

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.

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 torilis 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.
21. Cohet-Audouin 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.

[Skip to Main Content](#)

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.

© 2014 S. Karger AG, Basel

Copyright / Drug Dosage / Disclaimer

Copyright: All rights reserved. No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher.

Drug Dosage: The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any changes in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

Disclaimer: The statements, opinions and data contained in this publication are solely those of the individual authors and contributors and not of the publishers and the editor(s). The appearance of advertisements or/and product references in the publication is not a warranty, endorsement, or approval of the products or services advertised or of their effectiveness, quality or safety. The publisher and the editor(s) disclaim responsibility for any injury to persons or property resulting from any ideas, methods, instructions or products referred to in the content or advertisements.

You do not currently have access to this content.

Sign in

Don't already have an account? > [Register](#)

Individual Login

Ski

[LOGIN TO MY KARGER](#)

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.



Advertisement

[Skip to Main Content](#)

[View Metrics](#)[List 121](#) [Check 4](#) [Download 110](#) [Help 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 Content](#)

- 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

INFORMATION

- › Contact & Support
- › Information & Downloads
- › Rights & Permissions
- › Terms & Conditions
- › Catalogue & Pricing
- › Policies & Information

ABOUT US

- › Company
- › People & Organization
- › Newsroom
- › Careers
- › Stay Up-to-Date

Skip to Main Content

- › Regional Offices

› 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

