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HERBAL PREPARATIONS FOR THE PREVENTION OF OPHTHALMIC DISEASES

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Summary. The article describes the problems of ophthalmic diseases, determines the perspective of using drugs based on medicinal plant raw materials, and conducts a marketing analysis of phytoremedies and dietary supplements. There are 38 dietary supplements on the pharmaceutical market of Ukraine, the main component of which is blueberry fruit extract. In addition to blueberries, such natural sources of obtaining anthocyanins are known as the fruits of black currants, chokeberry, red grapes, as well as the flowers of the Sudanese rose. The range of medicinal plants that contain anthocyanins is small, so the search for plant raw materials is urgent. Such plants include *Paeonia officinalis* varieties «Rosea plena» and «Alba plena», in which the results of the study found the presence of anthocyanins in the flowers, which gives grounds for further study of this medicinal plant in ophthalmic practice.

Keywords: medicinal plants, ophthalmology, marketing analysis, *Paeonia officinalis*.

Topicality. With the help of vision, a person receives 80-90% of the information about the surrounding world, which is necessary for the full existence and

orientation of a person, but also for the aesthetic perception of the world.

However, one adult loses sight every 5 seconds, one child every minute, and about 12,000 people are recognized as disabled due to visual impairments in Ukraine every year. Every year, 300,000 eye surgeries are performed in Ukraine. Every year, doctors identify 150,000 children with vision problems [1].

According to the WHO, about 300 million people in the world have vision problems, of which 43% suffer from refractive errors – nearsightedness, farsightedness and astigmatism [2]. Currently, the treatment and correction of vision has great success, and such procedures are expensive, so the prevention of ophthalmic diseases, based on the use of phyto remedies, remains relevant [3].

The aim of the work is the marketing analysis of herbal medicines for the prevention of ophthalmic diseases, the search and expansion of the nomenclature of sources of obtaining anthocyanins.

Materials and methods. The objects of the study were medicinal products and medicinal plant raw materials used in ophthalmology available on the pharmaceutical market of Ukraine. The research was conducted on the basis of pharmacy chains in Chernivtsi, in addition, online pharmacies, electronic resources, and data from the electronic directory «Compendium – drugs» were also analyzed.

The research used methods of marketing analysis and statistical processing of the obtained data.

Results and their discussion.

In the era of mass distribution of electronic devices – computers, phones, tablets, TVs and other gadgets, a person feels a great strain on his vision. All this, in addition to environmental factors, age, lifestyle features (insufficient physical activity, stress, smoking, etc.), can lead to rapid eye fatigue, discomfort, other unpleasant manifestations, and even reduced vision.

With a preventive goal, as well as during the period of maintaining stability during the treatment of eye diseases, you can use phytotherapy, since these are natural drugs, and therefore less toxic, capable of organically participating in the biochemical processes of the human body, changing these processes and showing a therapeutic effect even in small doses their application and are less expensive.

Anthocyanins are one of the main components of medicinal plant materials that have a retinoprotective effect. It is known that the antioxidant effect of anthocyanins is more pronounced than that of vitamins C and E. It has been established that they accumulate in the human body mainly in the blood plasma, in particular in the tissues of the eye [4].

The antioxidant effect of anthocyanins prevents the formation and action of free radicals in the eye tissues, they contribute to the increase in the production of rhodopsin – a visual pigment necessary for good vision in conditions of insufficient lighting. Also, these substances reduce eye fatigue during intense work, increase visual acuity, improve metabolic processes and microcirculation in eye tissues, strengthen eye vessels, improve twilight vision, and reduce the risk of hemorrhages. This can explain the use of drugs based on anthocyanins in ophthalmological practice.

Carotenoids such as lutein and zeaxanthin also protect the retina. These are natural pigments contained in various plants: vegetables, fruits, berries of bright

colors. They prevent the processes of free radical oxidation in the retina of the eye, protect the retina from the harmful effects of light [5].

Lutein and zeoxanthin in high concentrations are contained in the inflorescences of plants of the genus *Tagetes L.*, in particular the species *T. erecta L.* and *T. patula L.* These compounds, isolated from the inflorescences of marigolds, are part of the following preparations: Nutrof® Forte, Ocuville Lutein Forte, Lutein for eyes, OKOMED, Resvega®, Resvega® Forte, Optix, Optix Forte, Optix Premium, Vitrum® For Eyes Forte, Vitrum® Vision, TauRetina, Viziohealth (Table 1).

Table 1

List of phytotherapies, dietary supplements used in ophthalmology and presented on the pharmaceutical market of Ukraine

№ п/п	Name	Dosage form	Country	Manufacturer
1	Nutrof® Forte	Capsules № 30	France	Laboratoires Thea
2	Ocuville Lutein Forte	Tablets № 30	Germany	Dr. Gerhard Mann
3	Lutein for eyes	Capsules 0,35 g, № 30	Ukraine	Company «Dana, Ya»
4	OKOMED	Capsules 0,6, g, № 30	China	Shenzhen Hongsen Biology
5	Resvega®	Capsules № 60	France	Laboratoires Thea
6	Resvega® Forte	Capsules № 60	France	Laboratoires Thea
7	Optix	Tablets № 30, № 60	Ukraine	Kuiv vitamin plant
8	Optix Forte	Tablets № 10, № 30, № 60	Ukraine	Kuiv vitamin plant
9	Optix Premium	Tablets № 30	Ukraine	Kuiv vitamin plant
10	Vitrum® For Eyes Forte	Tablets № 10, № 30, № 60	USA	Unipharm
11	Vitrum® Vision	Tablets № 30, № 60, № 90, № 120	USA	Unipharm
12	TauRetina,	Capsules № 30	Italy	Biodue S.p.A.
13	Viziohealth	Capsules № 30	Ukraine	Behealth
14	Strix Forte	Tablets № 30	Denmark	Ferrosan
15	Blueberry Forte	Tablets № 80	Ukraine	Elit-Pharm
16	OphtalMix	Capsules № 30	Ukraine	Vertex
17	Megazir	Capsules № 20	Belarus	Minskintercaps
18	Viziox	Capsules № 30	Ukraine	Universe Pharm
19	Viziocomplex	Capsules № 30	Ukraine	Ilan Pharm

Today, there are 38 dietary supplements on the pharmaceutical market of Ukraine, the main component of which is blueberry fruit extract, rich in anthocyanins, such as «Strix Forte», «Blueberry Forte», «OphtalMix», «Megazir», «Viziox», «Viziocomplex», etc (Table 1).

In addition to blueberries, such natural sources of obtaining anthocyanins are known as the fruits of black currant, chokeberry, red grapes, as well as the flowers of the Sudan rose [6]. The assortment of medicinal plants that contain anthocyanins is small, so the search for plant raw materials is urgent.

Such plants include varieties of *Paeonia officinalis* «Rosea plena» and «Alba plena», which are widely cultivated.

Paeonia officinalis is widely used in the folk medicine of many peoples, especially China. Its rhizomes are used as an analgesic, anticonvulsant, anti-inflammatory agent, as well as for the treatment of retinal hemorrhages, infectious hepatitis, stomach diseases, cancer, diabetes, gynecological diseases, nephritis, hypertension [7].

A decoction of rhizomes is used for menstrual cycle disorders, spastic colitis, gastric ulcer, gastritis with reduced secretion, to improve appetite, as a lactogenic, sedative, expectorant, diuretic agent.

In Tibetan medicine, a decoction of rhizomes is used for tuberculosis, colds, bronchitis, and pneumonia.

The flowers of the *Paeonia officinalis* variety «Rosea plena» are pink, and «Alba plena» are white with a pink tint when blooming. Therefore, it was expedient to establish the presence of anthocyanins in both studied varieties. According to the results of our research, after carrying out qualitative precipitation reactions with a 10% solution of basic lead acetate and with a 10% solution of sodium hydroxide, we observed the precipitation of a blue amorphous precipitate, as a result of the second – a yellow-green precipitate, which indicates the presence of anthocyanins in the flowers of medicinal peonies of both varieties. This gives grounds for further study of this medicinal plant in ophthalmology.

Therefore, taking into account the relevance of the problem of ophthalmic diseases, it is advisable to use phyto remedies for preventive purposes, taking into account the complexity of the action due to the biologically active substances of plants, the absence of toxicity, unlike synthetic agents.

Conclusion. Preparations based on medicinal plant raw materials are promising for ophthalmic diseases. The conducted study confirms the presence of anthocyanin content in the flowers of the *Paeonia officinalis* variety «Rosea plena» and «Alba plena», which will make it possible to expand the nomenclature of sources of their production and is the basis for further research.

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