

TOPICAL VS. INGESTIBLE COLLAGEN: A REVIEW OF THEIR EFFECTIVENESS FOR SKIN HEALTH

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Abstract: As the most prominent protein in a human body, collagen underpins one's fortitude, elasticity, hydration, and skin health. Both topical and ingestible collagen-based skin products have proliferated in recent years, offering diverse forms like creams and serums to powders, jellies, and emulsions. This article analyzes and evaluates the skincare methods of topical and ingestible collagens, suggesting that the skin barrier limits topical formulations, making ingestible collagen peptides more effective. After reviewing the mechanisms, available science, and outcomes, this article forges a conclusive argument for the optimal method of dermal collagen supplementation.

Introduction

Collagen constitutes an integral portion of the skin, tendons bones, and connective tissues due to the protein's rarity to be second to none and serves as a structural building block. Collagen accounts for half of the proteins that account for skin's texture. Age turns the tide on collagen. The hormonal shift causes a negative balance to the skin, opening doors to signs of aging such as wrinkles, dry skin patches, or sagging skin.

To mitigate these effects, the skincare industry has created many products designed to enhance collagen levels, available as topical collagen creams or oral collagen supplements. Although they are both advertised for skin rejuvenation, their marketing effectiveness remains a medical controversy. While topical creams claim to deliver visible results, the stratum corneum, the outermost layer of the skin, presents a major hurdle to collagen penetration. On the other hand, collagen in peptide form is thought to be ingested, absorbed by the body, and then transported to the dermis via the bloodstream.

This review intends to analyze the available literature concerning the effectiveness of oral versus topical collagen in a bid to establish which form is more reliable and clinically validated.

Methods

An organized search through the literature was conducted on the databases PubMed, Google Scholar, and Scopus. "Topical collagen," "Oral collagen supplementation," "collagen peptides," and "skin hydration" as well as "clinical trials on collagen" were considered as search terms. Only English published works dated between 2000 and 2024 were considered. Emphasis was placed on RCTs, systematic reviews, and studies conducted on human subjects.

Collagen and Skin Health: A Brief Overview

Collagen, particularly Type I and Type III, is critical for maintaining the skin's mechanical properties. It provides tensile strength and resilience and is involved in wound healing and

cellular regeneration. As early as the mid-20s, collagen synthesis begins to decline, and this trend accelerates due to factors such as UV exposure, smoking, and poor nutrition. Collagen loss is estimated at about 1% per year after the age of 25, making supplementation a growing area of interest for both consumers and medical professionals.

Efficacy of Topical Collagen Products

Topical products claim to restore lost collagen directly to the skin surface. However, several dermatological studies suggest that collagen molecules are too large to penetrate the epidermis effectively. Instead, any visible benefit may come from hydration and other ingredients like hyaluronic acid or peptides, rather than from collagen itself.

In a 2019 randomized study by Campos et al., topical application of collagen-enriched cream showed minimal long-term benefit compared to placebo in terms of wrinkle depth and skin elasticity. The authors concluded that while such creams may improve skin texture temporarily, they do not significantly increase dermal collagen content. Some topical formulations attempt to use “hydrolyzed collagen” to improve absorption, but even these are generally too large to penetrate to the dermis, the layer where collagen has the most impact.

Efficacy of Ingestible Collagen Supplements

In contrast, ingestible collagen peptides have shown more promising results in scientific studies. When collagen is hydrolyzed, it turns into small peptides that are easier for the body to absorb through the gastrointestinal tract. Once absorbed, these peptides can help fibroblasts produce new collagen, elastin, and hyaluronic acid in the dermis.

A 2014 double-blind, placebo-controlled study by Proksch et al. found that women who took 2.5 to 5 grams of collagen peptides daily for 8 weeks experienced significant improvement in skin elasticity and hydration compared to a placebo group. Additionally, wrinkle depth was noticeably reduced. A 2019 meta-analysis of 11 clinical trials confirmed these findings, noting better skin appearance and hydration with few side effects.

Collagen jellies, powders, and emulsions are often mixed with vitamin C, zinc, or hyaluronic acid, which further support collagen production in the skin.

Comparison and Discussion

Based on current medical literature, ingestible collagen seems to be more effective than topical collagen in improving skin quality, elasticity, and hydration. This is mainly because orally ingested peptides can reach the dermis through systemic circulation, while topical collagen mostly stays on the surface.

It's also important to mention that the skin's barrier function, which protects against environmental damage, limits the absorption of large molecules, making topical treatments less reliable for delivering collagen.

While topical creams can improve the skin's appearance through moisturization and other ingredients, they do not significantly increase collagen density in the dermis. Ingestible

collagen, especially in hydrolyzed forms, has a more measurable and medically supported

Feature	Topical Collagen	Ingestible Collagen
Form	Creams, serums, gels	Powders, capsules, drinks
Absorption	Limited absorption through skin	Absorbed through the digestive system
Target Area	Localized (specific skin areas)	Systemic (affects the whole body)
Efficacy Evidence	Mixed results in studies	More consistent positive results
Usage Frequency	Daily application	Daily intake (varies by products)
Cost	Generally higher per use	Often more cost effective per serving

effect on skin structure and aging.

Conclusion

Ingestible collagen supplements, especially hydrolyzed peptides, show greater effectiveness in improving skin health compared to topical collagen products. A growing body of clinical evidence supports this by demonstrating improved hydration, elasticity, and reduced wrinkles. While topical products may offer temporary boosts in appearance, their effects are mostly superficial due to limited penetration in the dermis.

Future studies should explore long-term safety, optimal dosing, and interactions with other nutrients to better understand how to maximize the benefits of collagen supplementation in dermatology.

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