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**"ANALYSIS OF MODERN WAYS OF DEVELOPMENT OF  
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# **ANALYSIS OF MODERN WAYS OF DEVELOPMENT OF SCIENCE AND SCIENTIFIC DISCUSSIONS**

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## COMBINATIONAL TREATMENT OF SUPERFICIAL MELASMA BY USING A COMBINED TOPICAL BLEACHING AGENT AND ALPHA-LIPOIC ACID

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**Introduction.** Melasma (hypermelanosis, hyperpigmentation) is a skin disease with abnormal pigmentation. Hyperpigmentation is not only a cosmetic defect that affects a person's appearance and psyche, their character but also serves as an indicator of the organism's health [11]. After all, the factors of excessive melanin accumulation can be not only genetic, but also chemical, physical, metabolic, endocrine, medicinal, and inflammatory [1], [5].

The leading place (60-70%) in the formation of melasma is occupied by ultraviolet irradiation with an enhanced effect on the skin [12]. Insolation can be the main or additional cause in combination with other provoking factors, leading to a violation of pigmentation and manifesting signs of skin photoaging, in particular, the appearance of age spots [10]. Throughout life, photodamage can accumulate, the more it does, the stronger its cumulative effect is, and therefore new pigmentation will be more pronounced even with minimal additional exposure of sunlight to the skin [6].

**Objective:** evaluation of the effectiveness of combined treatment of superficial melasma by using a combined topical bleaching preparation and alpha-lipoic acid.

**Materials and methods of treatment.** Patients with a superficial form of melasma located on the hands and face were selected for the study [7], [13].

To determine the depth of melasma, a dermatoscope was used, since the superficial occurrence of the pigment appears brown with a regular pigment network located only in the epidermis [2]. In the deep layers of the skin (dermis), melanin has a bluish-gray tint with an uneven pigment network during dermatoscopy. The mixed type of pigment deposition has both features [3].

For the treatment of superficial melasma, a combined preparation was chosen in the form of a cream containing in its composition: 4% of hydroquinone, tretinoin 0.05% of tretinoin, and 0.1% of mometasone furoate [8].

Hydroquinone is a depigmenter that interrupts the formation and synthesis of melanin by suppressing the activity of tyrosinase, and also affects the degradation of melanocytes and the synthesis of DNA and RNA in them.

When applied topically, Tretinoin penetrates through cell membranes, forming a cytoplasmic complex that enters the cell nuclei. The resulting hormone-receptor complex, binding to DNA, prevents transcription and thereby disrupts protein synthesis. This mechanism underlies the hypopigmentation action of tretinoin. Stimulates mitosis of epidermal cells, and increases the number of glycosaminoglycans, elastic fibres in the papillary layer of the skin. It inhibits melanogenesis, increases the growth and differentiation of epithelial cells [4].

Mometasone furoate is a mild glucocorticosteroid for external use. It has anti-inflammatory, anti-allergic and anti-exudative action. It induces the release of proteins that inhibit phospholipase A2, collectively known as lipocortins, which control the biosynthesis of inflammatory mediators such as prostaglandins and leukotrienes by inhibiting the release of a common precursor, arachidonic acid [9].

The duration of the cream application varied from 3 to 4 months. In the first two weeks, the cream was applied twice a day with a thin layer on the area of age spots, then 1 time per day in the afternoon. Throughout the entire duration of the combined bleaching cream use, patients used photoprotective products with a sun protection factor that ranged from SPF 15 to SPF 50 depending on the season and sun exposure. Alpha-lipoic acid 60 mg was administered once a day with meals simultaneously with the topical combination bleaching cream during the first month of therapy as an antioxidant to prevent photoaging by ridding the body of free radicals. It was also considered that alpha-lipoic acid has the property to reduce the accumulation of sugar and damage to the collagen framework fibres. Moreover, alpha-lipoic acid not only prevents glycation but also works with already damaged collagen.

For the study, two groups (n=44) of patients were formed, consisting of women with impaired superficial pigmentation, whose ages ranged from 29 to 55 years.

Patients of the first group (n=22) were prescribed only a three-component bleaching cream. Patients in the second group (n=22) were prescribed combined treatment using a combined topical bleaching preparation and alpha-lipoic acid.

**Results and discussions.** A pronounced positive effect was observed in patients of the second group (23.3%) after two weeks of combined treatment. In patients of the first group (22.1%) who received only topical combined bleaching treatment, a positive result was expressed at 3-4 weeks of treatment.

Clinically, both groups of patients showed a decrease in the size and brightness of age spots, as well as a decrease in the contrast between areas of hyperpigmentation of healthy skin. No subject in any of the groups had lesions that would be assessed as a side effect. General lightening of the lesions was noted in the second group after 3 months after the beginning of treatment, while in the first group after 4 months.

**Conclusions.** The triple combination of hydroquinone, retinoic acid and glucocorticosteroid reduces or eliminates side effects, manifested in the form of redness, peeling, and burning.

The combination of a three-component bleaching cream with oral administration of alpha-lipoic acid at a dose of 60 mg per day during the first month of treatment is an effective method of treating superficial forms of melasma, helps to shorten the time of application of a topical combination cream, and also prevents photoaging of the skin.

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