

The Effect and Analysis of Compound Polypeptide Firming Essence

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Introduction:

Anti-aging, as the current mainstream skin care appeal, is getting more and more attention. Anti-aging products that claim to improve facial skin relaxation, promote firming, local lifting have a high market share and a wide range of consumer groups^[1]. Compared with young skin, aging skin is dry, dull and shows some degree of laxity and local tissue sagging. Improving skin elasticity and firmness is important for skin anti-aging. Polypeptides have the advantages of biocompatibility, easy absorption, safety, good water solubility and low molecular weight, etc^[2], were categorized into four groups: signal peptides, enzyme-inhibitor peptides, neurotransmitter-inhibitor peptides and carrier peptides. At the same time, they have the functions of protecting, repairing damaged cells and promoting cell growth. Therefore, polypeptides have great development potential as anti-aging substances^[4]. The objective of this study was to assess the firming improving effect of the compound polypeptide firming Essence.

Materials & Methods:

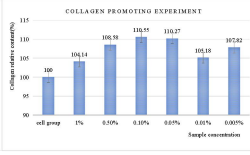
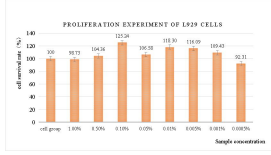
In vitro evaluation: Mouse fibroblast cell (L929) viability assay by MTT assay method. Determination of Type I Collagen Content in Fibroblasts (L929). Human test: A total of 30 Chinese women between 35~60 years old with sagging skin were enrolled, the left side is the control side, using the placebo, and the right side is the experimental side, using the compound polypeptide firming essence. After 4 weeks of continuous use, the effect of the compound polypeptide firming essence was evaluated by objective data, skin ultrasound, VISIA image and subjective evaluation. The test items and schedule are shown in Tab. -1.

Tab. -1 Test item table.

Actions	Before	1week	2weeks	3weeks	4weeks
Informed Consent of Test	√	—	—	—	—
Facial photography	√	√	√	√	√
Ultrasound Image	√	√	√	√	√
Elasticity data of E value	√	√	√	√	√
Elasticity data of R value	√	√	√	√	√
Elasticity data of VE value	√	√	√	√	√
Subjective satisfaction	—	—	—	—	√

Results & Discussion:

Results
1.1 In vitro evaluation.
1.1.1 L929 cell viability assay by MTT assay method. The concentration of 0.5%, 0.1%, 0.05%, 0.01%, 0.005% and 0.001% of the polypeptide firming essence can promote the proliferation of L929 cells. The results are shown in Fig-1.
1.2 Determination of Type I Collagen Content in Fibroblasts (L929). Compared with the cell control group, all the essence of 1%, 0.1%, 0.01% etc. concentrations have a certain effect of promoting collagen production. The results are shown in Fig-2.



2. Human test.
2.1 Skin elasticity measurement
After 4 weeks, the increase in elasticity value on the experimental side is greater than the control side. The E value (Young's elasticity modulus) of experimental side increased by 10.8% (P<0.05), the VE value (Visco Elasticity) of experimental side increased by 7.50% (P<0.05), the R value (Skin retraction time) of experimental side reduced by 4.97% (P<0.05). The results are shown in Fig-3 and Fig-4.

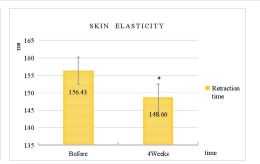
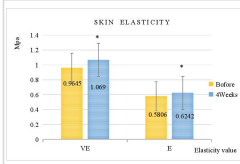


Fig-3 Improvement of skin elasticity (E value and VE value) on experimental side (*, adjusted p-value < 0.05).

Fig-4 Improvement of skin elasticity (R value) on experimental side (*, adjusted p-value < 0.05).

2.2 Skin pores improvement
According to the data analyzed by VISIA, The improvement of facial pore data can be observed. The improvement in pores value on the experimental side is greater than the control side. The Feature Counts of pores of experimental side reduced by 22.15% (P<0.05), the Absolute Scores of pores of experimental side reduced by 27.07% (P<0.05). The results are shown in Fig-5 and Fig-6.

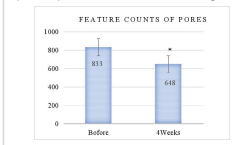


Fig-5 Improvement of pores counts on experimental side (*, adjusted p-value < 0.05).

Fig-6 Improvement of pores absolute scores on experimental side (*, adjusted p-value < 0.05).

2.3 Skin ultrasound
The firming effect of the product can be measured by the change of dermis reflection strength. According to ultrasound image, After using the Essence for 28 days, dermis reflection strength increased in more than 80% of volunteers. Partial typical cases are shown in Fig-7, Fig-8 and Fig-9.

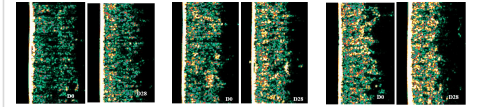


Fig-7 skin of 48 year old woman, the dermis reflection strength of the experimental side was significantly improved.
Fig-8 skin of 38 year old woman, the dermis reflection strength of the experimental side was significantly improved, skin thickness of dermis was increased.
Fig-9 skin of 36 year old woman, the dermis reflection strength of the experimental side was significantly improved, skin thickness of dermis was increased.

2.4 Subjective satisfaction of volunteers.
After the four weeks of test, the volunteers filled in the subjective satisfaction questionnaire, score from the skin moisturizing, facial sagging, slim wrinkle, overall satisfaction, etc., full of 5 points, a score above 4 represents satisfaction. More than 90% of volunteers thought their skin was firmer and more delicate.

Conclusions:

In this study, after 4 weeks, the E value (Young's elasticity modulus) of experimental side increased by 10.87% (P<0.05), the VE value (Visco Elasticity) of experimental side increased by 7.50% (P<0.05), the R value (Skin retraction time) of experimental side reduced by 4.97% (P<0.05). It is proved that the essence has a good promotion effect on skin elasticity. All the essence of 1%, 0.1%, 0.001% etc. concentrations have a certain effect of promoting collagen production and promoting cell proliferation. Through the evaluation of in vitro experiments and human test, the anti-aging effect of polypeptide combination active substance on skin was verified. The Compound Polypeptide Firming Essence has an excellent effect on improving skin elasticity, firmness and pores. It shows good results in vitro and human evaluation and has good application prospects in the field of anti-aging skin care products.

Acknowledgements:

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