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CREATION OF EXTEMPORAL SUSPENSION FOR THE TREATMENT OF HYPERHIDROSIS WIH BEEKEEPING PRODUCTS

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Abstract. Hyperhidrosis of the feet is the most common disorder of sweating. Various forms of antiperspirants, which include aluminum salts are widely used to combat of local perspiration. However, dermatitis, including allergic ones, may occur with their long-term using. Based on the data of modern scientific literature, the detailed analysis of the extemporal formulation of drugs used for local therapy of hyperhidrosis was conducted. One of the most widely known properties of propolis is its bactericidal and fungicidal activities that provides many benefits in various dermatologic applications. Thus, results of the analysis made it possible to select the active and auxiliary substances of the extemporaneous suspension for external use with some beekeeping products for the treatment of hyperhidrosis.

Keywords: hyperhidrosis, treatment, suspensions topical, beekeeping products, propolis.

Sweating is a physiological process that performs important functions: it is part of the mechanisms of thermoregulation; promotes the removal of excess fluid and harmful substances from the body; protects the skin from drying out. Sweat glands located in the dermis of the skin practically on the entire surface of the body (except the genital area) are responsible for the formation of sweat in the human body. The work of these glands is regulated by the sympathetic department of the vegetative nervous system, which is activated in response to any stressful situations, therefore, increased sweating under similar conditions is a normal reaction. But when a person calms down, his skin dries up and sweating ceases. The appearance of hyperhidrosis in a calm state is always a sign that something is going wrong in the body. [3]

Even in the extreme antiquity, the sweating disorders were given an important diagnostic value by doctors. In modern medicine, increased sweating or hyperhidrosis is usually divided into physiological (protective reaction of the body, aimed at increasing heat transfer during physical exertion, etc., can be caused reflexively as a result of irritation of the olfactory nerve and taste analyzer, fright, excitement, shame) and pathological (neuroendocrine disorders, the leading of which are functional or organic changes in the central and vegetative nervous systems).

Excessive sweating can be a consequence of both internal problems (for example, improper metabolism), and - the wrong way of life or the costs of the profession. In accordance with the reason it is necessary to choose a means that will allow to get rid of this pathology in the shortest possible time. [1]

Hyperhidrosis of the feet is the most common disorder of sweating. It develops as a result of the difficulty of local heat transfer (uncomfortable shoes, uncomfortable and poorly conductive clothing, increased temperature and humidity of the environment, etc.), the presence of certain diseases (vegetative-vascular dystonia, neurosis, etc.). Perspiration of the feet is one of the important factors contributing to the penetration of pathogens of fungal diseases into the skin, reducing it is one of the links in preventing mycosis. [5]

Also distinguish between local and generalized forms of hyperhidrosis. The first form is limited by axillary cavities, palms, soles, face area, and the second form is characterized by a violation of sweating throughout the area of the sweat glands. There is also a division into primary and secondary hyperhidrosis. In the case of primary hyperhidrosis, 80% - has palmar-plantar localization, and 20% - affects axillary cavities. In 30-50% of cases, a family history of the disease can be traced. The causes of secondary hyperhidrosis can serve: endocrine diseases and conditions (hyperthyroidism, pheochromocytoma, diabetes, hypoglycemia, acromegaly, climax); pathology of the nervous system (Parkinson's disease, stroke); infectious diseases (tuberculosis, septicemia, brucellosis); sensory and psycho-emotional states genetic diseases; tumor diseases; use of medicines (acetylsalicylic acid, insulin, promedol, pilocarpine, physostigmine, etc.); other causes (alcoholism, poisoning). [6]

Today, effective methods for detecting sweating disorders include: visual examination of the patient's skin, measurement of electrical resistance of the skin, assessment of the coloration of various chemicals. Sweating is caused by sweatshops, substances that activate the excreting centers in various parts of the nervous system (acetylsalicylic acid - acts on the hypothalamic structures, pilocarpine - on the peripheral apparatus). [4] Also, there are two test that may be used to diagnose hyperhidrosis, a paper test or a starch-iodine test. In the paper test, special paper is used to absorb the sweat and is then weighed. In the starch-iodine test, an iodine solution is applied to the sweaty area. After it dries, starch is sprinkled on the area. If there is excess sweat, the starch-iodine area will turn a dark blue [3]. Possible methods of the treatment of hyperhidrosis are performed in table. [2,3].

Table. **Methods of the treatment of hyperhidrosis**

Treatments	Uses	Side effects
▪ Diet	Exclusion from the diet - coffee, tea, Coca-Cola, chocolate	---
▪ Prescription medicine	These medicines can effectively treat sweating that involves entire body. (treatment for post-menopausal women who sweat excessively only from their head)	▪ Dry mouth ▪ Dry eyes ▪ Blurry vision ▪ Heart palpations (abnormal heartbeat)
▪ Antiperspirants, antiseptics	Apply to underarms, hands, feet, or hairline	▪ Burning sensation ▪ Irritated skin
▪ Iontophoresis	Hands and feet	▪ Dry skin ▪ Irritated skin ▪ Discomfort during treatment
▪ Botulinum toxin injections	Underarms	▪ Temporary muscle weakness
▪ Laser therapy	Underarms	It is not known
▪ Surgery	Surgical removal of sweat glands is used to treat the underarms Sympathectomy is mainly used to treat the palms	▪ Loss of feeling in the underarm and scarring are possible ▪ Risk of deve-loping an infection ▪ Damage to the nerves that run between the brain and eyes, extremely low blood pressure, irregular heartbeat, and inability to tolerate heat.

Various forms of antiperspirants, which include aluminum salts (aluminum chloride hexahydrate, from 10% till 30%) are also widely used to combat of local perspiration. However, dermatitis, including allergic ones, may occur with their long-term using.

The purpose of our work was to analyze the market of industrial and extemporaneous pharmaceutical medicines for the selection of optimal composition of the new extemporaneous combined medicine as a suspension form for the treatment of hyperhidrosis of the feet.

In this work the retrospective, logical, analytical research methods have been used to analyze the data of special literature and regulatory framework.

Based on the data of modern scientific literature, the detailed analysis of the extemporal formulation of drugs used for local therapy of hyperhidrosis was conducted. Today the following domestic dermatological medicines of industrial preparation are used for the treatment of hyperhidrosis according to the classification system of ATC (D11A A – Dermatological medicines for the treatment of hyperhidrosis):

- Pasta Teymurova (boric acid, sodium tetraborate, salicylic acid, zinc oxide, hexamethylenetetramine, formaldehyde, lead acetate, mint oil);
- Formidron (formaldehyde, alcohol). [7]

The pharmacological activity of these medicines is based mainly on the antiseptic, astringent and drying effect of the active ingredients included to their composition (salicylic acid, boric acid, zinc oxide, sodium tetraborate, talc, formaldehyde, alum burnt).

Honeybee products, such as honey, bee pollen, propolis, royal jelly, beeswax, bee venom, have long been used in traditional medicine. Propolis is a mixture of various amounts of beeswax and resins collected by the honeybee from plants, particularly from flowers and leaf buds. The major compounds are resins composed of flavonoids and phenolic acids or their esters, which often form up to 50% of all ingredients.

General medicinal uses of propolis include treatment of the cardiovascular and blood systems (anemia), respiratory apparatus (for

various infections), dental care, dermatology (tissue regeneration, ulcers, exzema, wound healing - particularly burn wounds, mycosis, mucous membrane infections and lesions), cancer treatment, immune system support and improvement, digestive tracts (ulcers and infections), liver protection and support and many others. [8]

One of the most widely known and extensively tested properties of propolis is its bactericidal and fungicidal characteristics it provides many benefits in various applications in dermatology.

Thus, results of the analysis made it possible to select the active and auxiliary substances of the extemporaneous suspension for external use with a beekeeping products. Pharmacological activity is based on their antiseptic, astringent, adsorptive and drying effect.

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