

Why we all need collagen

Collagen is a protein that makes up around 30% of all the proteins in the human body. It is the body's primary structural protein and is especially abundant in the skin where it represents around 80% of the dry weight of skin.

Through its vital role in connective tissues, collagen acts as the glue that helps hold us together. It occurs in all mammals and is also common in plant and marine life.

The matrix

Each collagen molecule resembles a microscopic rope that is extremely strong and flexible. Collagen forms a key part of the extracellular matrix of connective tissue and is found in a huge array of tissues including hair, nails, skin, bones, cartilage, tendons and ligaments. The extracellular matrix gives connective tissues most of their functional characteristics, such as the ability of bones and cartilage to bear weight.

There are at least 14 different type of collagen that naturally occur in the body. The most important of these are types I, II and III. Type I collagen is the most abundant and is found in tendons, skin, artery walls, cornea and the organic component of bones and teeth.

Type II collagen is found in hyaline cartilage and makes up 50% of all cartilage protein. Type III collagen is the collagen of granulation tissue and is produced quickly by young fibroblasts before the more robust type I collagen is synthesized. It's also found in muscles, artery walls, skin, intestines and the uterus.

Collagen works in partnership with naturally occurring elastin and hyaluronic acid to enable skin strength.

Loss of collagen with age

During the ageing process, skin loses its firmness, resulting in wrinkles and a loss of elasticity. Lines and wrinkles form as collagen starts to deplete. This depletion starts in the mid-twenties and significantly increases after the menopause when the body's collagen production decreases by 2% per annum. (Chung *et al* 2001; *et al* 2005, Patriarca *et al* 2007.)

Formulated for skin

The Proto-col range of collagen nutraceuticals uses VERISOL® B, a proprietary formulation of Bioactive Collagen Peptides® designed to support skin health. It features collagen that has been specifically optimised for beauty applications.

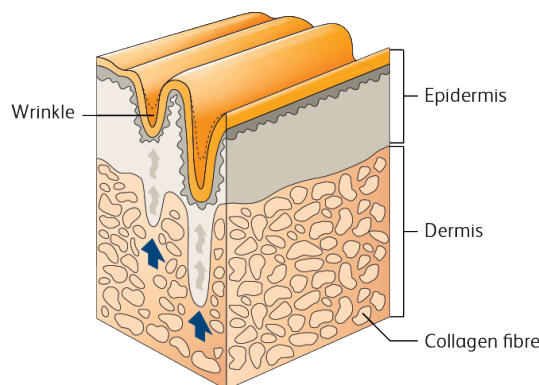
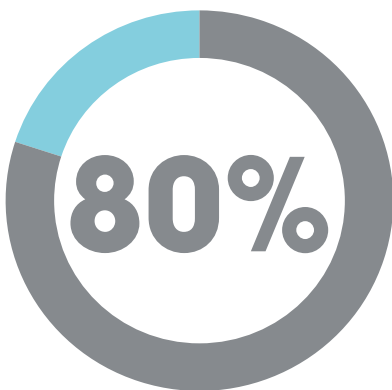
The skin's properties are known to be affected by endogenous and environmental factors including ageing, ultraviolet radiation, hormones and nutrition.

Our collagen nutraceuticals can help slow down the skin metabolism impairing processes that are responsible for the loss of the collagenous extracellular matrix.

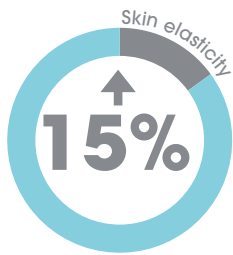
Those that regularly ingest the natural Bioactive Collagen Peptides® used in Proto-col's collagen products have noticeably firmer and smoother skin with fewer wrinkles.

This paper details several of the scientific studies that have scrutinized the potential of VERISOL®B.

Collagen is the major structural component of skin, comprising about 80 % of dry weight of skin.



Orally applied (consumed), VERISOL® systemically effects the collagen metabolism in the dermis rather than just reaching the outer layers of the skin in the way that creams and other topical products do.



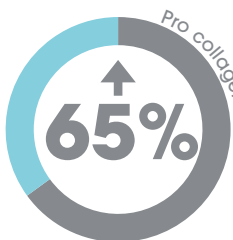
Study 1 – Increased skin elasticity

Oral supplementation of Specific Collagen Peptides has Beneficial Effects on Human Skin Physiology (Proksch et al. (2014) Skin Pharmacol. Physiol 27: 47-55)

15% increase in skin elasticity after 4 weeks of supplementation with 2500mg or 5000mg of VERISOL B®. More pronounced results for women aged over 50.

69 women aged between 35 and 55 years, split into three groups of 23. Each group was treated with a daily dose of either 2500mg of VERISOL B®, 5000mg of VERISOL B® or a placebo for a period of 8 weeks. The study revealed that both VERISOL B® groups showed statistically higher skin elasticity – up to 15% – compared to placebo treatment. Some of the volunteers saw an increase in skin elasticity up to 30%. No significant differences between different VERISOL B® dosages.

This effect could be measured already after 4 weeks of intake and it was persistent after 8 weeks of oral VERISOL B® administration. Another 4 weeks after last intake of the product, VERISOL B® application still showed higher skin elasticity levels than in the placebo treated group by trend. The results were more pronounced in elderly women aged over 50 years.

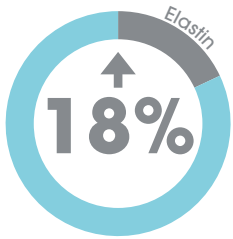


Study 2 – Reduced wrinkle volume

Oral Intake of Specific Bioactive Collagen Peptides Reduces Skin Wrinkles and Increases Dermal Matrix Synthesis (Proksch et al. (2014) Skin Pharmacol. Physiol 27: 113-119)

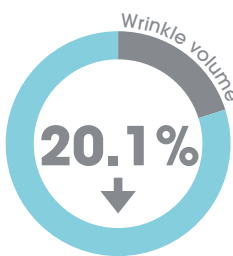
After 8 weeks of supplementation with 2500mg of VERISOL B®:

- **65% increase in pro collagen I**
- **18% increase in elastin**
- **20.1% decrease in wrinkle volume**

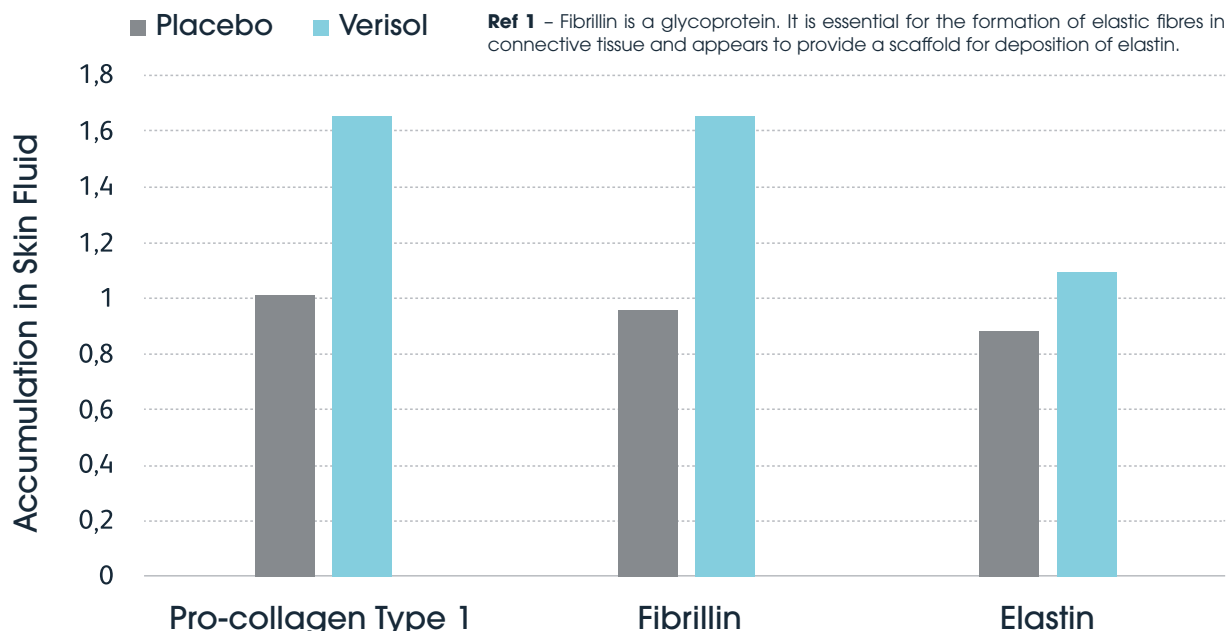


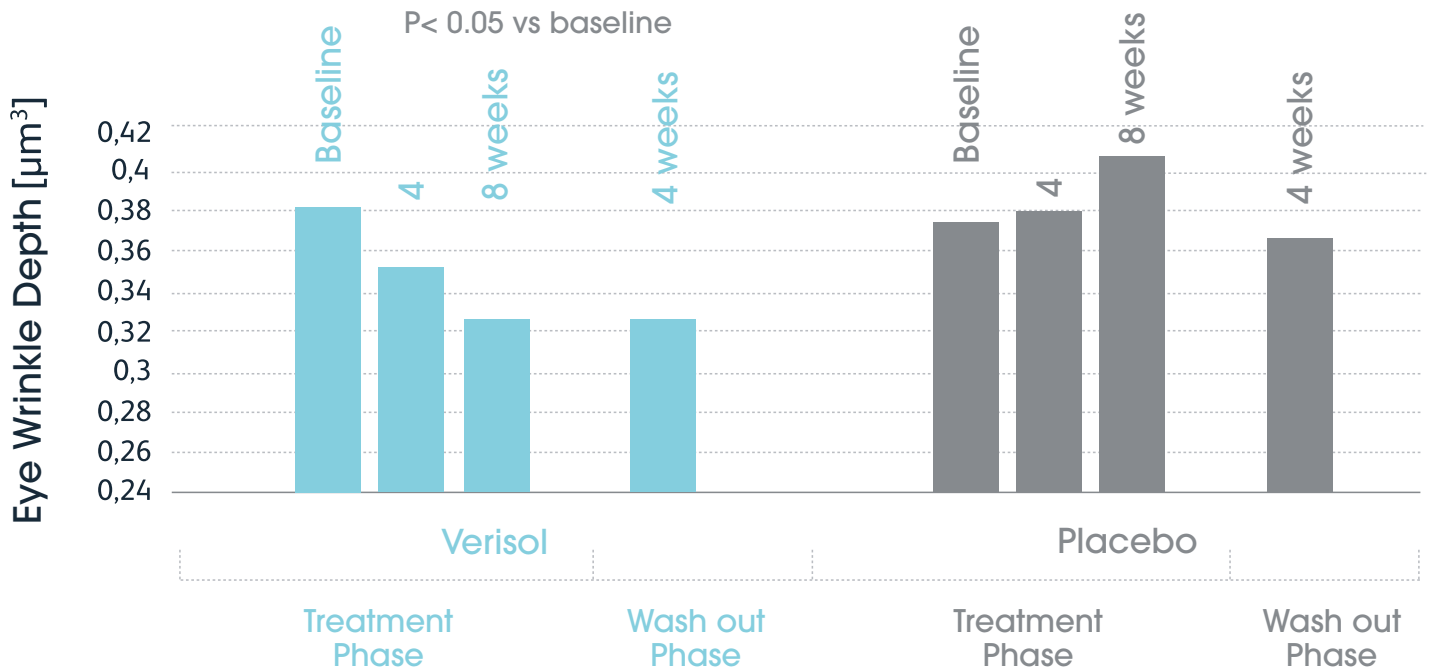
108 healthy females, aged between 45 and 65 years were split into two groups and completed the trial. Each group was treated with a daily dose of 2500mg of either VERISOL B® or a placebo for a period of 8 weeks.

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. Results revealed a reduction in eye wrinkle volume in comparison to the placebo group after 4 and 8 weeks. After 8 weeks the wrinkle volume of the group taking the VERISOL B® was significantly reduced by 20.1% on average. In conclusion the findings demonstrated that the oral intake of the VERISOL B® helped to improve the appearance of wrinkles (decrease in wrinkles).



In addition, 40 of the participants (20 from each group) completed a further study which involved analysis of suction blister fluids for pro collagen I, elastin and fibrillin (Ref 1) at the beginning of the trial and 8 weeks after intake. A statistically significant higher content of pro collagen I (65%) and elastin (18%) was detected in the VERISOL B® participants compared to those who took the placebo.





Study 3 – Improvement of appearance of cellulite

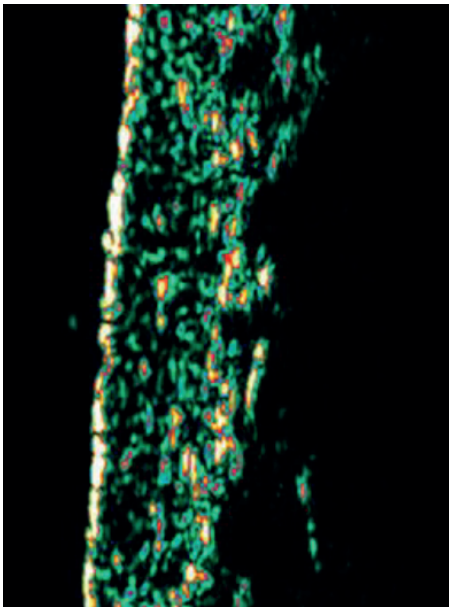
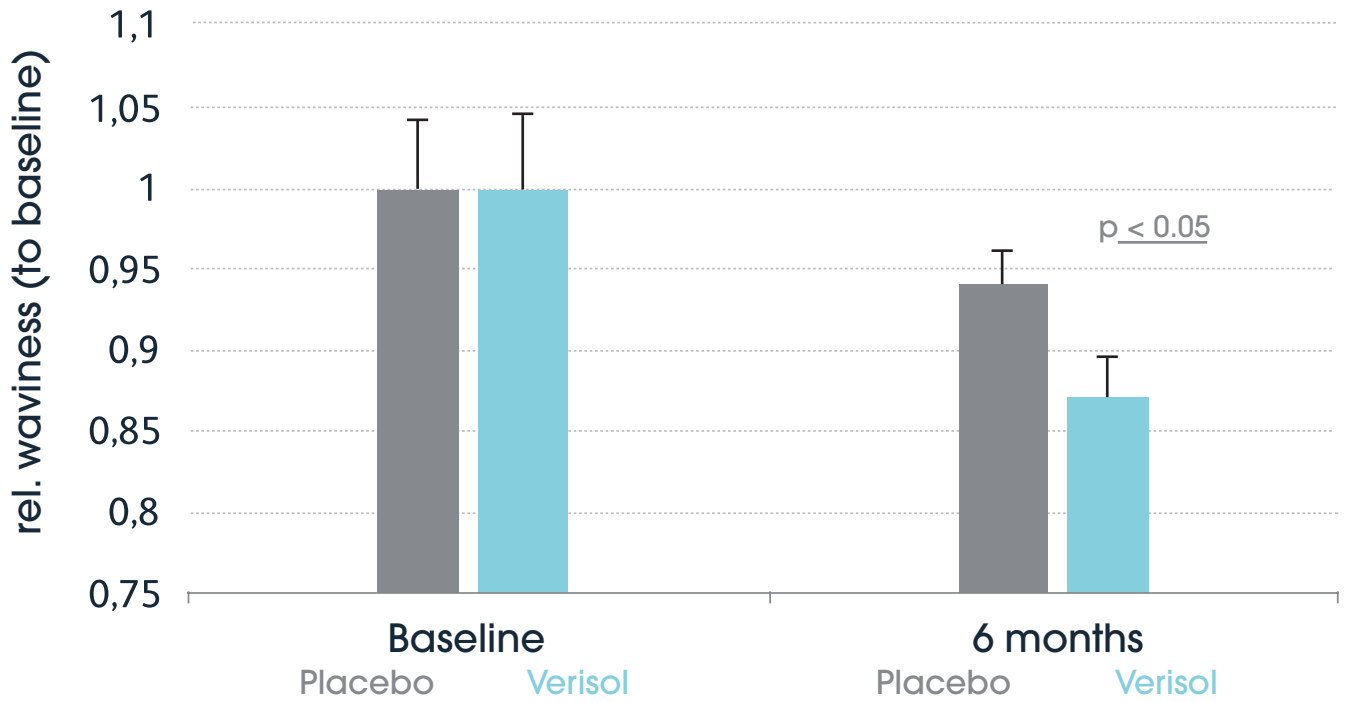
Dietary Supplementation with Specific Collagen Peptides has a Body Mass Index-dependent Beneficial Effect on Cellulite Morphology (Schunk et al., J.Med.Food 18 (12) 2015: 1340-1348)

After 6 months of supplementation with 2500mg of VERISOL B®:

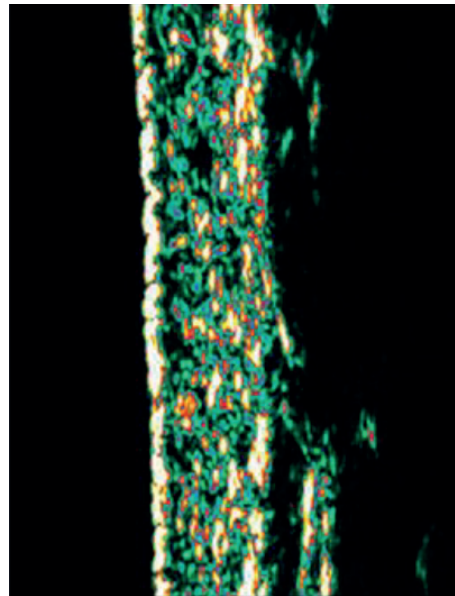
- Skin waviness reduced by 8% for overall VERISOL B® group
- Skin waviness reduced by 11% for women with normal weight (BMI<25)



In this double-blind, randomised, placebo-controlled study, 105 women with moderate cellulite, aged between 25-50 years were randomly split into two groups and two sub groups (BMI <25 and BMI >25). Each group was treated with a daily dose of 2500mg of either VERISOL B® or a placebo for a period of 6 months. The VERISOL B® group showed significantly higher dermal density after 6 months versus the placebo groups (overall 8% decrease in skin waviness). The results were more pronounced for women with normal weight with reduction in skin waviness by 11%.



Placebo



Verisol®

Study 4 – Improved wound healing

Improved Wound Healing After Oral Intake of Specific Bioactive Collagen Peptides (Knefeil et al., Nutrafood 17, 2017: 9-12)

In this double-blind randomized trial, two groups were studied: acute wounds and badly-healing wounds after surgical intervention.

Improved wound healing for both acute and badly healing wounds was observed, compared to placebo.

Group 1 – Subjects with acute wounds:

22 female subjects with postsurgical wounds, aged 24 – 67 years were split into two sub-groups. Each group was treated with a daily dose of 5000mg of either VERISOL B® or a placebo for a period of 12 weeks. The outcome was evaluated by the physicians and the findings demonstrated that the patients in the VERISOL B® group had a good or very good outcome. The patients themselves were very satisfied with the results. In the placebo group none of the patients was rated as having a very good outcome.

Acute wounds healing



Before

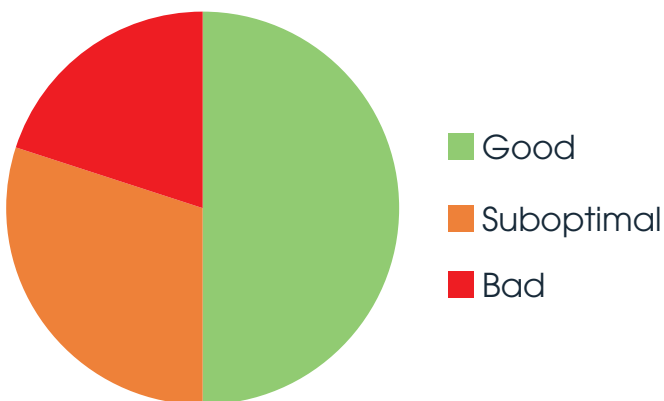


After

Upper lip after naevus removal in a patient

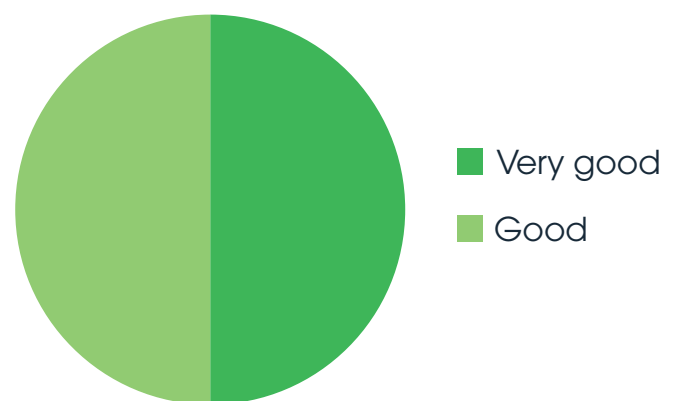
Excellent result following naevus removal after 4 weeks of VERISOL B® treatment in the patient shown in the image to the left

Placebo



Under placebo treatment

Verisol B®



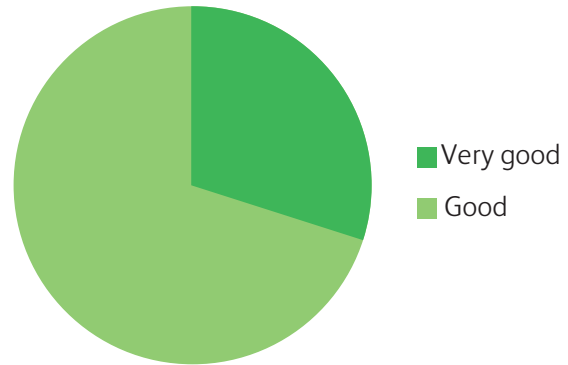
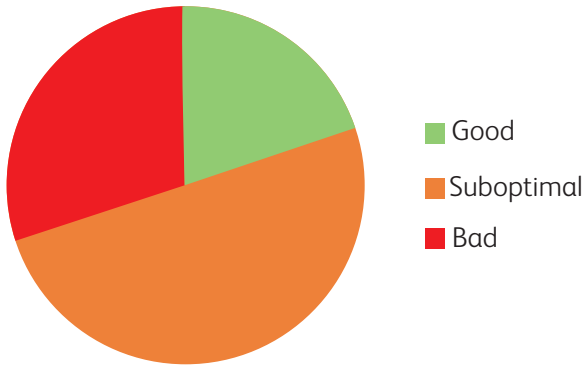
Under Verisol B® treatment

Group 2 – Subjects with badly-healing wounds:

22 male and female subjects with badly healing wounds post-surgery, aged 28-82 years were split into two sub-groups. Each group was treated with a daily dose of 10000mg of either VERISOL B® or a placebo for a period of 12 weeks. The findings showed that the patients in the VERISOL B® group had a good or very good outcome. In contrast, none of the patients in the placebo group was rated as having a very good outcome.

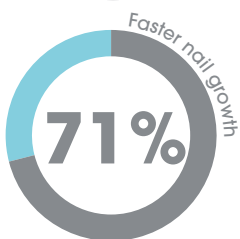
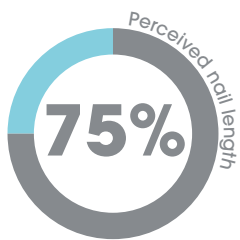
Under PLACEBO treatment: Healing
20% good / 50% subopt. / 30% bad

Under VERISOL treatment: Healing
30% very good / 70% good



Result:

In both groups, the patients treated with VERISOL B® had a clearly better outcome regarding wound healing compared to the placebo groups who showed suboptimal or bad results in the majority of cases.



Study 5 – Growth and quality of fingernails

Haxsel D, Zague V, Schunk M, Slega C, Camozzato FO, Oesser S. Oral supplementation with Specific Bioactive Collagen Peptides Improves Nail Growth and Reduces Symptoms of Brittle Nails. *J Cosmet Dermatol.* 2017; 00; 1-7.

In an open, single-centre clinical trial, 25 women with common symptoms of brittle nails, aged between 18-50 years were treated with 2500mg of VERISOL B® daily for 6 months.

Results:

- Notable improvement in nail peeling & clearly decreased nail edge irregularity
- **75%** of the women perceived their nails as longer
- **71%** said their nails grew faster and longer

