver. The second group is fatty oil, dermatoprotective wound healing agent

At present, it has been established by the method of high performance liquid chromatography (HPLC) that about a dozen different flavolignans. Of greatest interest from the point of view of biological activity are silybin, silidianin and silicristin

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