

Practical issues of use of emollients in management of patients with xerosis: resolution of the panel of experts from Russia, Kazakhstan and the Republic of Belarus

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On 05-06 June 2021, the expert panel was held in Moscow on the topic: “Practical issues of the use of emollients in management of patients with xerosis”. The panel was dedicated to the beginning of the implementation into clinical practice of the new line of Bepanthen®-Derma emollients for treatment in conditions and diseases accompanied by the development of dry skin syndrome. The meeting also became a platform for discussion of the accumulated clinical and organizational issues in the field of dry skin treatment. The purpose of the meeting was to discuss the issues:

- basic principles for the management of patients with xerosis;
- the «ideal» emollient properties for the management of patients with xerosis;
- application of new products of the Bepanthen®-Derma line in patients with dry skin.

The meeting was attended by experts in the field of dermatovenereology, cosmetology, clinical pharmacology, as well as representatives of other related specialties from Russia, the Republic of Belarus and Kazakhstan. The experts comprehensively examined the pathogenesis of skin xerosis of various etiologies and developed common recommendations on the principles of managing such patients and the place of emollients in clinical practice. Suggestions were made for further educational, informational and organizational activities aimed at expanding the knowledge of patients and doctors on the issue of dry skin.

ETIOLOGY AND PREVALENCE OF XEROSIS

Xerosis (syn. Xeroderma) is a pathological condition with increased dryness of the skin. The main role in xeroderma formation is played by the violation of the skin barrier with the development of dehydration and delipidization of the stratum corneum (SC) of the epidermis with a decrease in the water content in it by 10% or more, when the function of epidermal enzymes is disrupted, providing the formation of components of the natural moisturizing factor and the formation of lipids in the SC. Dry skin is also accompanied by decrease in the function of the sebaceous and sweat glands and, as a result, a decrease in moisture in the epidermis and dermis, a loss of skin elasticity, and a tendency to cracks. The process of the epidermal keratinization is also disrupted, leading to structural changes in keratinocytes, the formation of defective cells and a violation of their relationship. At the same time, the elasticity of the skin drops drastically, and dryness becomes clinically evident. The severity of xerosis can be influenced by human genetics, environmental factors, aging, ethnicity and some other factors [1,2].

Xerosis can be an independent phenomenon, or accompany other pathological conditions. The cause of xerosis can be a congenital failure of the epidermal barrier with the possible development of dermatological pathology, in particular, atopic dermatitis, ichthyosis, contact dermatites, some types of eczema, etc. Xerosis also develops on the background of non-dermatologi-

cal diseases such as diabetes mellitus, thyroiditis, some oncologic diseases, orphan diseases. Acquired dryness is often the result of improper skin care, exposure to chemically aggressive and climatic factors, local or systemic use of a number of medications, etc. And physiological xeroses in infancy and old age are separate category [3].

Xerosis can be a transient condition caused, for example, by short-term exposure to climatic or other aggressive factors, or it can progress and become chronic [6–8].

The prevalence of xerosis, according to some estimates, does not depend on gender and is about 30% in people of working age and exceeds 50% in people over 65 years of age [4,5]. Most often, in percentage terms, xerosis occurs in children and the elderly, which is due to the physiological characteristics of the epidermis - its incomplete formation in childhood and degenerative processes in old age.

Xerosis develops less often in the working-age population. The main causes of dry skin at this age are hereditary predisposition, dermatological diseases, exposure to negative environmental factors, occupational hazards and side effects of certain medications.

Xerosis has an adverse effect on human health and quality of life. Depending on the severity and localization of xerosis, the patient may experience varying degrees of physical discomfort and dissatisfaction with his/her appearance, which negatively affects daily activities and social interaction. Severe dryness of the skin can provoke the development of exacerbations or aggravate the course of existing dermatoses. In this regard, timely treatment of xerosis and regular skin care are extremely important.

The progression of xerosis is accompanied by a number of symptoms and morphological changes in the skin, the severity of which determines the severity of this condition. For successful treatment of xerosis, it is necessary to determine the degree of its severity. There are a significant number of questionnaires and rating scales aimed at assessing the severity of symptoms and quality of life in patients with dermatoses which can help to assess the symptoms of xerosis (Dermatological Life Quality Index, Skindex 17, Freiburg Life Quality Assessment, Patient Benefit Index, etc.), however, none of them are specialized for this condition. One of the latest developments in this area is the Xerosimeter questionnaire. The questionnaire takes into account the severity of such clinical manifestations of xerosis as skin peeling, cracks, erythema and itching, as well as the area of the lesion. Basing on the results of the assessment using the Xerosi-meter, it is possible to assess the severity of the disease, its prognosis, and calculate the patient's need for external agents for the relief of xerosis within a month [6].

In course of discussion of the features of skin conditions associated with dryness, experts from Russia, Kazakhstan and the Republic of Belarus noted the following common points:

- Climatic factors - prolonged and pronounced negative air temperatures in winter, as well as high temperatures in summer combined with very low humidity (in areas with continental and sharply continental climates) increase the risk of developing dry skin;
- Insufficient attention to skin condition by most people, especially males, people of mature and old age, insufficient understanding of the importance of stopping the early manifestations of dry skin;
- The prevalence of household traditions that have a negative effect on skin condition - the use of aggressive hygiene products (laundry soap and other types of alkaline detergents, etc.), the use of outdated skin care products with unproven effectiveness - the most striking example is the use of «baby» moisturizing creams, etc.;
- In professions with an increased risk of xerosis (industrial production, mineral resource extraction, household services (HCPs, hairdressers, nail technicians, etc.), insufficient attention is paid to working conditions in relation to preventing the development of xerosis as a professional pathology;
- There is a lack of awareness of the importance of xerosis prevention among people working in areas associated with an increased risk of dry skin development.

Summarizing the above, experts point out that the culture of skin care is underdeveloped and needs to be popularized in Russia, Kazakhstan and the Republic of Belarus. Most people without dermatoses do not understand the importance of preventing xerosis or do not consider it necessary to care for their skin when dryness develops.

PATHOGENESIS OF DRY SKIN

The stratum corneum (SC) plays a key role in the regulation of skin hydration. SC is the outer layer of the skin and consists of 15-20 layers of corneocytes connected by corneodesmosomes and located in the lipid matrix. The effective functioning of SC depends on its physical integrity, the state of the water-lipid mantle, the qualitative and quantitative composition of the intercellular matrix lipids, and the natural moisturizing factor, which are formed during the differentiation of the epidermis and the formation of the stratum corneum. Dysfunction of SC leads to an increase in transepidermal water loss, a decrease in the formation of moisturizing factors and lipids of the stratum corneum, and their quality. Xerosis as an in-

dependent chronic condition is the result of the progression of dysfunction of the stratum corneum and the accumulation of pathological changes, among which the key role is played by the violation of differentiation of epidermal cells. In patients with dermatoses (atopic dermatitis, ichthyosis, etc.) xerosis is a symptom and consequence of the pathogenesis of these diseases [9]. The modern understanding of chronic xerosis development mechanism as an independent condition (arising not against the background of dermatoses) suggests the so-called “pathogenetic links in the dry skin development” [11]:

1. Dehydration of the stratum corneum caused by endogenous or exogenous causes;
2. With a water loss of 10% or more - dysfunction / denaturation of key enzymes of epidermis and the most important structural proteins, in particular, filaggrin;
3. Disruption of the formation and decrease in the level of natural moisturizing factor and intercellular matrix lipids;
4. Decreased barrier function of the epidermis;
5. Penetration of pathogens and irritants;
6. Development of subclinical inflammation with the formation of pro-inflammatory factors;
7. Impaired differentiation of the epidermis and the formation of defective structural elements;
8. Further dehydration of the stratum corneum (see Fig. 1).

In some cases, the stimulus of pathological events can be congenital defects in the functioning of the en-

zymes of the stratum corneum, as is the case with atopic dermatitis or vulgar ichthyosis, which develop as a result of genetic defects in the filaggrin protein.

Each of the links in pathogenesis can be a prerequisite for even greater dehydration of the skin, thus forming a pathological circle. Attempts at physiological self-healing of the skin barrier induce the formation of a hyperproliferative state, which is manifested by impaired differentiation of keratinocytes (immature, unable to form full-fledged intercellular contacts, etc.) and aggravation of dehydration and desquamation of the stratum corneum [11].

Obviously, in addition to eliminating the etiological factors leading to dryness, the treatment of xerosis should also be aimed at correcting pathogenetic mechanisms, first of all, at suppressing inflammation and normalizing the processes of differentiation of the epidermis.

HISTORICAL ASPECTS OF TREATMENT OF XEROSIS

The history of the dry skin treatment begins with the very origin of medicine. Archaeological research in Egypt, the cradle of medicine, evidence that moisturizers already existed in the era of the pharaohs, and their composition varied depending on the patient’s financial capabilities. The first means for relieving dry skin were animal fats, vegetable oils (olive, castor, almond), talc and some others [12].

An important event in the development of new medications for the treatment of xerosis was the discovery in

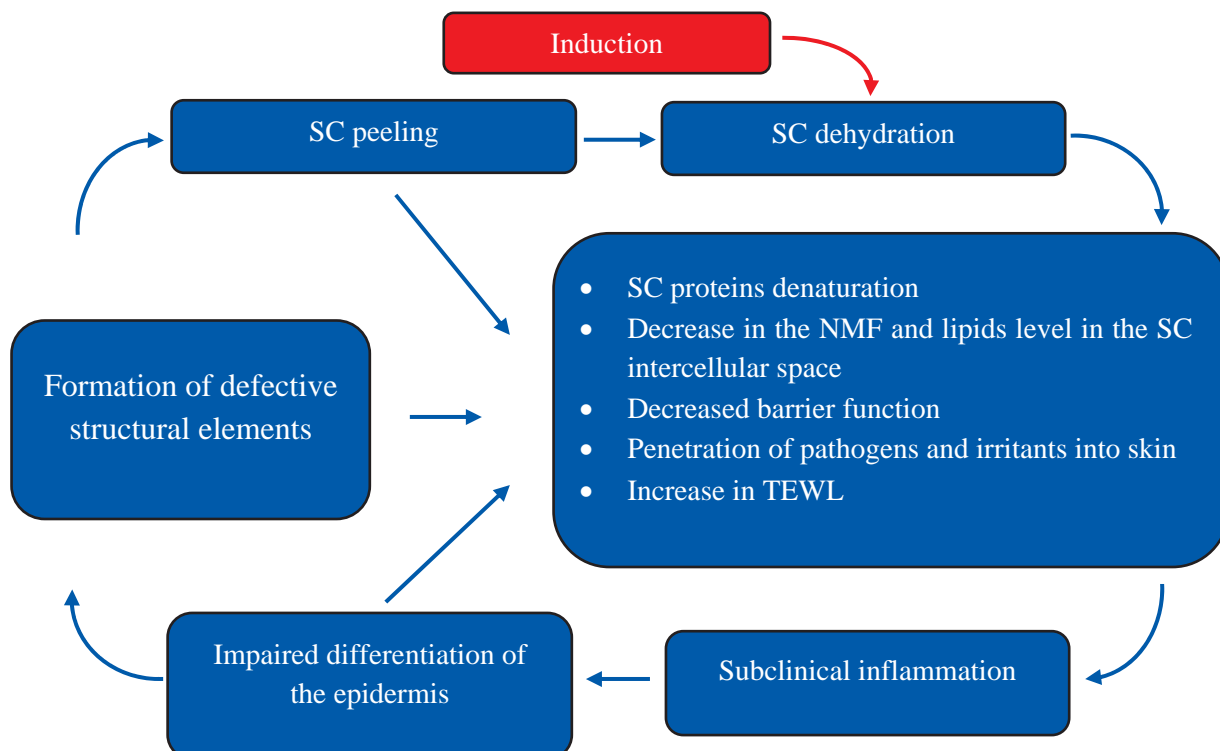


Figure 1. Pathogenetic links - viscous cycle of dry skin

Notes: SC - stratum corneum; TEWL- transepidermal water loss; NMF - natural moisturizing factor

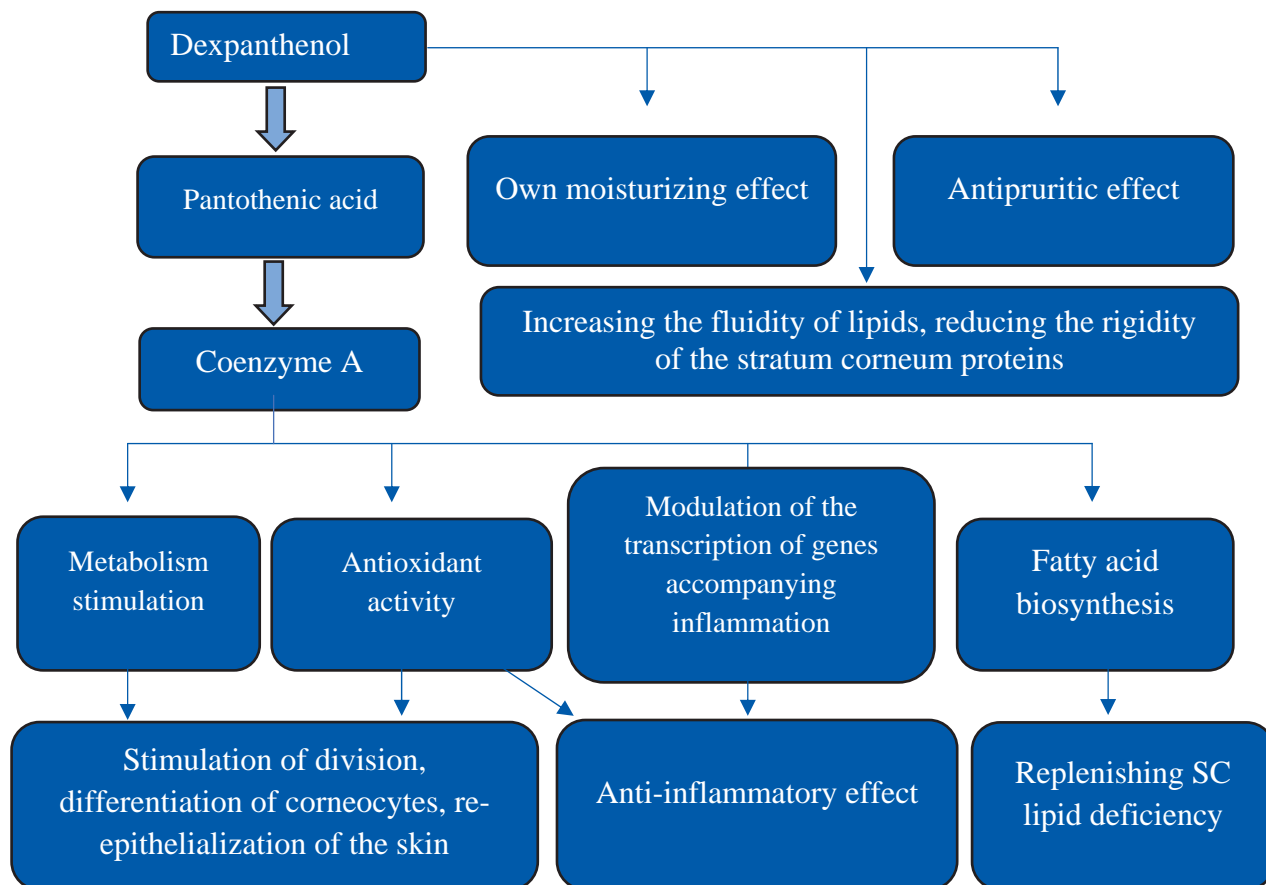


Figure 2. Direct and indirect dermatotropic biological effects of dexpanthenol

1931 of pantothenic acid (vitamin B5) and the release in 1944 of the Bepanthen® line products (tablets, solution for injection and ointment) based on it. The active ingredient of Bepanthen® is dexpanthenol, a precursor of vitamin B5, which has a wide range of dermatotropic biological effects (see Fig. 2).

OVERVIEW OF XEROSIS TREATMENT RECOMMENDATIONS

Moving on to the principles of managing patients with xerosis, it must be admitted that at the moment there are no generalized clinical recommendations on the criteria for diagnosis and treatment of patients with xerosis (L85.3 according to ICD-10).

There are recommendations on the treatment of xerosis in certain dermatological diseases, however, xerosis as an independent pathology has not yet been considered.

For example, the treatment of xerosis is discussed in detail in the European and Russian clinical guidelines for the treatment of atopic dermatitis, which assume the mandatory use of moisturizers and smoothing agents - emollients. Emollients belong to the basic therapy for atopic dermatitis [13,14]. For mild atopic dermatitis, emollients can be used in single-drug therapy. In moderate and severe cases, emollients are part of combination therapy, and should be used as part of maintenance

treatment and prevention of exacerbations [15,16].

The purposes of prescribing emollients for xerosis are [17,18]:

1. reduction of symptoms of xerosis,
2. restoration of the barrier function of the skin,
3. suppression of inflammation,
4. prolongation of remission of the underlying disease,
5. a decrease in the frequency of relapses,
6. steroid-saving effect,
7. improving the tolerance of therapy.

It should be noted that there are «emollients» and «emollients plus».

«Emollients» are products that do not contain pharmacologically active substances and contain only basic components without pharmacological activity: vegetable oils, paraffins, urea, etc.

«Emollients plus» contain, in addition to auxiliary substances, biologically active components (of plant or bacterial origin, less often - synthesized), exhibiting therapeutic effects and acting in synergy with auxiliary [13]. Examples of such compounds:

- provitamins, in particular dexpanthenol;
- saponins;
- flavonoids;
- bacterial lysates of *Aquaphilus dolomiae* or *Vitreoscilla filiformis*;

Classification of active ingredients in skin care products

Group	Mechanism of action	Examples of
moisturizing agents		
NMF (natural moisturizing factor)	Binds water in the skin.	Urea, lactic acid derivatives, pyrrolidine carboxylic acid, amino acids (alanine, arginine, citrulline, glycine, histidine, leucine, lysine, serine, threonine), inorganic salts, etc.
Other moisturizing factors and wetting agents	Hydrophilic and hygroscopic substances that reduce transepidermal water loss and /or improve water distribution.	Glycerin, glyceryl glucoside, hyaluronic acid, glycosaminoglycans, propylene glycol, polyethylene glycol/macrogols, butylene glycol, etc.
Film formation (occlusion)		
Mineral oils (mixtures of hydrocarbons)	Forms a hydrophobic film on the skin surface, reducing water loss.	Vaseline, liquid paraffin, wax, microcrystalline ozokerite.
Silicone oils	They form a thin hydrophobic semi-occlusive (water vapor-permeable) film on the skin surface.	Dimethicone, methicone, polysiloxane, cyclomethicone.
Lipid-replenishing		
Physiological lipids	Replenishment of the lipid pool for replenishment of the extracellular lipid matrix	Ceramides, sterols, cholesterol derivatives, triglycerides, free fatty acids.
Non-physiological lipids (natural oils, fats and waxes)	Polyunsaturated omega-6 fatty acids (linoleic acid, -linolenic acid), phytosterols and sterols for the formation of skin barrier lipids; form a hydrophobic film on the skin surface	Oils of evening primrose, grape seed, canola, flaxseed, borage, shea, jojoba, sunflower, cardy, almond, lanolin, beeswax, etc.
Skin soothing, anti-inflammatory agents		
Natural and synthesized substances	Suppress the secretion of inflammatory mediators. Binds free radicals and/or promotes wound healing	Lycocalcone A, glycyrrhizic acid, dexpanthenol, oat extract, bisabolol, vitamins A, E, B3 (niacinamide), hazelnut extract.
Antipruritic		
Natural and synthesized substances	Acts as a local anesthetic, relieves pain, and/or activates cold receptors	Polidocanol, menthol, camphor, menthoxypropanediol, N-palmitoyl ethanolamide, tanning agents, etc.

• etc.

When choosing an emollient, you should pay attention to the complete composition of the product. It is recommended to use complex agents that have several effects and act in synergy at the main stages of the pathogenesis of xerosis [16]. The main groups of active ingredients in skin care products are shown in Table 1.

Components used for the care of dry skin often do not contain the necessary active substances that affect the pathogenesis of xerosis and/or include an excess of indifferent components. It is obvious that the composition of a universal and optimal skin care product should provide an effect on all links in the pathogenesis of dry skin, breaking the endless pathogenetic circle at its key points [4,19], namely:

- decrease in TEWL
- increasing the level of NMF,
- prevention of excessive desquamation of the stratum corneum,
- relief of itching
- anti-inflammatory effect,
- decrease losing of lipids of the lipid matrix,
- restoration of differentiation of the epidermis.

MODERN OPPORTUNITIES FOR TREATMENT OF XEROSIS CUTIS

Currently, many ingredients are used in dermatocosmetics for the treatment and prevention of xerosis, but not all of them affect the pathogenesis of xerosis. For example, mineral oils form a film on the skin surface, which prevents transepidermal water loss, but at the same time interferes with skin respiration, which can only aggravate the situation.

The number of components affecting different elements of the pathogenesis of xerosis is also important. Fig. 1 shows that the elements of pathogenesis form large and small cycles, therefore, the impact on one link of pathogenesis may not be sufficient to interrupt the process of xerosis formation, since xerosis can be maintained through alternative pathways, which leads to the idea of the need to use an agent that would have an effect on all the main pathogenetic links in the formation of dry skin. The result of the development of this direction was the concept of “five key components” of the optimal emollient [1,20].

THE FIVE KEY COMPONENTS CONCEPT OF THE OPTIMAL EMOLLENT

The “Five Key Components” concept is based on the previously mentioned scheme of pathogenetic links

of xerosis and suggests the inclusion of ingredients in the optimal emollient for correcting dry skin, aimed at eliminating all pathogenetic factors of xerosis.

The concept was created as a basis for the development of new tools that are fundamentally different from most existing ones due to:

- influence on the pathogenesis of xerosis, and not a simple relief of individual symptoms;
- a complex composition that affects all links of pathogenesis, which ensures the versatility of the product and synergy between its components.

The five key components are supposed to mean the following groups of substances (some components can be attributed to more than one group) [1,20]:

- **moisturizing agent, humectant** (for example, glycerin, urea, propylene glycol, hyaluronic acid) is necessary for SC moisturizing, it compensates for the deficiency of the NMF function. Depending on the molecular weight, it can either moisturize the uppermost layers (hyaluronic acid), or penetrate into the deeper SC layers (urea, glycerin);
- **lipids** (for example, lanolin, petrolatum, other mineral and vegetable oils) - compensate deficiency of skin lipids in the outer layers of SC, form a hydrophobic film that reduces TEWL due to occlusive effect;
- **emollients / smoothing agents** (ceramides, fatty acids, isopropyl isostearate) - penetrate into the deep layers of SC, replenish the deficiency of natural lipids, help restore the optimal composition and structure of the lipid matrix, replenish the deficiency of the lipid component of corneocytes;
- **antipruritic/soothing agents** (e.g. niacinamide, squalane) - can prevent or relieve itching, thereby preventing the skin from scratching and compromising its physical integrity;
- **multifunctional agents to support regeneration and differentiation of the epidermis** (for example, dexpanthenol) - a key factor affecting the pathogenesis of xerosis, enhance the effects of other components of the emollient, stimulate the regeneration and normal differentiation of keratinocytes.

The proposed components provide an effect on all the xerosis pathogenesis links, shown in Fig. 1, which should prevent further progression of dry skin, restore the normal functioning of SC, and stimulate physiological mechanisms to restore the skin barrier.

The logic of the concept was supported by the members of the expert panel. As an additional positive characteristic of the concept, experts pointed out the absence of excessiveness in the number of «necessary»

components - this is important, since with an increase in the number of ingredients, the risk of side effects may increase. In addition to the natural allergic reactions developing risk, individual for each person, it is also necessary to take into account the increased reactivity of the skin of patients with xerosis in general, which increases the risk of intolerance through the use multicomponent drugs.

EMOLLIENTS OF THE BEPANTHEN®-DERMA RANGE

The practical implementation of the concept of “five key components” was implemented by Bayer, having developed and made available for clinical use in the Russian Federation an updated line of Bepanthen®-Derma products, the composition of which provides optimal hydration, restores the skin barrier, prevents itching and reduces skin irritation, provides regeneration and normal epidermis differentiation.

The composition of Bepanthen®-Derma products includes all the recommended components of an optimal emollient (Table 2).

Hence, the components of Bepanthen®-Derma products, due to a complex and synergistic effect on the epidermis, provide an effect on all the main manifestations of dry skin - they reduce TEWL, prevent lipid loss, stimulate their synthesis, promoting the barrier function implementation, have an anti-inflammatory effect, normalize the epidermis differentiation, restore the lipid matrix normal structure and composition, reduce flaking and itching, stimulate the epidermis regeneration.

The Expert panel also confirmed the **important role of dexpanthenol** as the main and historical component of all Bepanthen®-Derma products. Among its many functions, dexpanthenol compensates for the decrease in hydration by increasing the water content, as well as by beneficially affecting the molecular fluidity of the lipid lamellae of the stratum corneum. Another key feature of dexpanthenol is its stimulating effect on epidermal regeneration by enhancing keratinocyte differentiation. The described effects are especially important for a long-term solution to the xerosis issue due to the interruption of the closed pathogenetic dry skin cycle.

Due to their complex effect, Bepanthen®-Derma products can be considered as universal means for basic skin care for xerosis of any degree, regardless of the predominance of individual pathogenesis links and the presence of concomitant dermatoses.

The updated line of Bepanthen®-Derma emollients today includes the following products:

- ***Bepanthen® Derma Restoring Daily Body Lotion.***
It is used for mild xerosis for daily care of dry and sensitive skin, prone to irritation, with age-related xerosis;
- ***Bepanthen® Derma Replenishing Daily Body Lo-***

The composition and properties of the active ingredients of Bepanthen®-Derma products

Components and their biological effects
Component to support the epidermis regeneration and differentiation
Dexpanthenol It is a well-known regenerating agent, supports the epidermis formation and differentiation, synthetic processes and all types of metabolism in epidermal cells, has an anti-inflammatory effect, moisturizes the skin. Dexpanthenol has been shown to relieve most of the major symptoms of xerosis - dryness, roughness, flaking, itching, erythema and fissures [1,21–24].
Moisturizing component (humectant)
Glycerol It is the main moisturizing component (humectant) of Bepanthen® Derma products. Absorbs (from the dermis and the environment) and retains water in the stratum corneum [1,27].
Lipids
Shea butter and argan oil, squalane Vegetable multicomponent oils, which include lipids (linoleic acid, linolenic acid, triglycerides) and other components (phytosterols, triterpenes (squalane) and phenolic compounds). Phytosterols, linoleic acid, linolenic acid and triglycerides have a barrier moisturizing effect (occlusive effect), slowing down TEWL, and triterpenes, linoleic acid, linolenic acid and phenolic compounds have an anti-inflammatory and soothing effect [28].
Emollients / smoothing components
Isopropyl isostearate The ester of isostearic acid and isopropanol, has the properties of a physiological lipid. It is incorporated into the lipid matrix of SC, contributes to the normalization of the phase state of the lipid matrix, increases the stability of the lipid matrix, contributing to the lipids orthorhombic organization formation), increases the SC hydration, reduces the epidermis permeability and reduces TEWL [29].
Soothing / anti-itch component
Niacinamide Contributes the epidermal barrier restoration (stimulates the ceramides synthesis and lipid matrix components, reduces TEWL, has a soothing effect, has an anti-inflammatory effect [25,26].

Comments: SC - stratum corneum; TEWL- transepidermal water loss.

tion. It is used for severe xerosis. Provides intensive care for very dry and sensitive skin.

EVIDENCE BASE

The clinical efficacy of lotions Bepanthen®-Derma has been evaluated in several controlled clinical trials.

In a pilot open controlled trial [32] subjects of European and Asian origin with dry skin of degree 1-3 took part ($n = 15$). Lotion Bepanthen®-Derma was applied 2 times a day to the skin of the lower leg for 3 weeks, the same area of the lower leg of the other leg of each participant served as a control zone. A number of traditional and recently developed biophysical instrumental methods, as well as visual assessment of skin condition, have been used to determine various aspects of skin function.

The results showed that after 3 weeks of using the product, the degree of dryness in the area of application decreased by an average of 1.5 points ($p < 0.001$) according to the 4-point overall dryness skin score (ODSS) scale according to which 0 - absence of xerosis, 4 - pronounced xerosis of the skin, while no significant changes occurred in the control zone.

Instrumental assessment of skin hydration using corneometric and measurement of skin electrical resistance showed that skin hydration in the area of application of Bepanthen®-Derma lotion significantly improved and exceeded the control zone in terms of hydration level.

In the area of application of lotion Bepanthen®-Derma, an increase in the thickness of SC was also noted in relation to the thickness of the layer of desquamating corneocytes (the ratio of SC to desquamating corneocytes was 3.05), while in the control zone, the thickness of SC remained significantly thinner (the ratio of SC to desquamating corneocytes was 0.29).

The lipid content in SC in the area of application of the lotion Bepanthen® Derma increased, and in the control area it decreased. The qualitative composition of the lipid matrix also changed - the length of lipid structures (lamellae) increased, the level of cholesterol, free fatty acids and ceramide 6 increased, while in the control zone the lipid matrix composition remained at the same level.

The results obtained demonstrate that even within 3 weeks of application, lotion Bepanthen®-Derma has a positive effect on several pathogenetic links of dry skin and leads to a decrease in xerosis.

Another prospective open-label intraindividual comparative study of lotion *Bepanthen® Derma Restoring Daily Body Lotion* [33] was carried out for 28 days in 42 healthy participants with dry and sensitive skin. The lotion was applied to the skin of one forearm, and the symmetrical area of the other forearm served as a control. The study examined the effects of the lotion on SC hydration, TEWL levels, skin biomechanical properties and lipid content in SC, and skin tolerance of the

lotion after single and prolonged daily use. By the end of the experiment, an improvement in the degree of skin hydration by 64% ($p < 0.001$) was recorded, as well as a statistically significant increase in the cholesterol content and free fatty acids in SC, along with an improvement in skin elasticity, and good tolerance of the lotion was noted - not a single systemic or a local adverse effect associated with the test agent.

According to the survey of study participants, 88% would recommend the product to a friend, 88% reported that the use of the product resulted in a visible improvement in the appearance of the skin, and 90% indicated that *Bepanthen® Derma Restoring Daily Body Lotion* relieves itching and soothes the skin immediately after application.

Bepanthen®-Derma Replenishing Daily Body Lotion was also studied in the controlled trial with a similar design for 28 days ($n = 42$) [33]. By the end of the study, the hydration degree had increased by 72%. The level of TEWL in the area of application of *Bepanthen®-Derma Replenishing Daily Body Lotion* during the entire observation period was statistically significantly lower than in the control area.

The study participants also took the survey, according to the results of which 88% would recommend this product to a friend, 90% reported that the use of the product resulted in a visible improvement in the appearance of the skin and 86% - that Bepanthen reduces itching and soothes the skin immediately after application.

Acceptability and tolerance of *Bepanthen®-Derma Restoring Daily Body Lotion* in patients with type 1 and type 2 diabetes mellitus ($n = 40$) was studied in a study by Stettler H. et al., 2021 [34]. The lotion was applied to the entire body except the face once a day for 14 days. By the end of the 2nd week, the skin hydration degree of the participants increased by 24%, itching decreased by 95% (itching has stopped in almost all participants), and TEWL decreased by 16%. The acceptability of the *Bepanthen®-Derma Restoring Daily Body Lotion* was highly rated with all completing subjects scoring the acceptability of the product as very good. Similarly, cutaneous tolerability - as assessed via the help of a dermatologist - was rated as very good in all completing subjects. Except 1 transient (5 minutes) event of mild pruritus, no adverse event considered related to the studied product was recorded. The *Bepanthen®-Derma Restoring Daily Body Lotion* was well tolerated and experienced a high acceptability by the overwhelming majority of subjects.

Hence, the Bepanthen®-Derma line of products, based on the latest trial in the field of skin xerosis, can be a universal tool for basic skin care and treatment for such patients.

During the discussion of the possibility of using the Bepanthen®-Derma line products, the experts identi-

fied the following positive features of the Bepanthen®-Derma line products:

- have universal and balanced composition, which includes all the most necessary components for moisturizing the skin, while they do not have an excess of components, which could negatively affect the tolerance of such products;
- the polymodality of the effect of Bepanthen®-Derma emollients allows them to be used as a daily basic skin care product, including in patients with dermatoses;
- the flexibility of the line is due to the presence of a separate mold for sensitive and dry skin, as well as a mold for sensitive and very dry skin, intended for application to the whole body.

DISCUSSION

During the discussion, the panel members identified the accumulated issues in the field of organizing medical care for patients with xerosis:

- despite the prevalence of this pathology and the long history of its study, this issue is still insufficiently covered, due to the lack of its universal recognition as a widespread and significant medical issue that requires uniform approaches to the diagnosis and management of such patients;
- not enough attention is paid to the issues of skin hydration, both on the part of many medical specialists and on the part of the patients themselves.

Evaluating the Bepanthen®-Derma products, the experts spoke about the scientific validity and high potential for the effectiveness of these products. It was noted that the available studies have been conducted to high standards and confirm the ability of Bepanthen®-Derma products to restore the skin barrier and reduce the dry skin symptoms.

CONCLUSION

The experts came to the following conclusions:

1. **The importance of skin care needs to be promoted among patients.** The Expert panel recommends expanding people's perceptions of everyday situations in which prophylactic use of skin care products is recommended. Particular attention should be paid to patients of middle and elderly age groups, since age-related skin changes are inevitably accompanied by xerosis.

2. **Emollients are recommended** for the care of dry skin at any age and can be used as basic agents for **xerosis of any etiology**, including age-related, occupational, xerosis caused by climatic factors, as well as xerosis associated with various dermatological and general diseases

3. **The concept of the "five key components"** of an optimal emollient has a scientific basis, and includes 5

important components; humectants, physiological lipids, non-physiological lipids, soothing agents and multifunctional agents which improve epidermal differentiation.

4. **The new Bepanthen® Derma line** has been developed basing on the “**five key components**” concept and includes Repair Complex: dexpanthenol, glycerin, niacinamid, isopropyl isostearate, argane oil, shea butter and squalane. New Bepanthen®-Derma lotions act on the cause of dryness in all layers of the epidermis, not only moisturize, but also restore the skin barrier and reduce the symptoms of inflammation and itching. Dexpanthenol, as a key component, compensates for the decrease in hydration and enhances the differentiation of keratinocytes, which is especially important for a long-term solution to the issue of xerosis by interrupting the closed pathogenetic cycle of dry skin germination.

5. **Products Bepanthen®-Derma** can be considered as universal means for basic care for xerosis of any degree due to a complex effect on all links in the dry skin pathogenesis.

6. The members of the expert panel recommended to **continue expanding the line of products** and make other products that currently available in Europe, including cleansing gels and face creams, available to patients in Russia, the Republic of Belarus and Kazakhstan. It is recommended to continue conducting studies to obtain new clinical data in real clinical practice and in various groups of patients to expand the scope of the new line of products.

7. **It is needed to increase the awareness of doctors of related specialties on the dry skin issue** (allergists, endocrinologists, oncologists, chemotherapists, general practitioners, therapists, gerontologists).

8. **It is recommended to develop training programs** for dermatologists and methodological guidelines for the management of xerosis with subsequent implementation at the level of dermatology departments in the Russian Federation.

9. It is required to create clinical guidelines for the management of patients with xerosis. The development of unified clinical guidelines and/or standards of medical care for the treatment of xerosis will improve the results of treatment and the quality of life of patients with xerosis.

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CONFLICT OF INTEREST

The expert panel was organized with the support of Bayer.

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