Arsenal of Medical Products Intended for the Local Conservative Treatment of Wounds

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Abstract: It has been analyzed segment of soft drugs with wound-healing effect by the countries - manufacturers, presentation, value and composition. Among the range of investigational medicinal products is dominated by foreign agents. The form of release largest proportion of ointments and creams. The studies of the pharmaceutical market of Ukraine show promising the creation of domestic soft drugs. It has also developed the ointment with extract of pine with wound-healing properties.

Key words: Pharmaceutical market, a medicinal product, ointment, pine, wound healing effect.

1. Introduction

With each year in the pharmaceutical market increases the number of new drugs with different pharmacological action.

But the in most cases this growth is explained by the development of new drug forms on the basis of already known substances.

Dosage form provides to a medicinal product or medicinal plant materials suitable condition to application to ensure proper therapeutic effect. Dosage form is essential for therapeutic action of the drug, which depends not only on its pharmacological properties, but also on the ability of the drug to penetrate to the action—to the specific receptor or the amazed body of, that depends on its biological availability.

Recently, much attention is given to the developing of drugs for external application, namely, the wound-healing effect.

It is known that the therapeutic effect of soft medicinal forms determined primarily, drugs and ointment base provides focused character, its biotransformation and necessary pharmacotherapeutic effect.

The mechanism revenues of drugs through skin are interpreted by different authors-different. Some of the authors think that skin cells are able to actively transfer the substance inward and others assign them to a passive role.

Medicinal substances of soft dosage forms can be absorbed into skin layer located under the epidermal barrier (permeation) or can be absorbed through the epidermal barrier into the dermis then in to blood and lymphatic substance (“trans dermal” or “through the skin” resorption).

Among the soft medicinal forms in medical practice are used ointments, creams, gels, pastes and others.

Analysis of soft medicinal forms of wound-healing effect depending on the type of issue is shown in Fig. 1.

2. Results and Discussion

The results of the show study that the range of soft drugs is presented ointments, creams, gels, gels, liniments, pastes and oil solutions. As the Fig. 2 shows, more than half of the range of drugs constitutes ointments (which total market of 51.4 %). A small number of items presented in the form of oil solutions of 1.5 %, 0.4 % jelly, balms 0.7 %. Moreover, among the drugs domestic producers ointments and liniments fat based on one-way action are

Fig. 1 Market Analysis soft drugs by the number of names depending on the type of issue.

Fig. 2 The price structure of the market of soft drugs depending on producer countries.

dominated. Drugs in the form of creams, gels and jellies are being imported mostly [1].

The most effective dosage form for local therapy is an ointment that is well distributed and absorbed from the skin, which causes high bioavailability of active substances. Ointment is a mild overuse dosage form viscous consistency for outdoor use. It consists of a base (Constituens) and drug evenly distributed into it. Petrolatum (Vaselinum), lanolin (Lanolinum), purified pork fat (Adeps suillus depuratus seu Axungia porcina depurata) are used for ointments as a basis. In addition,

carbohydrates, fat, emulsion, water, silicone, polyethylene glycol and other synthetic base are used as form-building substance [2, 3].

Marketing researches of soft drugs vange have shown that the pharmaceutical market of Ukraine has registered 11 drugs for external use with wound-healing properties. And it is in Ukraine to treat for wound surfaces are used drugs such as:

- (1) "Dr. Ointment Theissen with Symphytum", Dr. manufacturer Naturvaren Theiss GmbH, Germany;
- (2) "Ointment streptotsydova" producer OAO

“Byosyntez”, Russia;

(3) “Nytatsyd”, producer of Pharmaceutical firm “Darnitsa”, Ukraine;

(4) Ointment “Streptonytol”, producer of Pharmaceutical firm “Darnitsa”, Ukraine;

(5) Ointment “Vundehil” producer LLC “Scientific-production pharmaceutical company” Eym Ukraine,

(6) Ointment “Alhofin” producer of Lisohimik Ukraine

(7) Cream “Alhofin forte”, the producer of Lisohimik, Ukraine,

(8) Ointment “Altanova” producer SPC “Borschagovsky CPP”, Ukraine,

(9) Ointment “Vulnuzan” manufacturer “Sopharma” JSC, Bulgaria;

(10) “Dioksyzol-Darnitsa” producer JSC Pharmaceutical firm “Darnitsa”, Ukraine;

(11) Ointment “Levomekol” producer of “Lubnyfarm”, Ukraine [4-7].

We have analyzed the cost of the study group of drugs in the pharmaceutical market of Ukraine. The results are shown in the Fig. 2.

Structure producers pricing policy is shown in the Fig. 2.

This data suggests that the most expensive foreign drug is Dr. ointment Theissen with Symphytum and the cheapest drug is Ukrainian production streptocidal ointment, and the ointment of Altanova is registered but isn't on the pharmaceutical market.

The study has shown that there are enough of foreign preparations on the Ukrainian market and there are not any Ukrainian analogue soft drugs show that the monocomponent drugs predominate over composition analysis has action drugs on the market.

So the development of new drugs with antimicrobial and wound healing effects is important. Medical plants based ointment processing is very perspective due to its combined action. One of such plants is pine. Pine is evergreen, conifer. Refers to the genus *Pinus*, family-Pinaceae, class-Pinopsida.

Species of *Pinus* genus are distributed in the woods, groves, mountain and rocy slopes, forest, edgesands and also infoduced as a decorative species.

Buds and shoots contain essential oil (from 0.6 % to 3.0 %), tannins, ascorbic acid (0.3 %), flavonoids (toksifolin, miritsin, kaempferol), vitamin C, carotene, tocopherol, resin, bitter substances pinikryn, macro- and micronutrients in its composition. The composition of essential oils include bornilatsetat (30-60 %), free borneol, camphene (10 %), α -pinene, Santen, bisabolen, dypenten, felandren.

In medicine, pine is used as a sedative, vasodilator, diuretic and disinfectant remedy. Buds are used to prepare a decoction which used as an expectorant to treat chronic bronchitis.

Turpentine is part of ointments, liniments applying neuralgia, myositis, rheumatism, gout. It is also indicated for inhalation, the affected bronchial mucosa.

It is especially important determines the therapeutic activity of the drug in ointment to select base wick development.

Ointment base is a part of ointment, which determines its mass (sometimes up to 90% or more), physico-chemical and consumer properties (consistency, stability during storage, pH, appearance, color, smell, etc.), active ingredients concentration, speed and completeness of the release of active substances [8-10].

Therefore, the first step of our research was the choice of optimal ointment base. Since extract is soluble fraction, we used hydrophilic and emulsive bases.

In selected ointment bases the most commonly: observed PEO, petrolatum, lanolin, glycerin, propylene glycol, fatty oils and others. Among Porymers take a special place among the different auxiliary substances. They are characterized by the excellent functional properties and can improve the soft medicinal forms technology, focused on balance of efficiency and quality. Most of these drugs

water-soluble, biodegradable, low-toxic and physiologically absorbed in the body.

On the basis of technological, biopharmaceutical research it has found that the hydrophilic ointment base, including PEO-4000, glycerin, purified water is optimum base.

PEO main property is that it has a strong dehydrating effect to the tissues. With its high capacity for hydration, these polymers absorb wound exudate actively and microbial toxins, products of tissue decay, and various biologically active substances wounds-lysosomal enzymes and other mediators of inflammation, thus "tearing" its progressive course. This hydrophilic base enhances the antimicrobial properties of substances that make up the multi component ointments, such as PEO can form complex compounds with them and transport them within the tissue where the bacteria are located. It is important that this penetrative, ability, of the polymer is enhancing under the conditions of inflammation without damaging the cells. At the same time PEO provides long osmotic activity of ointments, actively adsorbing infected wound exudate into a bandage. Bases on the basis of PEO are stable during storage, resistant to high temperatures and have poor bactericidal action, readily soluble into water, so that the ointment made on these bases, easily washed away with water, which is important for wound healing without disturbing the granulate. It is essentially, that the ointment PEO has resorptive effect that is important for the penetration of active ingredients directly into the cell inflammation [10-12].

Thus, as a result of the research we proposed the ointment with extract of pine for the treatment of wounds.

3. Conclusions.

It has been analyzed segment of soft drugs with wound-healing effect by the countries—manufacturers, presentation, value and composition. Among the range

of investigational medicinal products is dominated by foreign agents. The form of release largest proportion of ointments and creams. The studies of the pharmaceutical market of Ukraine show promising the creation of domestic soft drugs.

The composition of ointment with extract of pine with wound-healing properties. Promising pharmacological studies have developed an ointment for the implementation of a medical and pharmaceutical practice.

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