

Keratin and Innovation

Kerline's journey from research to market



Giovanna Sotgiu

kerline
BIO DERIVED ACTIVE INGREDIENTS

Materiali da proteine

Milano 28 ottobre 2025

About us

- **innovative enterprise**
- founded in **2017**
- **spin-off** of the National Research Council
- built on over **20 years** of **scientific research**



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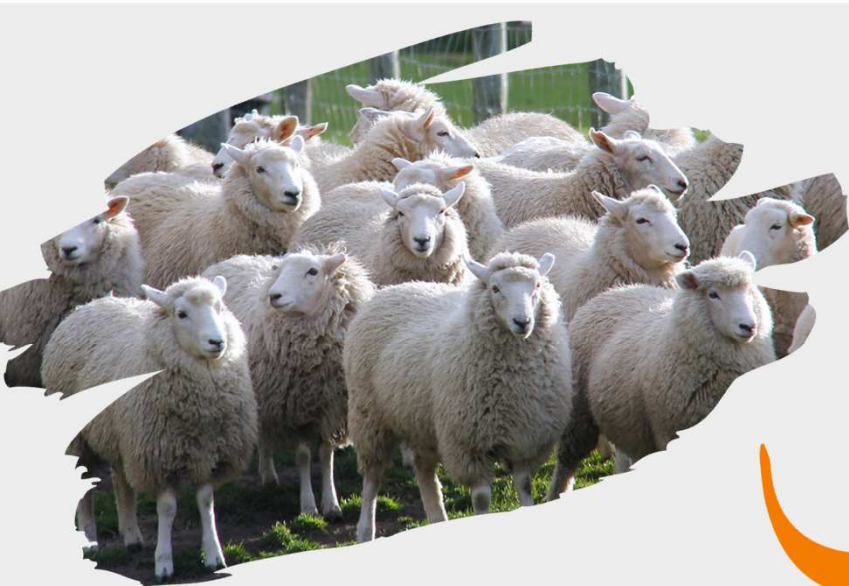
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Production and sale of **keratin** :

- **Natural**
- **Undegraded** and
- **Water soluble**

Kerline has set up a method for the extraction of **high molecular weight keratin** similar to that found in **epidermis, nails** and **hair**

Mission

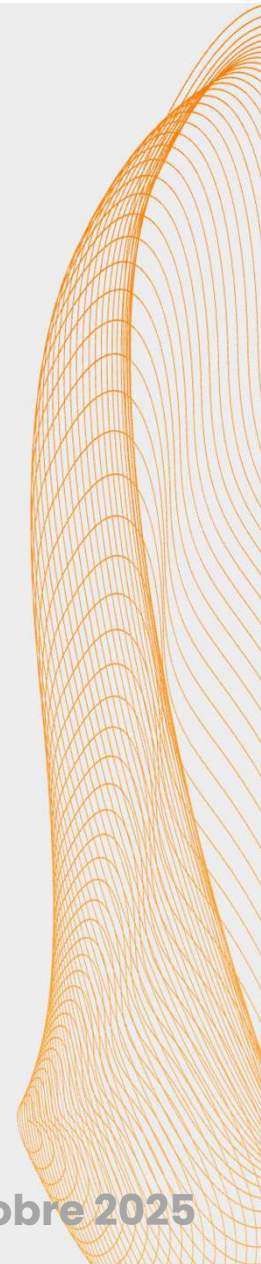


Kerline extracts its **keratin** only from
certified raw wool and totally
cruelty free shear

Circular Economy

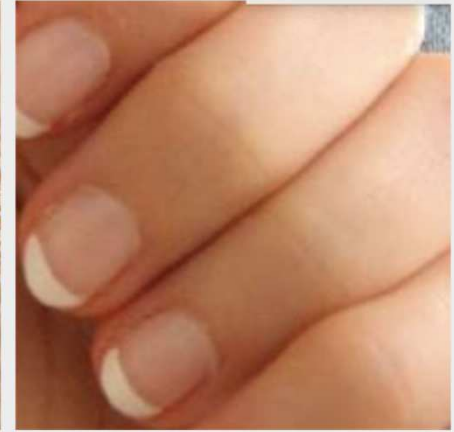
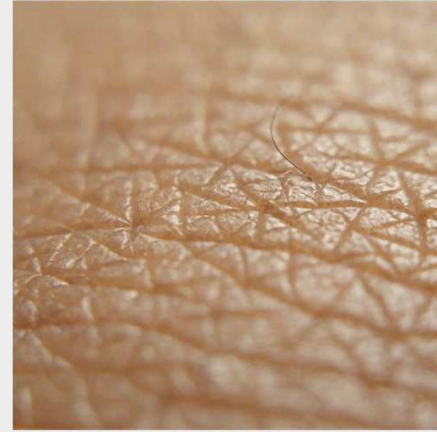
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Keratin

- A family of **structural proteins**
- Abundant in the outer layer of **human skin**, in **hair**, and in **nails**
- **Rich** in the amino acid **cysteine**
- Forms **tough, insoluble structures**



HMW Keratin kerline



1.1% HMW Keratin Solution
4% HMW Keratin Solution
or
HMW Keratin powder

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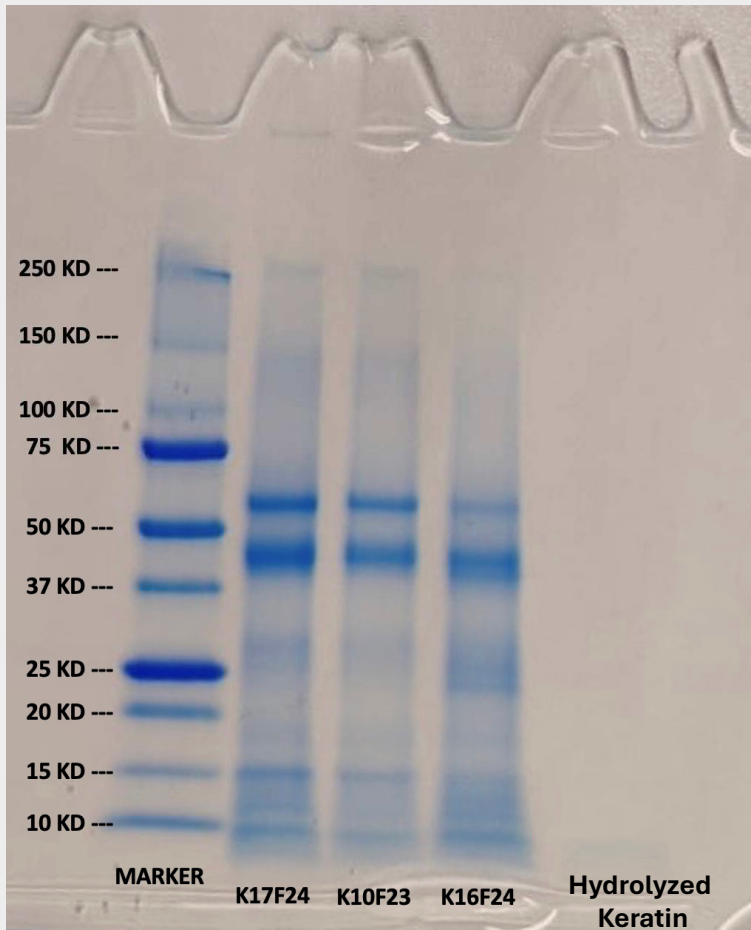
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HMW Keratin kerline



- **Natural emulsifier**
- **Filming properties**
- **Bioactive**
- **Water soluble**
- **Carrier of active ingredients**
- **Antiaging**
- **Antioxidant**
- **Excellent processability**

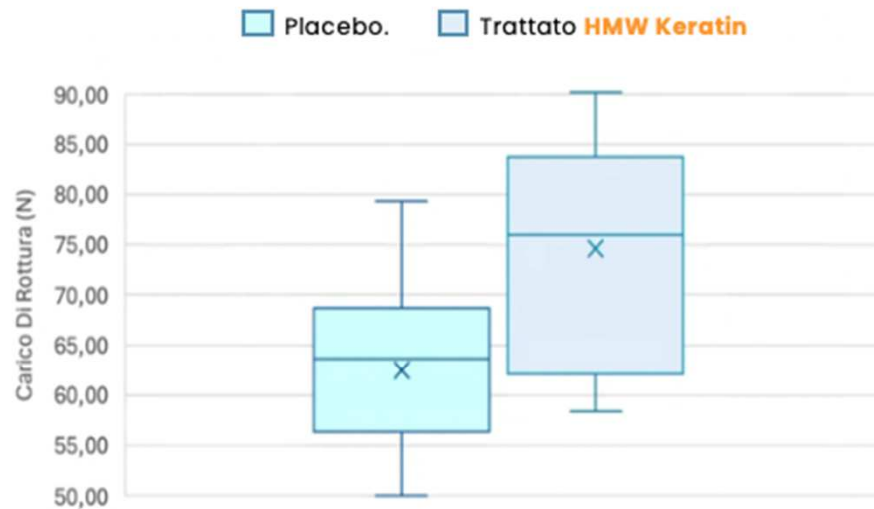
HMW Keratin kerline



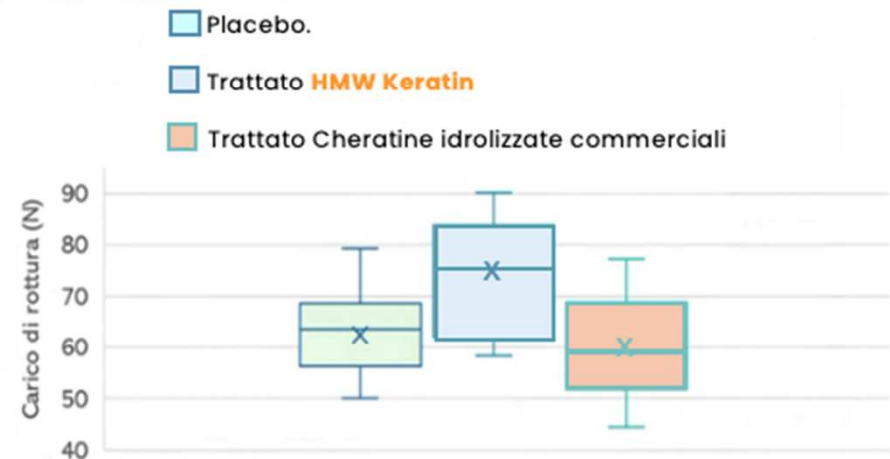
- High molecular weight (**50 kDa**): structure similar to **native keratin**
- **Biocompatibility** and **biodegradability**: safety for skin and **the environment**
- Sustainable manufacturing process: **environmentally friendly methods** without the use of **organic solvents**.

HMW Keratin kerline vs commercial hydrolized keratins

Confronto carico di rottura capelli: Placebo vs **HMW Keratin**

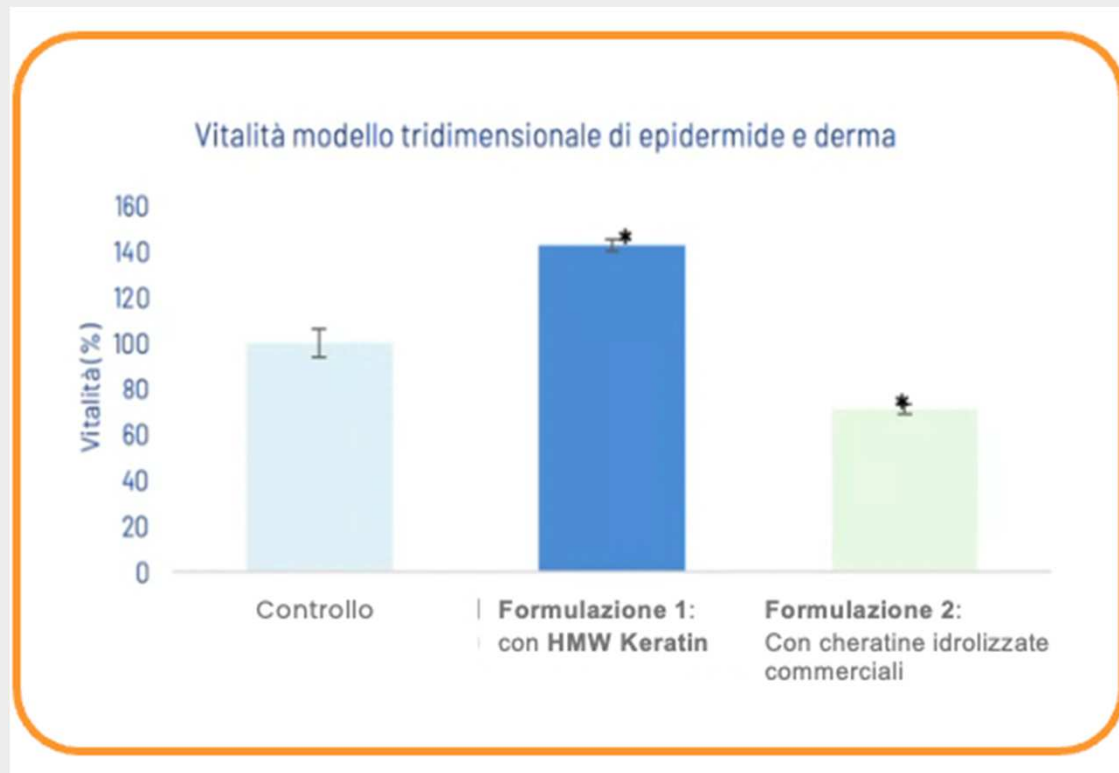


Confronto carico di rottura capelli: Cheratine idrolizzate commerciali vs **HMW Keratin**





HMW Keratin kerline vs commercial hydrolyzed keratins



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HMW Keratin kerline

Skin regeneration effect



before



after 24 h

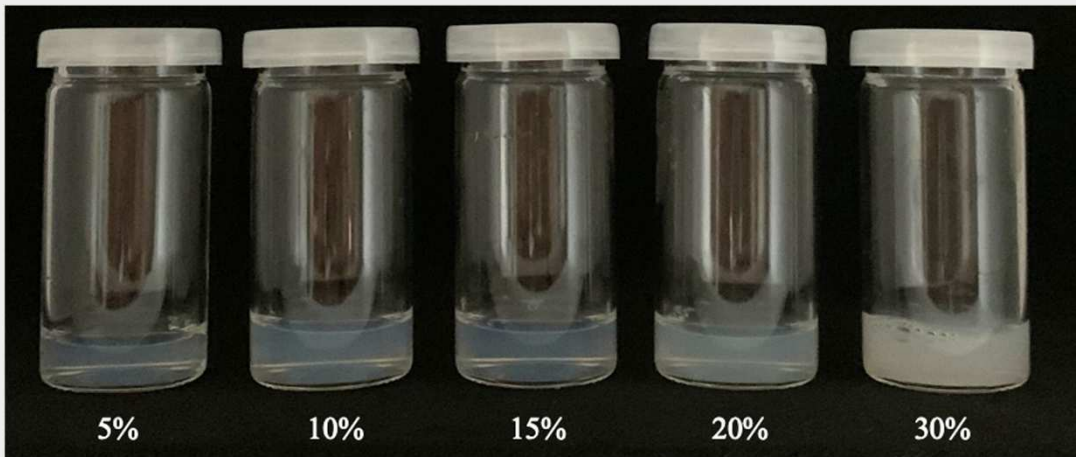
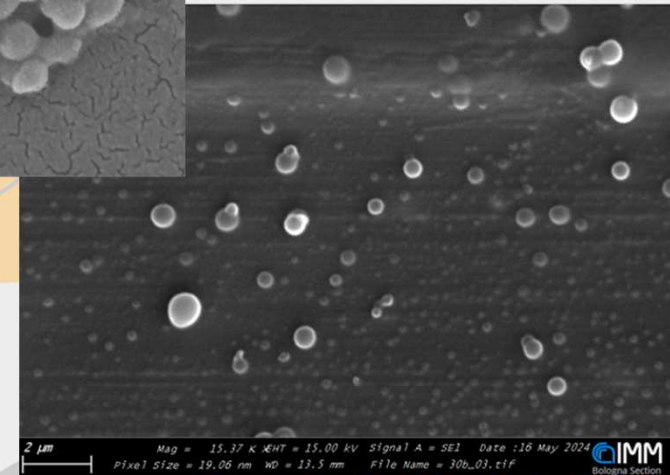
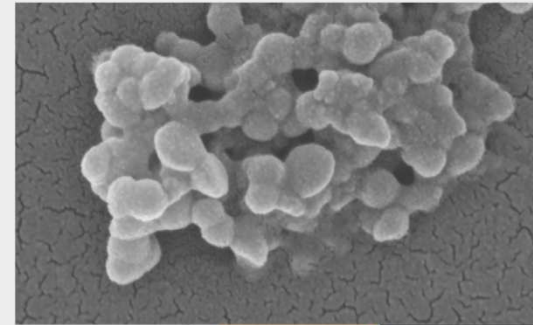


after 48 h

Keratin-based technological solutions

Micro/Nanoparticles

- Active ingredients encapsulation
 - Carrier of active ingredients



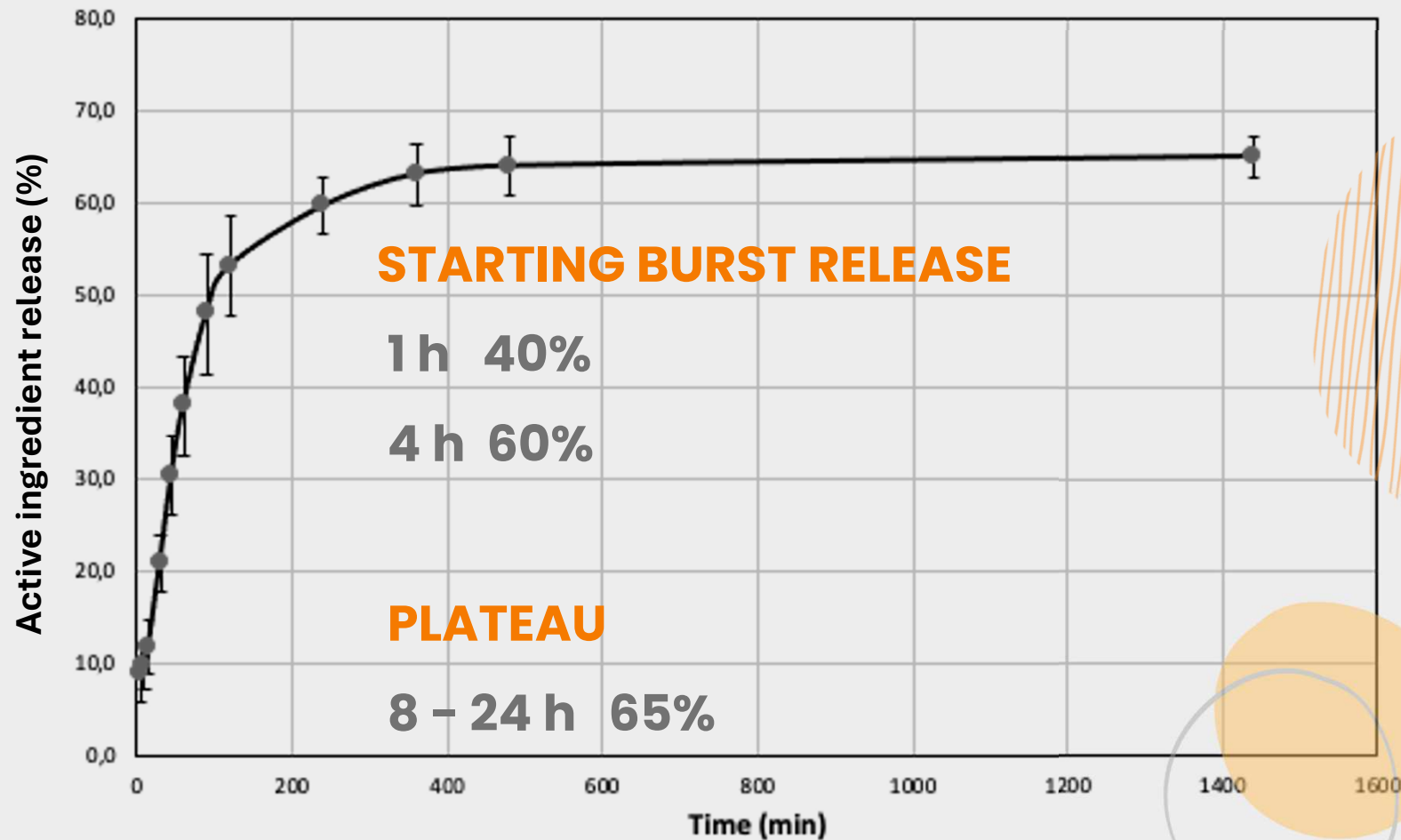
- High loading
 - Controlled size

Patent

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Drug release studies



Sustained release

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MICOSKer

prodotti innovativi
a base di **cheratina**
per il trattamento topico
delle **micosi** cutanee

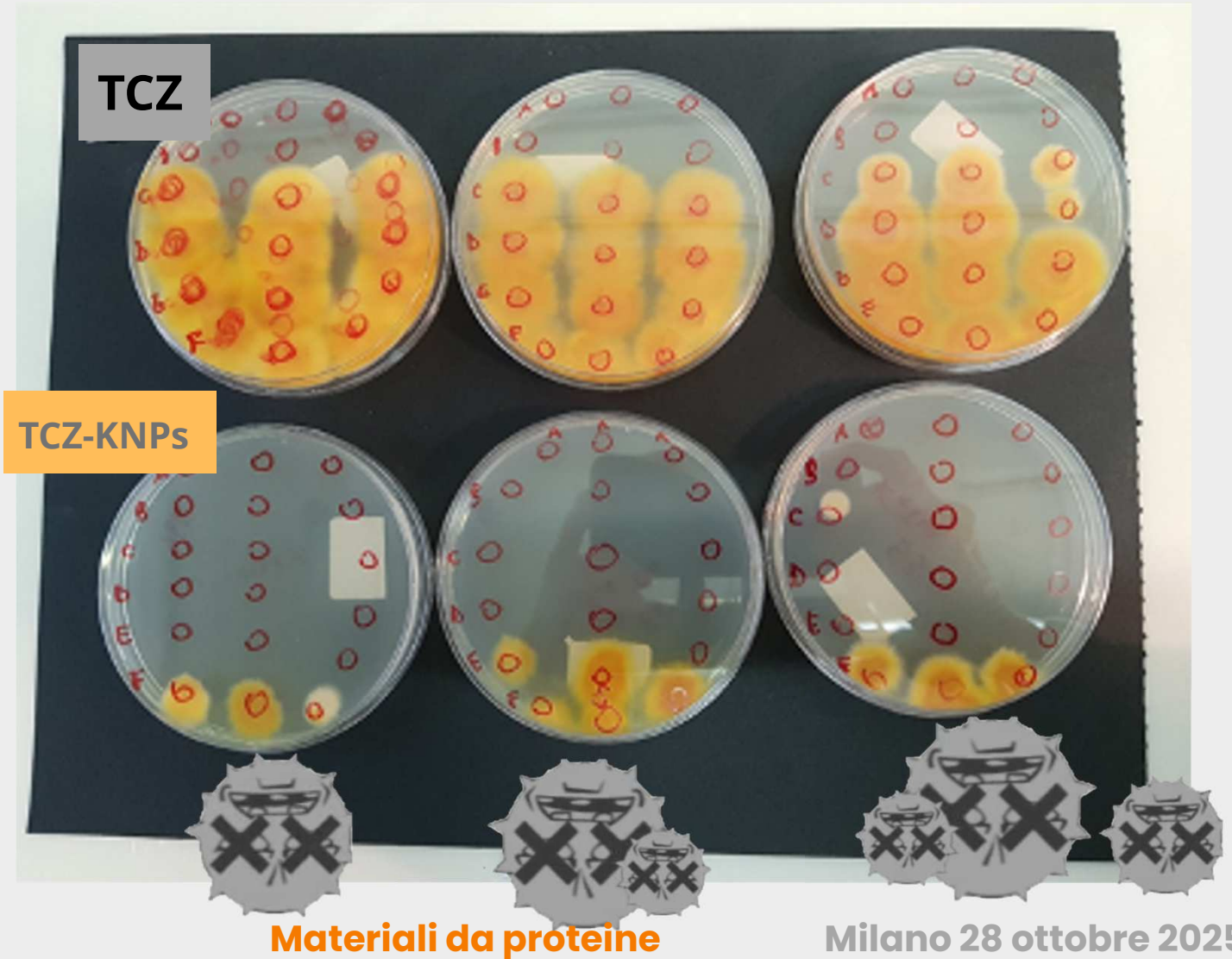


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In vitro studies

Thioconazole-loaded
Keratin nanoparticles
TCZ-KNPs have a
**prolonged effect over
time** and **greater
efficacy** than free
thioconazole against
M. canis



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Preliminary results of MICOSKer nanoparticles

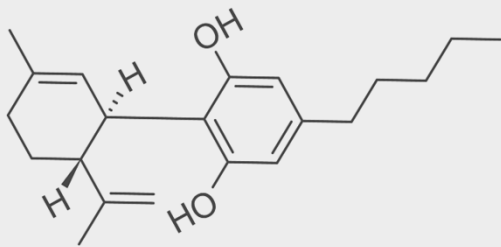


Fungal Skin infection
in a volunteer

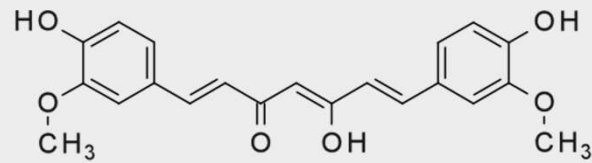
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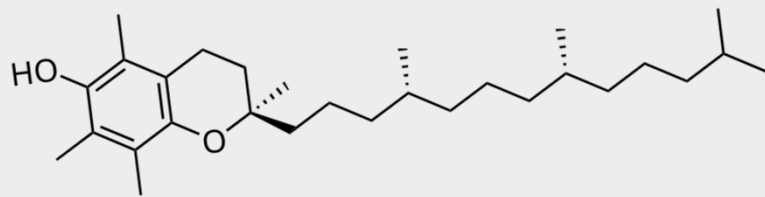
Micro/nanoparticles for API delivery



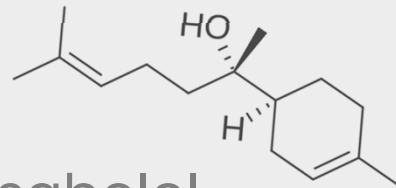
- Cannabidiol



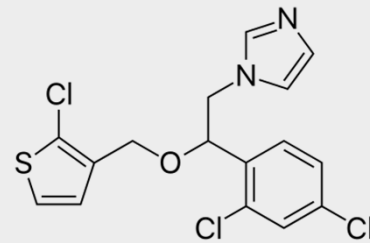
- Curcumin



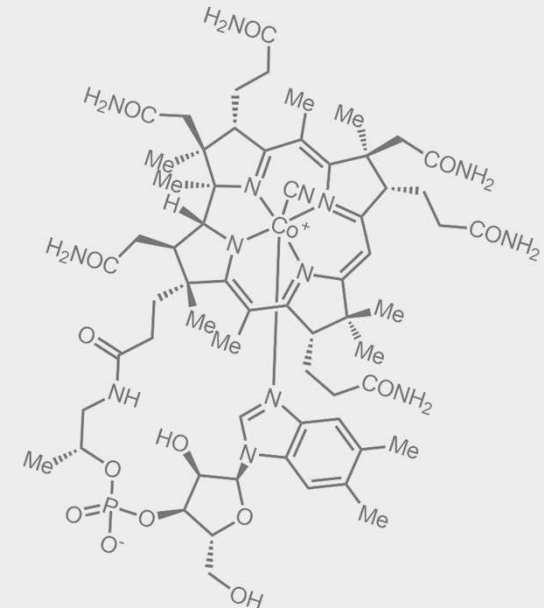
- Tocopherol



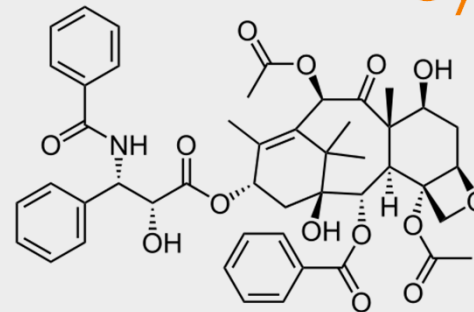
- Bisabolol



- Tioconazole



- Cyanocobalamin

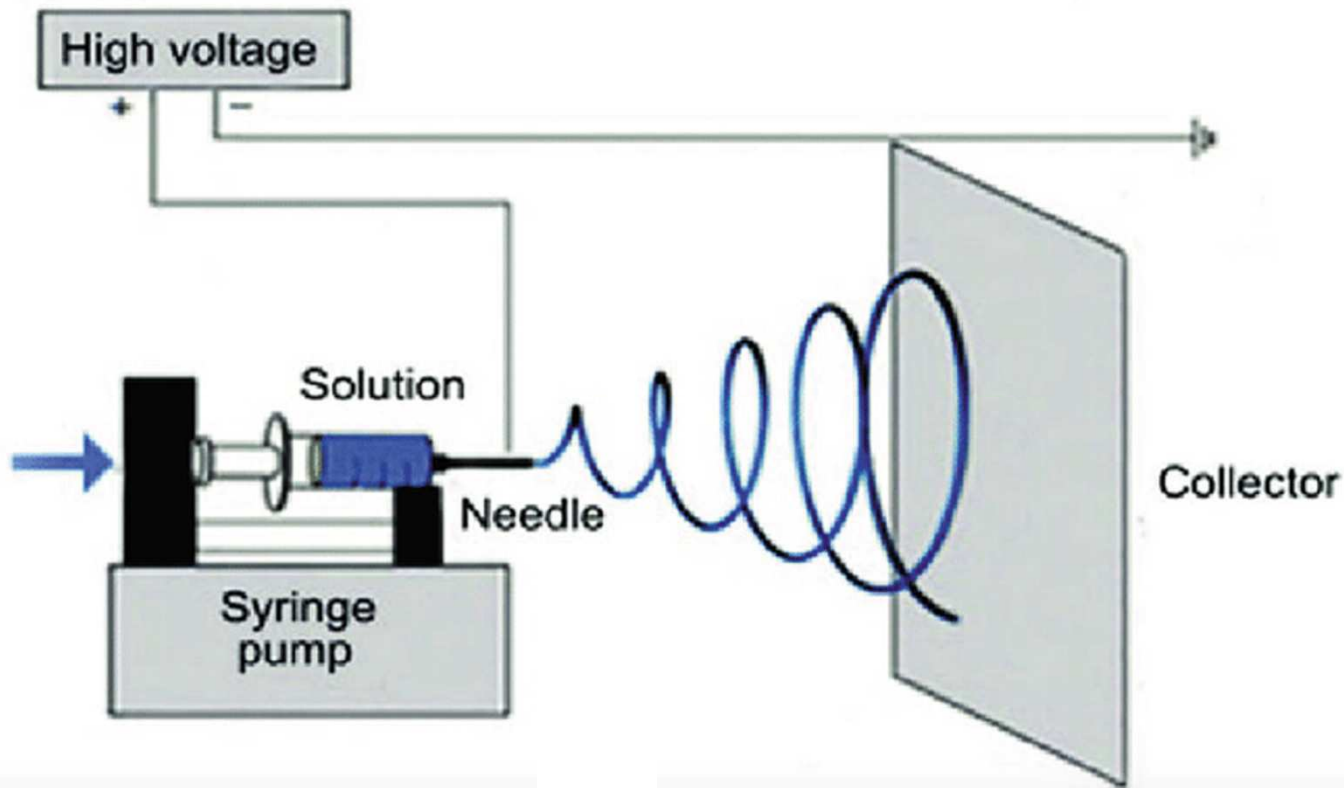


- Paclitaxel

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Keratin-based technological solutions



Electrospun
nanofibers

Keratin-based technological solutions



**Electrospun
nanofibers**

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Electrospun nanofibers

- Highly biocompatible
- Completely bioresorbable
- Highly skin adhesion
- Carrier of active ingredients



patent

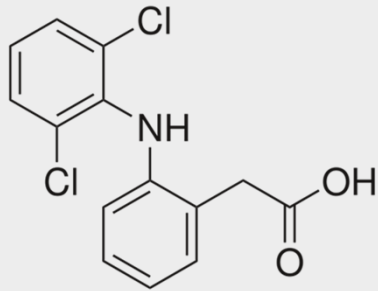
Electrospun nanofibers



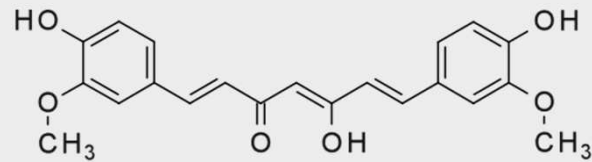
- Highly skin adhesion

patent

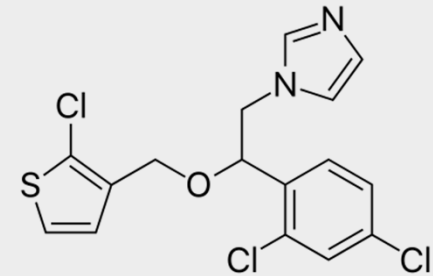
Nanofibers for API delivery



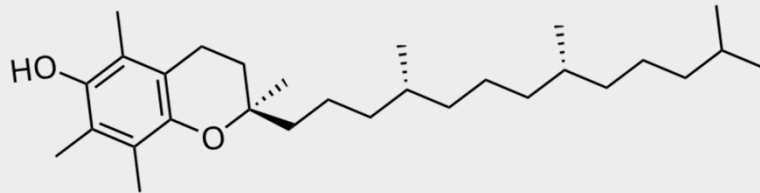
- Diclofenac



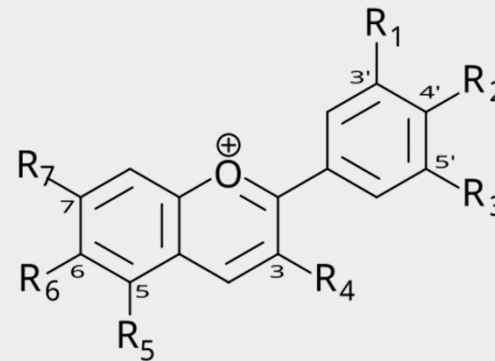
- Curcumin



- Tioconazole



- Tocopherol



- Anthocyanins



- **Product innovation:** Integration of keratin with active ingredients for premium formulations
- **Customization:** Ability to develop tailor-made solutions (loading of active ingredients, formats, etc.)
- **Sustainability:** Meeting the growing demand for natural and environmentally friendly ingredients.

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