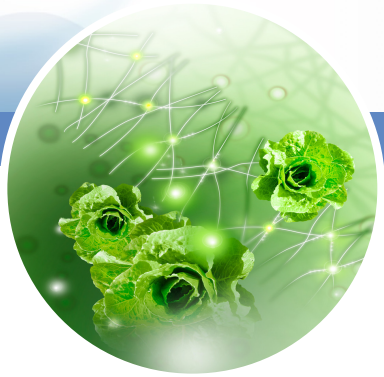
vitalab
BIOTECH-BASED ACTIVE INGREDIENTS



VITA TECHCOLLAGEN

Green Biotech Recombinant Human Collagen

SKIN BENEFITS

√ Stimulating collagen production.
√ Improving collagen assembly and modelling.
√ Protecting collagen from degradation.

TECHNICAL INFORMATIONS

TRADE NAME
Vita TechCollagen

SOURCE
Lactuca sativa

INCI NAME
Lactuca Sativa Extract/Sr-arabidopsis Thaliana Polypeptide-1 Tri (Sh-polypeptide-47 Phaseolus Vulgaris Polypeptide-1) Sh-polypeptide-47 Octapeptide-22 Tetrapeptide-120

RECOMMENDED USE
0,5%

PRESERVATION
None

Vita TechCollagen pioneers sustainable molecular pharming to produce **biomimetic human collagen peptides**. Using *Lactuca sativa* (lettuce), **this biotech process ensures safety, efficacy, and regulatory** compliance. By leveraging plant-based technology, we create a **next-generation collagen alternative** that aligns with the growing demand for sustainable and effective skincare solutions. Our process ensures that **each peptide fragment is produced to be skin-identical** to the ones present in human collagen and optimised for superior skin performance.

Key Advantages of our technology

- **Non-GMO, Plant-Derived Collagen**: Lettuce-based production eliminates concerns of contamination and ensures a clean, natural source of collagen peptides.
- **Enhanced Stability & Bioactivity**: Unique human collagen peptide fragments work synergistically to boost, stabilize, and remodel skin structure for lasting benefits.
- **Sustainable & Safe**: Vertical farming optimises energy and water usage, reducing environmental impact while maintaining product purity.
- **Superior Post-Translational Modifications**: Unlike bacterial systems, peptides produced in plants undergo natural modifications that enhance their full functionality.

Skin benefits

The unique human collagen peptide fragments contained in **Vita TechCollagen are specifically designed to work in synergy to stimulate collagen synthesis, and improving collagen assembly and modeling**. The inclusion of lettuce phytometabolites provides an additional layer of protection, **preventing collagen degradation** and enhancing skin resilience.

Vita TechCollagen **redefines collagen innovation through sustainable biotech advancements**, offering an ethical and **effective alternative to traditional collagen sources while maintaining peak performance** in beauty formulations.

In vitro test

- **Collagen boosting effect**

ELISA assay
+66%* Pro Collagen I production

An in vitro study was conducted using **human skin fibroblasts** to assess the efficacy of Vita TechCollagen in stimulating **collagen production**. The peptide sequence contained in Vita TechCollagen was specifically engineered with a high presence of **glycine and proline, key amino acids essential for improved collagen synthesis**.
Vita TechCollagen effectively stimulates fibroblast function, promoting **improved collagen biosynthesis**.

- **Extracellular matrix remodelling**

RT-PCR
+62%* SPARC gene expression

To further evaluate the biological activity of Vita TechCollagen, an in vitro assay was performed to assess its effect on **SPARC (Secreted Protein Acidic and Rich in Cysteine) gene expression in human skin fibroblasts**. The active ingredient contains **peptide sequences of the collagen interhelix region, along with integrin and SPARC binding sites**, responsible for collagen assembly and modelling.
The results demonstrated a notable upregulation of SPARC gene expression, confirming the ability of **Vita TechCollagen to enhance extracellular matrix remodelling**.

- **Collagen protection**

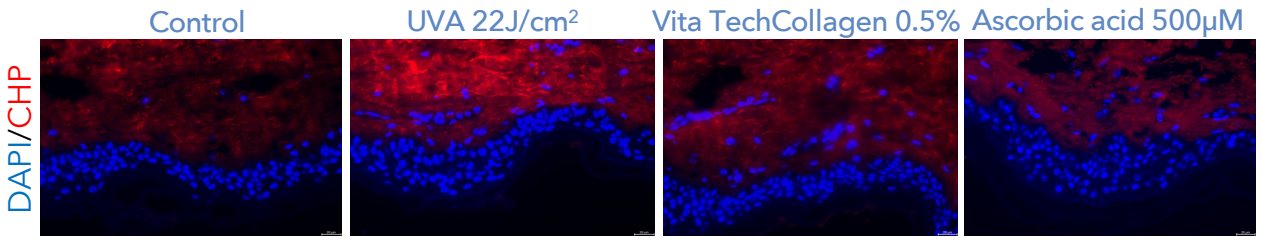
RT-PCR
-37%* MMP1 gene expression

To assess the ability of **Vita Tech Collagen** to protect collagen from degradation, an in vitro test was performed to measure the **downregulation of matrix metalloproteinase 1 (MMP1)**, an enzyme responsible for collagen breakdown. Results showed a significant reduction in MMP1 gene expression in fibroblasts upon UVA stress.

Ex Vivo test

- **Collagen protection and repair**

The ability of the active ingredient to protect and repair collagen fibers was evaluated trough **Collagen Hybridizing Peptide (CHP) staining on skin explants**. CHP specifically binds to damaged collagen through triple helix formation. Skin explants were pre-treated with the active ingredient or ascorbic acid (positive control), exposed to UVA to induce collagen damage, and treated again for 72 hours with the actives. CHP binding was quantified via immunolabeling.



Vita TechCollagen demonstrated protective and reparative effects by reducing by 50%* CHP binding, **indicating decreased collagen degradation**.

*Statistically significant