

Anti-photoaging efficacy and safety evaluation of retinol combined with soy isoflavones

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Yu, Yu²; Jia, Kai¹; Ding, Song¹; Yang, Ke¹; Liu, Chenguang^{2*};
1 Qingdao Youdo Bioengineering Co., Ltd, Qingdao, Shandong, China;
2 College of Marine Life Science, Ocean University of China, Qingdao, Shandong, China

Introduction:

The skin is the body's first line of defense and plays an important role in resisting external aggression, maintaining the internal environment and safeguarding physiological functions. Skin aging is not only affected by natural aging factors, but also directly exposed to the external environment, and is affected by exogenous aging. The strongest, UV-induced aging is called photoaging^[1]. In addition to sagging skin, obvious dryness and desquamation, photoaging skin will also have photoaging-specific manifestations such as skin thickening, hyperkeratosis, hyperpigmentation, and telangiectasia. Histologically photoaged skin is characterized by epidermal atrophy and reduced collagen and elastin^[2-3]. There are many methods for clinical treatment of facial skin photoaging, including chemical peeling, topical preparations, physical therapy, and surgical treatment. Physiotherapy includes laser, radio frequency, etc. Surgical treatment including botulinum toxin injection, hyaluronic acid filling, etc. The above methods can improve the skin quality of patients. However, chemical peeling, physical indicators, and surgical treatment have shortcomings such as a long recovery period and many complications, such as scarring, pigmentation, and skin infections^[4]. Topical skin preparations are a safe and effective means of preventing photoaging and improving symptoms of photoaging. It has been shown that retinol inhibits UV-induced metalloproteinases and stimulates collagen synthesis in photoaged skin, with a significant improvement in wrinkles observed after 12 weeks of treatment with retinol preparations. Subsequently, topical application of 1% retinol for 7 days was investigated to decrease metalloproteinase activity, accompanied by an increase in fibroblast growth and collagen^[5]. Retinoids include vitamin A and a range of other metabolites, such as retinol, retinaldehyde, retinyl esters, retinoic acid, and some synthetic derivatives. Retinoids are found in keratinocytes in two forms: retinol and retinyl esters. These lipophilic organic compounds are important for epithelial differentiation, immune regulation, vision^[6]. Retinol is an anti-aging topical preparation recognized by the dermatology and cosmetics industry, but it will bring certain adverse reactions. The use of certain compounds can avoid or reduce the adverse reactions caused by the use of retinol to a certain extent. In this experiment, topical retinol combined with soy isoflavones was used to observe its effectiveness and tolerance in anti-facial photoaging.

Results & Discussion:

All 30 subjects completed the test as required, using Dermalab to test the improvement rate of skin moisture content and elasticity before use and 28 days after use. Test skin moisture content improvement rate and elasticity improvement rate before and after operation using Dermalab. Dermalab was used to perform skin ultrasound to observe the changes in the dermis of the skin, and VISIA was used to take pictures to observe the changes in wrinkles. After 28 days of use in all subjects, the improvement rate of skin moisture was 33.4%, the improvement rate of elasticity was 11.2%, and the improvement rate of dermal layer thickness was 8.2%, improved to a greater extent (P<0.05). Typical cases are shown in Figure 1 and Figure 2. In this study, a total of 30 subjects were collected for skin closed patch test, and the skin reaction of the subjects was observed after removing the patch tester for 30min, 24h, and 48h. According to the self-assessment questions provided, the subjects themselves assessed the degree of improvement in facial wrinkles, elasticity, and gloss. The facial wrinkle evaluation score was 7.9 points, the elasticity score was 7 points, and the glossiness score was 7.8 points. Overall validity: The subjects' overall satisfaction with the test results reached 96.7%. Subjects assessed tolerance with a score of 3.

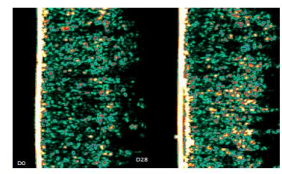


Fig. 1 The changes of collagen content in the dermis of the skin were evaluated by skin ultrasound. The skin ultrasound was detected by Dermalab before the test and after 28 days of using the product. The collagen content in the dermis increased significantly.

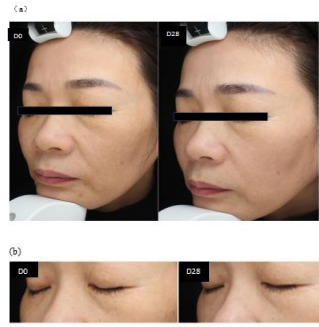


Fig. 2 Skin wrinkle improvement effect (a) Facial images were taken with VISIA before the test and after 28 days of product use. (b) In image (a), the periorcular image is magnified.

Materials & Methods:



Conclusions:

The results of this study confirm that the retinol-soy isoflavone cream used in this test can effectively improve the symptoms of photoaging, including improving skin moisture, skin elasticity, increasing dermal thickness and collagen content, improving fine lines, and long-term use, no adverse reactions occurred. Suitable as a daily anti-photoaging treatment.

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References:

- [1] He Qiu Xia, Gao Jian Li, et al (2022) Dermatoscopic characteristics of photoaged skin and endogenous aged skin. *Dermatology and Venereology* 44:157-160.
- [2] Stern R S (2004) Clinical practice Treatment of photoaging. *New England Journal of Medicine* 350: 1526-1534.
- [3] Sachs D L, Varani J, Chubb H, et al (2019) Atrophic and hypertrophic photoaging: clinical, histologic, and molecular features of 2 distinct phenotypes of photoaged skin. *Journal of the American Academy of Dermatology* 81: 480-488.
- [4] Jiang Hong Ling (2022) Comparative analysis of the efficacy of intense pulsed light and CO2 fractional laser in the treatment of facial skin photoaging. *China Medical Cosmetology* 102:25-28.
- [5] Farris P K, Rendon M I (2010) The mechanism of action of the topical retinoids for the treatment of nonmalignant photodamage. *Cosmet Dermatol* 23:108-109.
- [6] Sorg O, Saurat J-H (2014) Topical retinoids in skin aging: a focused update with reference to sun-induced epidermal vitamin A deficiency. *Dermatology* 228:314-325.
- [7] Kim J E, Kim B, Kim H, et al (2010) Retinyl retinoate induces hyaluronan production and less irritation than other retinoids. *J Dermatol* 37:448-454.
- [8] Scharfetter-Kochanek K, Wlaschek M, Briviba K, et al (2010) Singlet oxygen induces collagenase expression in human skin fibroblasts. *FEBS Lett* 331:304-306.
- [9] Dong K K, Damaghi N, Picart S D, et al (2008). UV-induced DNA damage initiates release of MMP-1 in human skin. *Experimental Dermatology* 17:1037-1044.
- [10] Rasche C, Elsner P (2010) Skin aging: a brief summary of characteristic changes. *Textbook of Aging Skin. Germany* : Springer 2010:55-65.
- [11] Rossetti D, Kielmanowicz MG, Vigodman S, et al (2011) A novel anti-ageing mechanism for retinol: induction of dermal elastin synthesis and elastin fibre formation. *Int J Cosmet Sci* 33:62-69.
- [12] Wang X, Li Li, et al (2016) Multivitamin A Clinical observation on anti-wrinkle efficacy and safety of cream. *Clin Dermao* 45:63-66.
- [13] Dai Hong Liang, JiaGui Zhi, et al (2015) Anti -proliferative Effects of Genistein on Human Hepatoma SMMC7721 Cells Proliferation via Inhibiting EGFR/ERK Pathway. *Liaoning Medical University* 36:1-3.