

# Nutricosmetics:

A way to prevent  
time effects

---



## Well-ageing starts early!

---

**Well-aging is a fresh approach to ageing, which is a natural process that affects us all. This means helping our skin through the changes and thinking beauty as a global topic: taking care of our skin, our well-being and feeling in harmony with ourselves.**

### Cellular ageing, an inevitable process

Cellular ageing plays a crucial role in skin ageing with the appearance of the first signs of ageing such as wrinkles, loss of elasticity and dehydration<sup>1</sup>. But it's not just the skin that is affected: hair and nails also show signs of ageing: loss of hair density and increased fragility in the nails...

**And unfortunately, whether it's the hair or the skin, this process is inevitable..**

#### Mechanisms

The cellular ageing process can be considered as programmed and results from damages caused by various endogenous factors, including <sup>2</sup>:

- **Shortening of telomeres<sup>3</sup>**: located at the end of chromosomes, telomeres shorten with each cell division. When telomeres become too short, cells enter into senescence

- a state of irreversible cessation of growth - leading to the production of toxic residues and inflammation in the body.

- **Oxidative stress<sup>4</sup>**: excessive free radicals - reactive oxygen species - produced in large quantities in response to environmental factors (UV rays, pollution, stress), irreversibly damage cells and accelerate ageing.

---

1- Yaar, M et al, Journal of Investigative Dermatology, 2002

2- Shin SH et al, Frontiers in Physiology, 2023

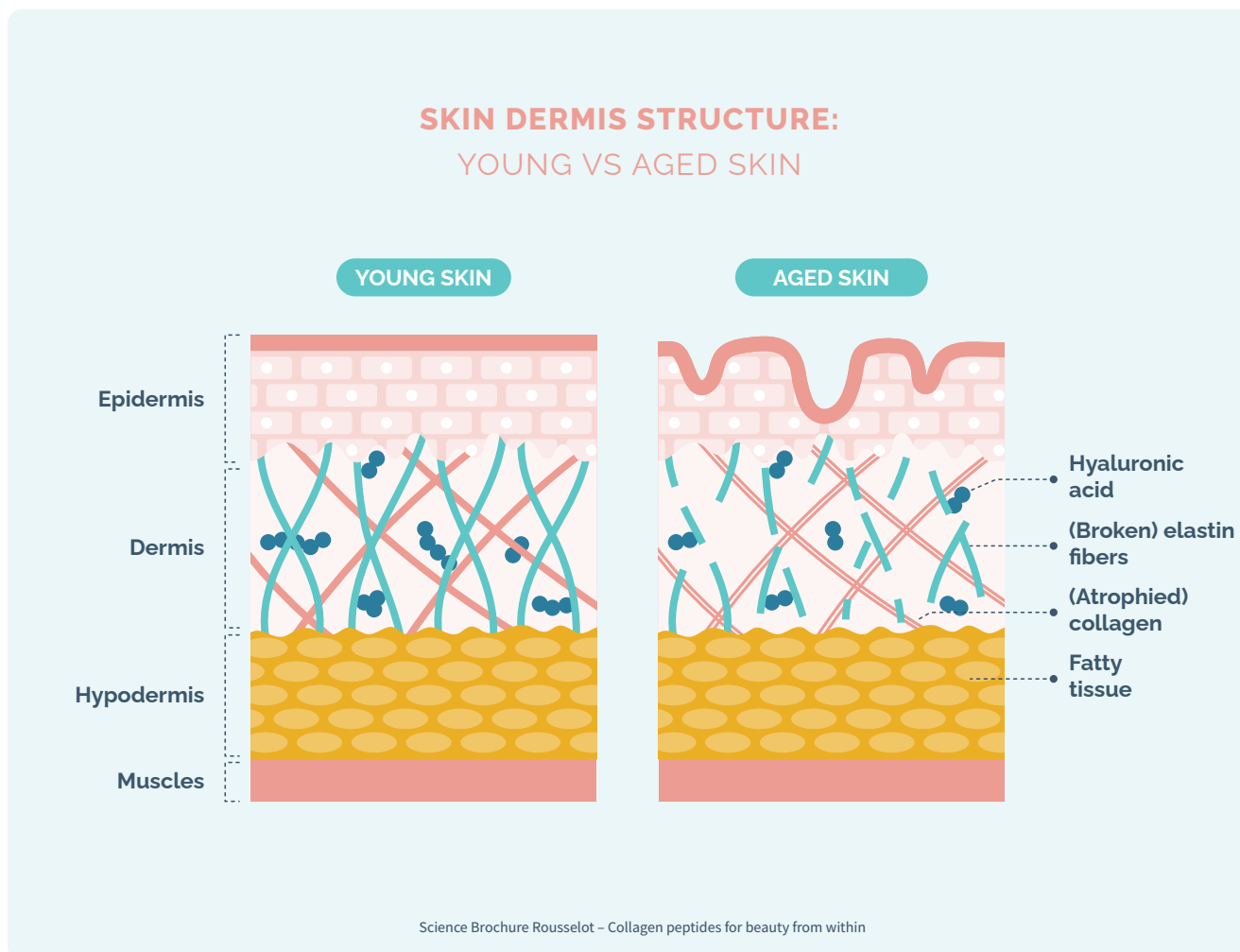
3- Harley et al, Nature, 1990

4- Hensley, K et al, Archives of Biochemistry and Biophysics, 2002

## Time effects on skin are visible as from 25 years! <sup>1,2</sup>

Due to free radicals and senescent cells, **the extracellular matrix degrades during the ageing process.**

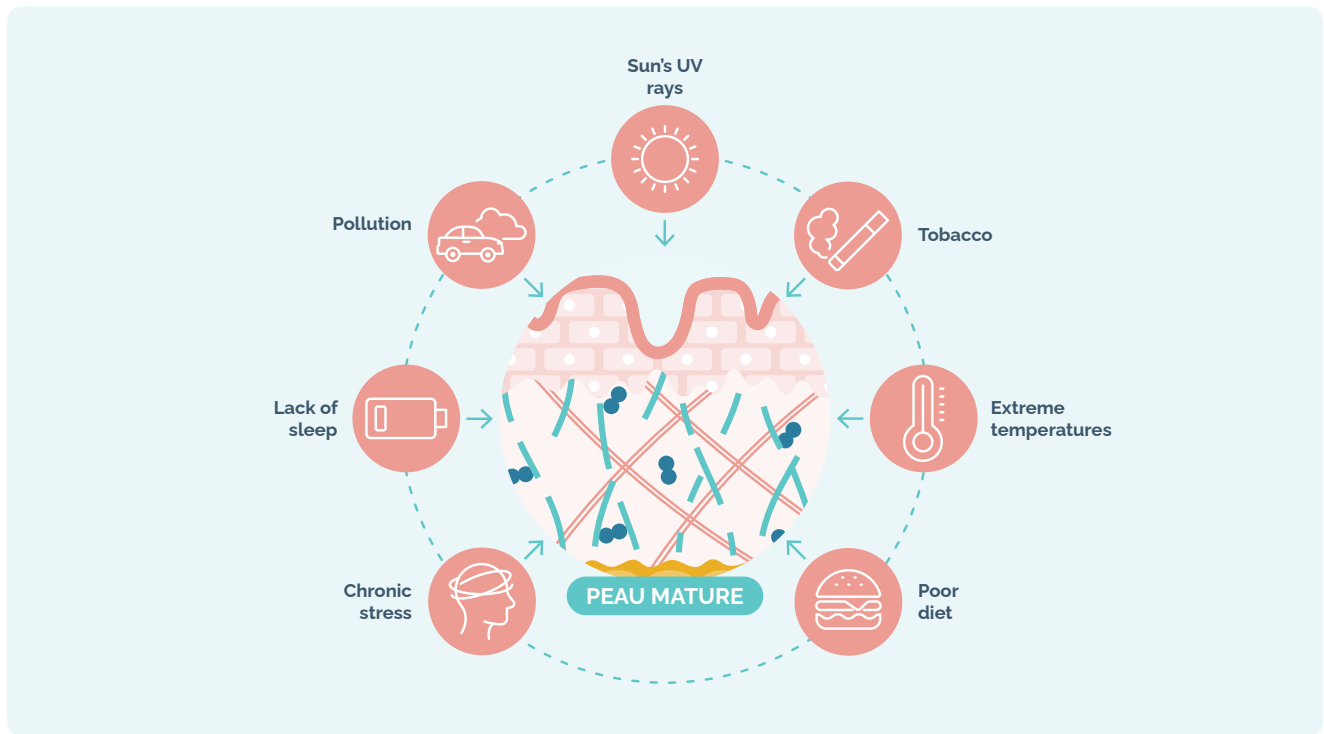
- As a result, our skin loses its elasticity, due to a reduced production of collagen and elastin, major components of the extracellular matrix.
- The appearance of wrinkles and fine lines on the skin becomes visible, due to the loss of collagen and elastin.
- The dermis and epidermis become thinner, and sebum production decreases, making the skin more fragile.



- Hair becomes thinner and loses its natural colour, turning grey or white as a result of the reduced number of melanocytes (melanin-producing cells in the epidermis).
- Nails break more easily and grow more slowly.

### External factors exacerbate this process<sup>5,6,7</sup>

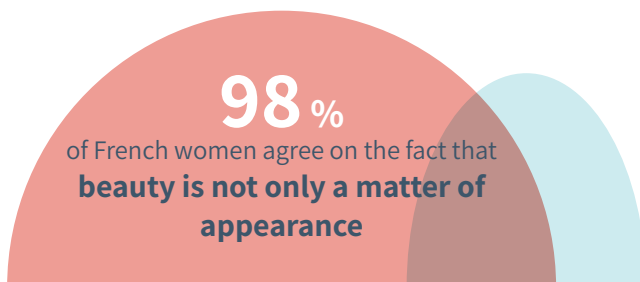
- **The Sun's UV rays** damage skin cells, leading to wrinkles, brown spots and loss of elasticity.
- **Smoking** reduces the production of collagen and elastin, making the skin dull and less elastic.
- **Extreme temperatures**, excessive heat, intense cold or a sudden change in weather conditions have a harmful effect on the skin.
- **Environmental pollutants** cause oxidative stress that damages skin cells.
- **Chronic stress** can accelerate ageing by increasing the production of free radicals.
- **A poor diet low in essential nutrients** affects skin health.
- **Lack of sleep** leads to reduced collagen production, increased oxidative stress and reduced cell regeneration.



## Well-ageing, a positive and realistic approach of ageing

Accepting that we're getting older is the first step towards successful ageing.

To prevent the first visible signs of ageing, it's vital to act early to maintain **the health and beauty of our skin** in a natural, non-invasive way.



Nowadays, beauty is not just about appearance, so taking care of our skin is fundamental, and the link with nutrition has become unquestionable. Indeed, over the last ten years, **the impact of nutrition on skin health** has been the subject of **more than 300 scientific studies**<sup>9</sup>, advocating the benefits of essential nutrients such as antioxidants and anti-inflammatory agents. This is the emergence of a major trend focusing on the global management of inner well-being and outer appearance: **holistic beauty**.

5- Landau, M, Environmental Factors in Skin Diseases, 2007

6- Shin SH et al, Frontiers in Physiology, 2023

7- Farage, M.A et al, International Journal of Cosmetic Science, 2008

8- Souali M. La beauté holistique en France, IFOP, 2021

9- Nombre publications avec un titre comprenant les mots-clés « nutrition/alimentation » et « peau », PubMed, 2002-2023

# Holistic beauty

## A global understanding of beauty

Holistic beauty is an approach that blurs the boundaries between beauty, health and well-being, asserting that skin quality comes from a healthy lifestyle.

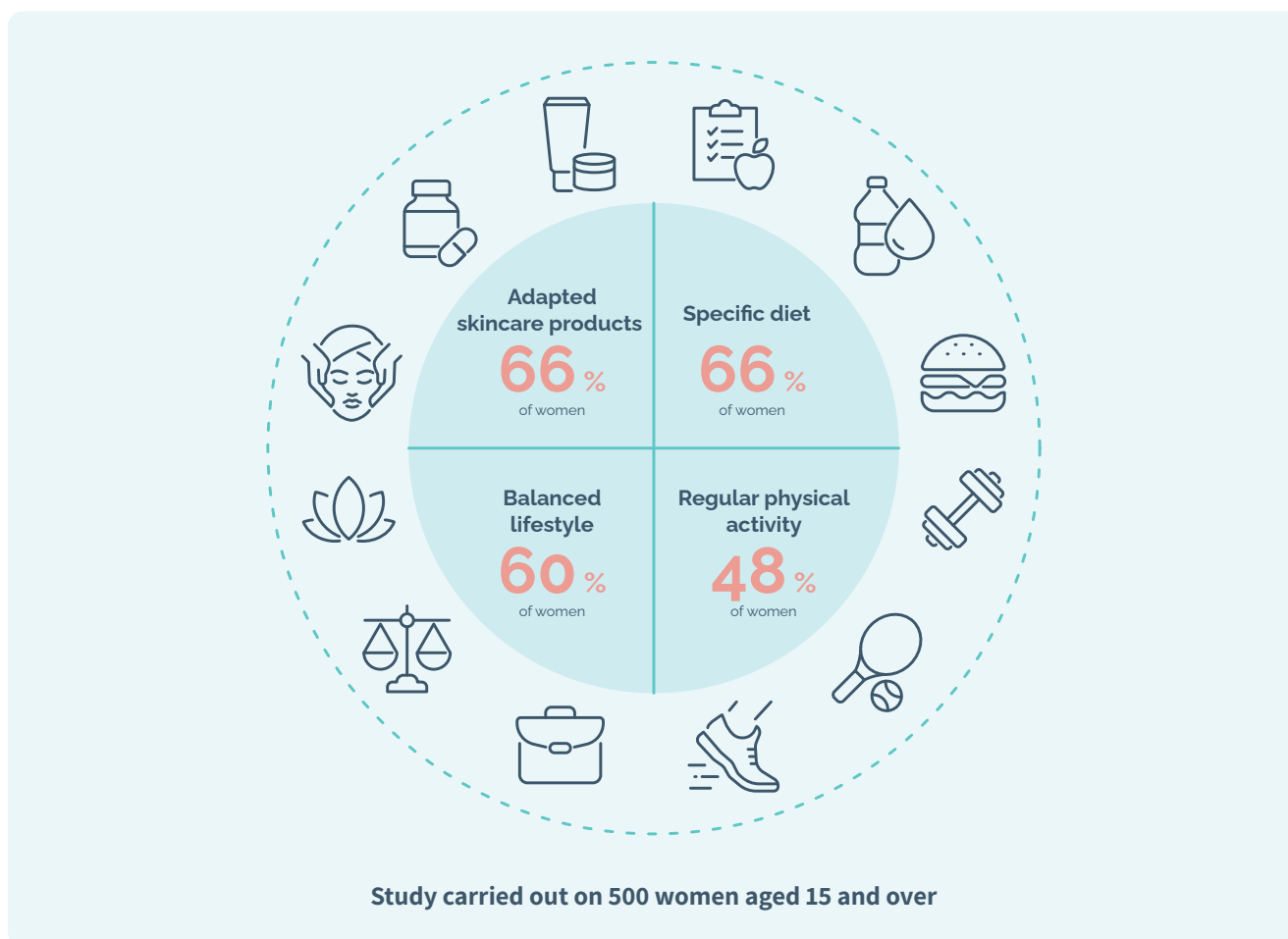
This approach, accompanied by the right skincare products, is based on several essential elements:

- **A balanced and appropriate diet** plays a significant role in improving skin health and reducing skin problems<sup>10</sup>.
- **Physical activity** promotes blood circulation and helps

to eliminate toxins, while also having a positive impact on mood<sup>11</sup>.

- **Stress management** is crucial, as chronic stress can lead to a variety of skin problems<sup>12</sup>.
- **An unpolluted environment** - clean air is essential for healthy skin.

In a nutshell, holistic beauty seeks a balance between these elements, promoting healthy, radiant skin. This is what a study<sup>13</sup>, carried out on 500 women aged 15 and over, set out to demonstrate the complementary nature of the actions presented below in the quest for a global, holistic approach to beauty.



Nutrition plays a fundamental role, linking beauty and well-being inseparably. **Nutricosmetics** is one of the pillars of this 360-degree vision of holistic beauty.

10- Chiu, A et al, The Journal of Clinical and Aesthetic Dermatology, 2009  
11- Miller, A. Journal of Sports Medicine, 2019  
12- Hernández-Pérez, M et al, Clinical, Cosmetic and Investigational Dermatology, 2020  
13- Souali M. La beauté holistique en France, IFOP, 2021

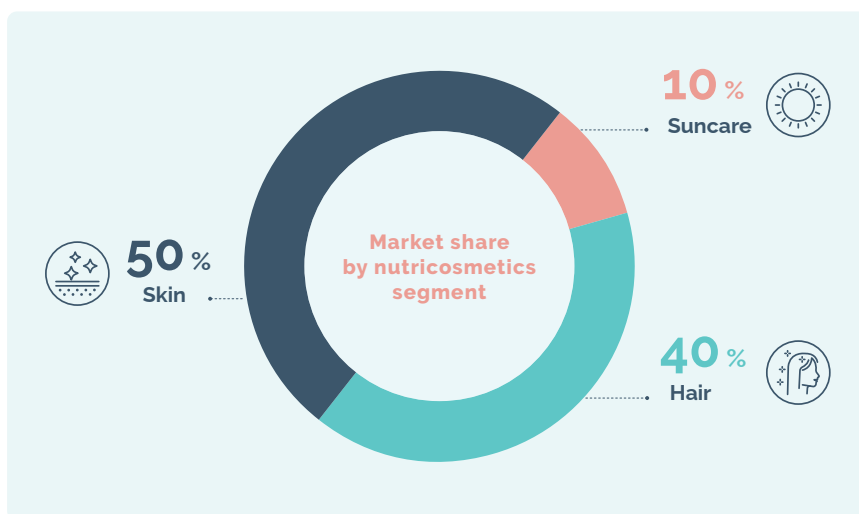
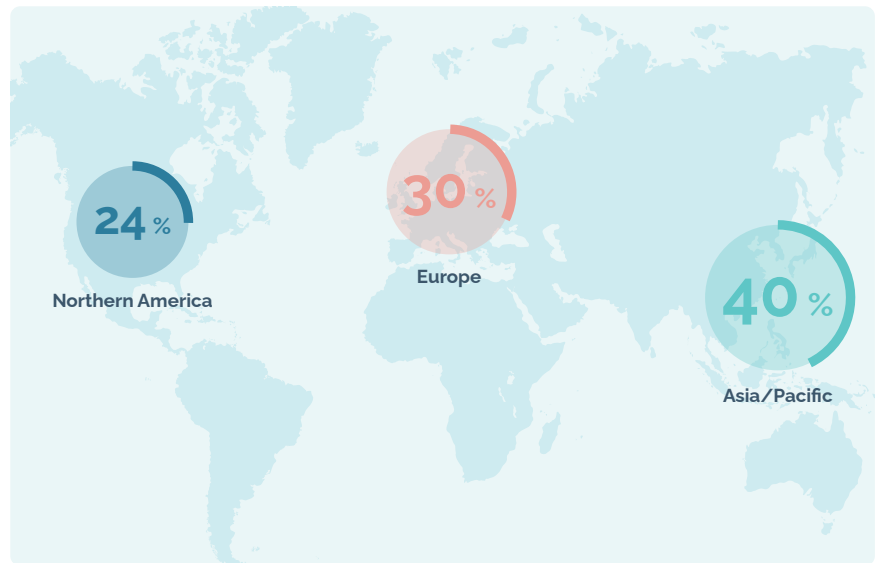
## Nutricosmetics, one of the foundations of the holistic approach

Nutricosmetics represents a new dimension in beauty and well-being, based on nutrition to improve the appearance of skin, hair and nails. By acting from the inside out, by providing macro- and micro-nutrients from food and food supplements, nutricosmetics helps to improve the functions and structures of the skin and appendages, which are damaged by cellular ageing.

### Nutricosmetics market and segmentation

The market emerged in Asia, and more specifically in **Japan**, where the culture of holistic beauty is deeply rooted. Until 2010, Japan was the most dynamic market.

The global nutricosmetics market is expected to reach **€9 billion** by 2026, with annual growth of around **5,5 %**<sup>14</sup>. It currently accounts for **10 %** of the food supplements market<sup>15</sup>.



The nutricosmetics market can be segmented into three main categories<sup>16</sup>:

- **Skin**, with two key benefits: hydration and anti-ageing.
- **Hair**, with promises targeting vitality, reduced hair loss and shine.
- **Suncare**, including solutions to prepare the skin for exposure to the sun, enhance tanning and protect against the harmful effects of UV rays.

14- Global nutricosmetic Market, WiseGuyReports, 2019  
 15- Webinaire Les tendances Vitafoods 2024 - Actifs x Nutrikeo  
 16- Estimation Nutrikéo

## Current nutricosmetics trends

Already a well-established player in the dietary supplements market, the nutricosmetics segment is constantly reinventing itself through new emerging trends: **personalisation, naturalness, transparency, etc.** These aspects are similar to those of the topical cosmetics market, to such an extent that their complementarity today is a source of innovation in nutricosmetics.



The **"In & Out"** concept combines the use of topical cosmetic skincare products, targeting the outer layers of the skin, with nutricosmetic solutions targeting an internal action, for a beauty synergy and better results in the long-term.






Likewise, **"clean beauty"** with its sustainable nature, is a key trend in nutricosmetics. It reflects growing consumer demand for natural, sustainable and transparent products, free from controversial substances, with health and environmentally-friendly formulations.

Combined with innovative and fun galenic forms such as shots or gummies, inspired by **'foodification'**, the consumption of food supplements is becoming more popular, enjoyable and accessible.

These trends reflect changing consumer expectations in terms of well-being and inner beauty, combining effectiveness and pleasure. These consumers are increasingly aware that caring for their skin requires a high quality supply of nutrients, which is just as important, if not even more, than appropriate topical cosmetic care. They recognise the important role that the quality of their skin plays in their overall well-being and in their quest to well-ageing.



# The key ingredients

Ingredients	Demonstrated benefits <sup>17,18,19,20,21,22</sup>	Action
<p><b>Vitamins</b> A, C, E, Beta-caroten, B8, B9</p>	<ul style="list-style-type: none"> <li>• Collagen synthesis</li> <li>• Acceleration of wound healing</li> <li>• Cellular protection</li> <li>• Reduction of UV damage</li> <li>• Antioxidant activity</li> <li>• Hair strengthening and loss</li> <li>• Nail growth</li> </ul>	
<p><b>Oligoelements</b> Se, Zn, Cu, Si</p>	<ul style="list-style-type: none"> <li>• Reduction of oxidative stress</li> <li>• Antioxidant activity</li> <li>• Acceleration of wound healing</li> <li>• Hair strengthening and loss</li> <li>• Nail growth</li> </ul>	
<p><b>Polyphenols</b> (flavonoids)</p>	<ul style="list-style-type: none"> <li>• Reduction of cellular oxidation</li> <li>• Cellular protection from ROS*</li> <li>• Hair growth</li> <li>• Increase of keratin level</li> </ul>	
<p><b>Omega 3</b> (EPA/DHA)</p>	<ul style="list-style-type: none"> <li>• Reduction of inflammation</li> <li>• Wound healing processus</li> <li>• Hydration and skin strengthening</li> <li>• Hair strengthening and loss</li> </ul>	
<p><b>Ceramides</b></p>	<ul style="list-style-type: none"> <li>• Protection of the Epidermis</li> <li>• Reduction of UV damage</li> <li>• Acceleration of wound healing</li> <li>• Hair strengthening and loss</li> <li>• Reduction of scalp sebum production</li> </ul>	

\* Espèces réactives de l'oxygène

17- Pérez-Sánchez et al, Nutrients 2018

18- Bukhari et al, International Journal of Biological Macromolecules, 2018




19- Dini I. Laneri S., Phytotherapy Research, 2019

20- Dudonné S. et al, International Journal of Cosmetic Science, 2024

21- Hwang H. et al, International Journal of Cancer, 2006

22- Tenore GC et al, Journal of Medicinal Food, 2018



<p><b>Biotics</b>  <b>Probiotics (lactic acid bacteria)</b>  <b>Prebiotics (galacto-oligosaccharides)</b></p>	<ul style="list-style-type: none"> <li>• Skin hydration</li> <li>• Collagen and hyaluronic acid production</li> <li>• Skin elasticity</li> </ul>	
<p><b>Collagen (peptides)</b></p>	<ul style="list-style-type: none"> <li>• Skin hydration</li> <li>• GAGS and Collagen production</li> <li>• Dermis thickness, density and firmness</li> <li>• Acceleration of wound healing</li> <li>• Hair strengthening and dryness improvement</li> <li>• Nail growth</li> </ul>	
<p><b>GAGs (hyaluronic acid)</b></p>	<ul style="list-style-type: none"> <li>• Skin hydration</li> <li>• Collagen and elastin production</li> <li>• Improvement of hair and nails dryness and fragility<sup>23</sup></li> </ul>	

## Collagen: a key protein for skin beauty

Collagen is the most abundant protein in humans and animals, accounting for 25-35% of all proteins. It plays an essential role in the structure of several tissues, such as skin and bone, ensuring their rigidity and integrity<sup>24</sup>.

Collagen production naturally decreases with age<sup>25</sup>. However, it is possible to limit or slow this phenomenon by enriching your diet with foods rich in the amino acids which are essential for collagen synthesis (glycine and proline, for example), or foods rich in collagen (bone broth, fish soup, etc.). But it can be difficult to eat this type of food regularly, which is why collagen supplementation via food supplements is a solution.

Among the various types of collagens, Type I and II are the most abundant. Type I collagen is extracted from bones and skin from bovine, porcine and marine sources, as well as from eggshell membranes. The second is derived from cartilage from avian, bovine, porcine and marine

sources. These two types of collagens may or may not be hydrolysed<sup>26</sup>. Hydrolysed Type I and II collagens are beneficial to skin health, by promoting the production of collagen and macromolecules present in the extracellular matrix. Recent studies demonstrate the beneficial effects of collagen peptides on the intestinal microbiota<sup>27</sup>, revealing the holistic aspect of this ingredient.

As a reminder, there are no sources of plant collagen, as plants do not contain it. The molecule that makes plants rigid is cellulose, which unlike collagen is a carbohydrate and not a protein.

23- Pérez-Sánchez et al, *Nutrients*, 2018

24- Ricard-Blum S, *Cold Spring Harbor Perspectives in Biology*, 2011

25- Varani J et al, *The American Journal of Pathology*, 2006

26- Livre Blanc Abyss Ingrédients intitulé « Santé articulaire: quand il vaut mieux prévenir que guérir », 2024

27- Ren, B et al, *Current Opinion in Food Science*, 2024

# Cartidyss<sup>®</sup>, a science-backed-up ingredient for nutricosmetics



Well, what is Cartidyss<sup>®</sup>? Quite simply, much more than collagen peptides!

Cartidyss<sup>®</sup> is unique thanks to its composition. It naturally contains collagen peptides, the benefits of which are described above, but also glycosaminoglycans (GAGs) including chondroitin, glucosamine and hyaluronic acid.

GAGs in general, and chondroitin sulphate (CS) in particular, are essential components of the connective tissue extracellular matrix. They play a key role in many biological processes, such as regulating cell proliferation and differentiation

and controlling the inflammatory process. Clinical studies report beneficial effects of GAG supplementation on skin health, such as improved skin elasticity and thickness<sup>28</sup>.

Cartidyss<sup>®</sup> is obtained from local fishery by-products, more specifically skate cartilage (Raja SPP), using an enzymatic hydrolysis process to obtain highly assimilable constituents.

## Clinically proven skin benefits

A randomised, double-blind, placebo-controlled clinical trial demonstrates the benefits of Cartidyss<sup>®</sup> on the skin<sup>29</sup>: after 90 days of supplementation at only 500mg/day, Cartidyss<sup>®</sup> significantly reduces wrinkles (-25%) and smoothes skin texture, thanks to its effects on the deeper layers of the skin. Cartidyss<sup>®</sup> significantly improves the density (+38%), thickness (+10%) and hydration of the dermis. Cartidyss<sup>®</sup> also improves collagen structure.

## An explained mechanisms of action on the skin

Two mechanistic studies have highlighted the mechanisms contributing to the positive impact of Cartidyss<sup>®</sup> supplementation on the skin.

- The 1st study demonstrated the bioavailability of Cartidyss<sup>®</sup><sup>30</sup>. This study also demonstrated that Cartidyss<sup>®</sup> metabolites stimulate the synthesis of elastin (+40%) and hyaluronic acid (+5%), maintaining elasticity, firmness and deep hydration. In addition, Cartidyss<sup>®</sup> metabolites inhibit the enzymes responsible for collagen degradation, suggesting a protective action on the collagen matrix, helping to improve dermal density and limit the appearance of wrinkles.
- The 2nd study completes these data,<sup>31</sup> by showing that Cartidyss<sup>®</sup> metabolites accelerate the healing of fibroblasts (cells in the dermis) and stimulate the production of proteins with anti-inflammatory and immunomodulatory properties, as well as proteins likely to promote the hydration and stability of the extracellular matrix, thereby promoting skin healing and regeneration.

28- Pérez-Sánchez et al, Nutrients, 2018

29- Maia Campos et al, Molecules, 2021

30- Wauquier et al, Nutrients, 2022

31- Le Faouder et al, Biomedicines 2024

## A high satisfaction score and powerful beauty claims in nutricosmetics

In 2023, a user test of Cartidyss® at 500 mg/day on the beauty of hair and nails revealed **94 % positive opinions** after 3 months of supplementation and **a 70% recommendation** from participants. This user test, as well as the 2019 clinical study, led to beauty claims:



‘Cartidyss® visibly reduces wrinkles and plumps the skin’

‘Thanks to Cartidyss® supplementation, hair is less dull, less dry and less brittle.’

‘Cartidyss® reduces hair loss.’

‘After using Cartidyss®, nails are harder and less brittle.’

‘Cartidyss® improves facial skin tone.’

## To put it in a nutshell

Cartidyss® is composed of collagen peptides and GAGs with positive effects on the skin at only 500 mg/day, proven bioavailability, a clearly explained mechanisms of action on the skin, a high satisfaction rate and beauty claims for both skin, hair and nails.





## Abyss Ingredients

---

Abyss Ingredients is a French company with a human size, whose mission is to develop and market innovative natural marine ingredients. We combine local upcycling economy, sustainability and science to address health issues through nutrition.

Since 2019, we have been heavily investing in Research & Development in order to demonstrate the efficacy of our ingredients and better understand their mechanisms of action. We are also developing innovative new ingredients to meet consumer expectations.

**Because ageing well is beautiful!**



---

[contact@abyss-ingredients.com](mailto:contact@abyss-ingredients.com)  
[www.abyss-ingredients.com](http://www.abyss-ingredients.com)