ARTICLE NAVIGATION

RESEARCH ARTICLES | DECEMBER 24 2013

Oral Intake of Specific Bioactive Collagen Peptides Reduces Skin Wrinkles and Increases Dermal Matrix Synthesis

Subject Area: Dermatology , Pharmacology

E. Proksch; M. Schunck; V. Zague; D. Segger; J. Degwert; S. Oesser

Skin Pharmacol Physiol (2014) 27 (3): 113–119.
https://doi.org/10.1159/000355523 Article history

Content Tools

Abstract

Dietary consumption of food supplements has been found to modulate skin functions and can therefore be useful in the treatment of skin aging. However, there is only a limited number of clinical studies supporting these claims. In this double-blind, placebo-controlled study, the effectiveness of the specific bioactive collagen peptide (BCP) VERISOL® on eye wrinkle formation and stimulation of procollagen I, elastin and fibrillin biosynthesis in the skin was assessed. A hundred and fourteen women aged 45-65 years were randomized to receive 2.5 g of BCP or placebo, once daily for 8 weeks, with 57 subjects being allocated to each treatment group. Skin wrinkles were objectively measured in all subjects, before starting the treatment, after 4 and 8 weeks as well as 4 weeks after the last intake (4-week regression phase). A subgroup was established for suction blister biopsies analyzing procollagen I, elastin and fibrillin at the beginning of the treatment and after 8 weeks of intake. The ingestion of the specific BCP used in this study promoted a statistically significant reduction of eye wrinkle volume ($p < 0.05$) in comparison to the placebo group after 4 and 8 weeks (20%) of intake. Moreover a positive long-lasting effect was observed 4 weeks after the last BCP administration ($p < 0.05$). Additionally, after 8 weeks of intake a statistically significantly higher content of procollagen type I (65%) and elastin (18%) in the BCP-treated volunteers compared to the placebo-treated patients was detected. For

Skip to Main Content

fibrillin, a 6% increase could be determined after BCP treatment compared to the placebo, but this effect failed to reach the level of statistical significance. In conclusion, our findings demonstrate that the oral intake of specific bioactive collagen peptides (Verisol®) reduced skin wrinkles and had positive effects on dermal matrix synthesis.

Keywords: Bioactive collagen peptide, Collagen peptides, Skin, Wrinkles, Type I collagen, Elastin, Fibrillin

References

1. Imokawa G: Recent advances in characterizing biological mechanisms underlying UV-induced wrinkles: a pivotal role of fibroblast-derived elastase. Arch Dermatol Res 2008;300(suppl 1):S7-S20.

2. Calleja-Agius J, Muscat-Baron Y, Brincat MP: Skin ageing. Menopause Int 2007;13:60-64.

3. Takema Y, Yorimoto Y, Kawai M, Imokawa G: Age-related changes in the elastic properties and thickness of human facial skin. Br J Dermatol 1994;131:641-648.

4. Takema Y, Yorimoto Y, Kawai M: The relationship between age-related changes in the physical properties and development of wrinkles in human facial skin. J Soc Cosmet Chem 1995;46:163-173.

5. Boelsma E, Hendriks HF, Roza L: Nutritional skin care: health effects of micronutrients and fatty acids. Am J Clin Nutr 2001;73:853-864.

6. Liang J, Pei X, Zhang Z, Wang N, Wang J, Li Y: The protective effects of long-term oral administration of marine collagen hydrolysate from chum salmon on collagen matrix homeostasis in the chronological aged skin of Sprague-Dawley male rats. J Food Sci 2010;75:H230-H238.

7. Zague V, de Freitas V, da Costa RM, de Castro GA, Jaeger RG, Hado-Santelli GM: Collagen hydrolysate intake increases skin collagen expression and suppresses matrix metalloproteinase 2 activity. J Med Food 2011;14:618-624.

8. Matsuda N, Koyama Y, Hosaka Y, Ueda H, Watanabe T, Araya T, Irie S, Takehana K: Effects of ingestion of collagen peptide on collagen fibrils and glycosaminoglycans in the dermis. J Nutr Sci Vitaminol (Tokyo) 2006;52:211-215.

Skip to Main Content

9. Tanaka M, Koyama Y-I, Nomura Y: Effects of collagen peptide ingestion on UV-B-induced skin damage. Biosci Biotechnol Biochem 2009;73:930-932.

10. Kiistala U: Suction blister device for separation of viable epidermis from dermis. J Invest Dermatol 1968;50:129-137.

11. Green AC: Premature ageing of the skin in a Queensland population. Med J Aust 1991;155:473-478.

12. Nouveau-Richard S, Yang Z, Mac-Mary S, Li L, Bastien P, Tardy I, Bouillon C, Humbert P, de Lacharrière O: Skin ageing: a comparison between Chinese and European populations. A pilot study. J Dermatol Sci 2005;40:187-193.

13. Manriquez JJ, Majerson Grinberg D, Nicklas Diaz C: Wrinkles. Clin Evid 2008;12:1-42.

14. Bauza E, Oberto G, Berghi A, Dal CF, Domloge N: Collagen-like peptide exhibits a remarkable antiwrinkle effect on the skin when topically applied: in vivo study. Int J Tissue React 2004;26:105-111.

15. Lee J-H, Seo J-H, Park Y-H, Lim K-M, Lee S-J: The effect of hydroxyproline and Pro-Hyp dipeptide on UV-damaged skin of hairless mice. Korean J Food Sci Technol 2008;40:436-442.

16. Kawaguchi T, Nanbu PN, Kurokawa M: Distribution of prolylhydroxyproline and its metabolites after oral administration in rats. Biol Pharm Bull 2012;35:422-427.

17. Chai HJ, Li JH, Huang HN, Li TL, Chan YL, Shiau CY, Wu CJ: Effects of sizes and conformations of fish-scale collagen peptides on facial skin qualities and transdermal penetration efficiency. J Biomed Biotechnol 2010;2010:757301.

18. Frantz C, Stewart KM, Weaver VM: The extracellular matrix at a glance. J Cell Sci 2010;123:4195-4200.

19. Cho S, Won CH, Lee DH, Lee MJ, Lee S, So SH, Lee SK, Koo BS, Kim NM, Chung JH: Red ginseng root extract mixed with torilus fructus and corni fructus improves facial wrinkles and increases type I procollagen synthesis in human skin: a randomized, double-blind, placebo-controlled study. J Med Food 2009;12:1252-1259.

20. Zhang Z, Wang J, Ding Y, Dai X, Li Y: Oral administration of marine collagen peptides from chum salmon skin enhances cutaneous wound healing and angiogenesis in rats. J Sci Food Agric 2011;91:2173-2179.

Skip to Main Content

21. Contet-Audonneau JL, Jeanmaire C, Pauly G: A histological study of human wrinkle structures: comparison between sun-exposed areas of the face, with or without wrinkles, and sun-protected areas. Br J Dermatol 1999;140:1038-1047.

22. Fujimura T, Haketa K, Hotta M, Kitahara T: Loss of skin elasticity precedes to rapid increase of wrinkle levels. J Dermatol Sci 2007;47:233-239.

23. Proksch E, Segger D, Degwert J, Schunck M, Zague V, Oesser S: Oral supplementation of specific collagen peptides has beneficial effects on human skin physiology: a double-blind, placebo-controlled study. Skin Pharmacol Physiol 2014;27:47-55.

Ski

Institutional Login

- Access via Shibboleth and OpenAthens
- Access via username and password

Digital Version

Pay-Per-View Access $39.00

BUY THIS ARTICLE

1 Karger Article Bundle Token

$150

BUY TOKEN

Rental

This article is also available for rental through DeepDyve.

Skip to Main Content

View Metrics

121 | 4 | 110 | 1

Email Alerts

- Online First Alert
- Latest Issue Alert

Citing Articles Via

- Web Of Science (98)
- Google Scholar
- CrossRef (102)

LATEST | MOST READ | MOST CITED

- Cluster analysis identifies clinical phenotypes of primary hyperhidrosis
- Effects of a pH-Regulating Emollient Cream in Mild Atopic Dermatitis Patients with Moderate Localised Lesions
- Evaluation of bioequivalence and pharmacokinetic profiles for topical desonide cream using Chinese skin

Skip to Main Conten

- Stratum Corneum Hydration Measurements with a Bluetooth Wireless Probe: A Real-Life Study at Home Compared to Measurements under Laboratory Conditions
- Diesel Particulate Matter Permeation into Normal Human Skin and Intervention Using a Topical Ceramide Formulation

Suggested Reading

- Serum Markers of Type I Collagen Synthesis and Degradation in Amyotrophic Lateral Sclerosis

Eur Neurol (July,2000)

- Oral Supplementation of Specific Collagen Peptides Has Beneficial Effects on Human Skin Physiology: A Double-Blind, Placebo-Controlled Study

Skin Pharmacol Physiol (August,2013)

- Neonatal Marfan Syndrome: Report of a Case with an Inherited Splicing Mutation outside the Neonatal Domain

Mol Syndromol (February,2016)

- Platelet-Collagen Interaction: The Influence of Native and Modified Collagen (Type I) on the Aggregation of Human Platelets

Pathophysiology of Haemostasis and Thrombosis (April,2009)

Skip to Main Content

Online ISSN 1660-5535 Print ISSN 1660-5527

Community Voice

SERVICES FOR

Researchers
Authors
Reviewers
Healthcare Professionals
Patients & Supporters
Librarians
Health Sciences Industry
Medical Societies
Agents & Booksellers

KARGER INTERNATIONAL

S. Karger AG

P.O Box, CH-4009 Basel (Switzerland)

Allschwilerstrasse 10, CH-4055 Basel

Tel: +41 61 306 11 11
Fax: +41 61 306 12 34
Contact: Front Office