

# SEA CUCUMBER : THE KEY TO ANTI-AGING

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## 1. Introduction

Sea cucumbers and their extracts have gained immense popularity and interest among researchers and nutritionists due to their nutritive value, potential health benefits, and use in the treatment of aging. Sea cucumber extracts contain unique components, such as collagen fibres which is glycine, proline and hydroxyproline. These compounds are responsible to make up collagen, which is a protein that can be found approximately 30% in the human body.

Photoaging are changes to skin induced by chronic UVA and UVB exposure. UVB rays are a primary mutagen that can penetrate through the epidermal layer of the skin, resulting in DNA mutations. These mutations may be clinically related to specific signs of photoaging such as wrinkling and damage of elastin and collagen where the body cannot produce sufficient collagen to replace the amount of collagen that has degraded.

We have extensively studied the efficacy of this extract in increasing dermal collagen. In this review, we discuss the anti-aging properties of sea cucumber extracts.

## 2. Research Method

This study was an experimental laboratory study using randomized post-test only control group design. As many as 12 female mice recruited in this study were divided into four groups, which consists of 3 mice per group.

The Control Group without administration of any supplement, the First Treatment Group with administration sea cucumber supplement with the dose of 100mg/kg weight of mice, the Second Treatment Group with administration of sea cucumber supplement with the dose of 150mg/kg weight of mice, and the Third Treatment Group with administration of collagen supplement type 1 sold in market with the dose of 150mg/kg weight of mice.

UVB irradiation of all mice was performed 45 minutes daily for 4 weeks. UVB irradiation dose of 105  $\mu$ W / cm<sup>2</sup>. The dorsal skin spacing of mice with UV lamp is 15 cm.

The entire group of mice was shaved regularly to ensure thorough irradiation of UVB of its fur on the back for about 2x2 cm<sup>2</sup>.

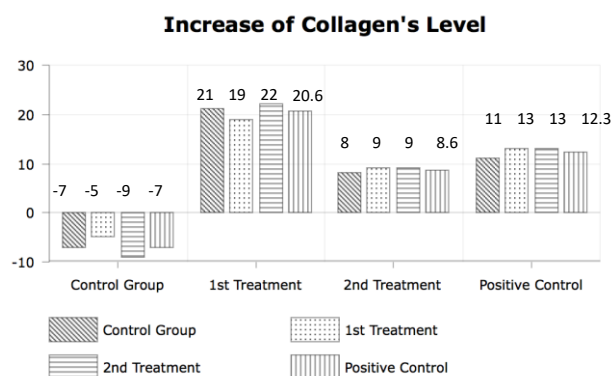
Measurements including collagen levels, skin elasticity, moisture content, pigment and sebum levels before and after 4 weeks of treatment with Skin Analyzer EH 900 were taken to give comparison. 3 measurements were taken for each mice and each variable on the same place.

An anti aging evaluation with Skin Analyzer EH 900 U refers to Aramo (2012) and Susana (2013). The evaluation is done to test animals in active state, because the use of skin analyzer does not hurt the skin and is not invasive.

The data were analyzed with post hoc with least significant difference (LSD) test at significance level of <0.05.

The collected data was then organized in the form of tables and graphs as a basis for performing quantitative and qualitative analysis and to draw conclusions.

## 3. Result and Analysis



Based on the data that has been accumulated it is noteworthy that supplementation of sea cucumber in wistar mice resulted in a difference of collagen level in dermis skin.

Whereas the control group had a difference of collagen level of 7% due to irradiation and on supplementation of sea cucumber of 100 mg/kg BW increased 20.6%. As for the supplementation of sea cucumber supplements of 150 mg/kg BW only resulted to an increase of 8.6%. The supplementation of collagen supplements on the market as much as 150 mg/kg BW only resulted in an increase of 12.3%.

## 4. Conclusion

Sea cucumber extract supplement has proven to increase levels of collagen in mice and based on evidence of increased accumulation of collagen fibers in dermis it was found that the best dose of supplementation of collagen was 100 mg/kg BW of mice that gave an increase of 19%.

For further research its recommended to find other compounds that can contribute to higher effectivity of the supplement such as adding ascorbic acid.

## 5. References

- [1] Garmyn, M., Vander Oord, J. Ch., Cho, S., and Kang S. 2004. Clinic and Histological change in Photoaging in
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