Skin aging 皮肤衰老

- As the years go by, the skin loses its tonicity and elasticity leading to aging sign appearance: fine lines, expressive wrinkles...随着年龄的增长，皮肤也会逐渐失去弹性，从而出现衰老现象：细纹，皱纹……

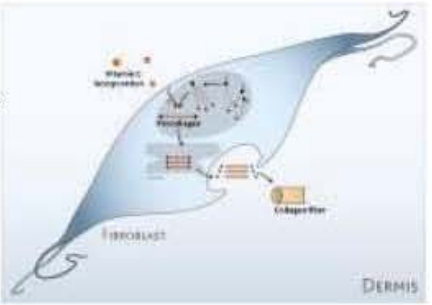
- The alterations of the skin biomechanical properties are mainly due to :
  主要是由于以下皮肤的生物生理特性的改变：

  - **A decrease of collagen and elastin synthesis** by fibroblasts
    纤维原细胞中胶原质和弹性蛋白的合成的减少

  - An increase of the activity of degradation systems, such as the **MetalloProteinases** (MMPs), responsible for the degradation of the matrix components
    降解体系活性的增加，例如基质金属蛋白酶，主要作用是降解一些基质成分

  - **A decrease of the antioxidant protective system**, generating oxidative stress and cellular damages抗氧化保护体系的减少，引发氧化压力和细胞的损伤

Vitamin C & collagen synthesis
维他命C & 胶原质的合成



• Collagen is a fibrous structural proteins synthesized by fibroblast. It is the major component of the extracellular matrix.胶原质是一种通过由纤维原细胞合成的纤维状结构蛋白质。它是细胞外基质的主要成分。

• The vitamin C is a co-factor of the collagen synthesis reaction (limiting factor).
维他命C是胶原质合成反应中的辅助因素之一（限制因素）

• A study (Dumas & al.*) has proved that:从一种研究证明(Dumas & al.*)所知：

- Vitamin C incorporation in fibroblasts decreases with age (figure 1)

在纤维原细胞中的维他命C会随着年龄增长而减少（如图1所示）

- Stimulation of collagen synthesis induced by vitamin C decreases with age (figure 2)

由于维他命C会随着年龄增长而减少，胶原质的合成也会随着减少

Figure 1

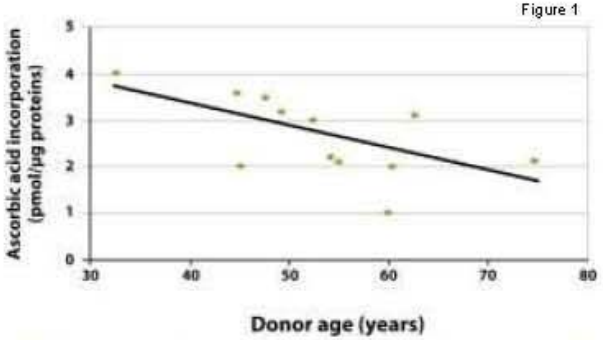
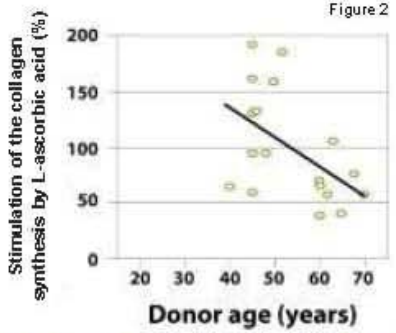


Figure 2



→ The age-related decrease of collagen synthesis is induced by a decrease of vitamin C incorporation in fibroblasts
老年性的胶原质合成的减少，是由于在纤维原细胞中维他命C的减少所引起的。

** DUMAS M, CHAUDAGNE C, BONTE F, MEYBECK A. (1996) Age-related response of human dermal fibroblasts to L-ascorbic acid : study of type I and II collagen synthesis, Life sciences, p.1127-1132*

Ellagi-C

• Ellagi-C is an Ecocert approved ingredient extracted from the bark of the African tree *Anogeissus leiocarpus.*

Ellagi-C是由Ecocert认证的活性成分，萃取于一种非洲树“光滑果榆绿木”的树皮

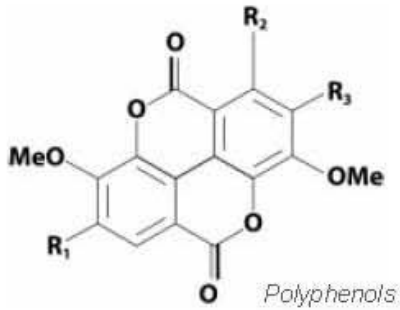
• *Anogeissus leiocarpus*, also called «African birch », is traditionally used for its therapeutic properties (antibacterial activities, treatment against yellow fever...).

光滑果榆绿木也叫“非洲桦树”，是一种传统的药用植物（具有抗菌作用，用来治疗黄热病）。

• Ellagi-C contains two polyphenols as biological markers:

在生物基因标记中，Ellagi-C含有两种多酚：

- **3,3'-di-O-methylellagic acid** (R_1=OMe ; R_2=R_3=OH)
  3,3'-O-二甲基鞣花酸 (R1=OMe ; R2=R3=OH)
- **Ellagic acid** (R_1=R_3=OH; R_2=OH)
  鞣花酸(R1=R3=OH; R2=OH)

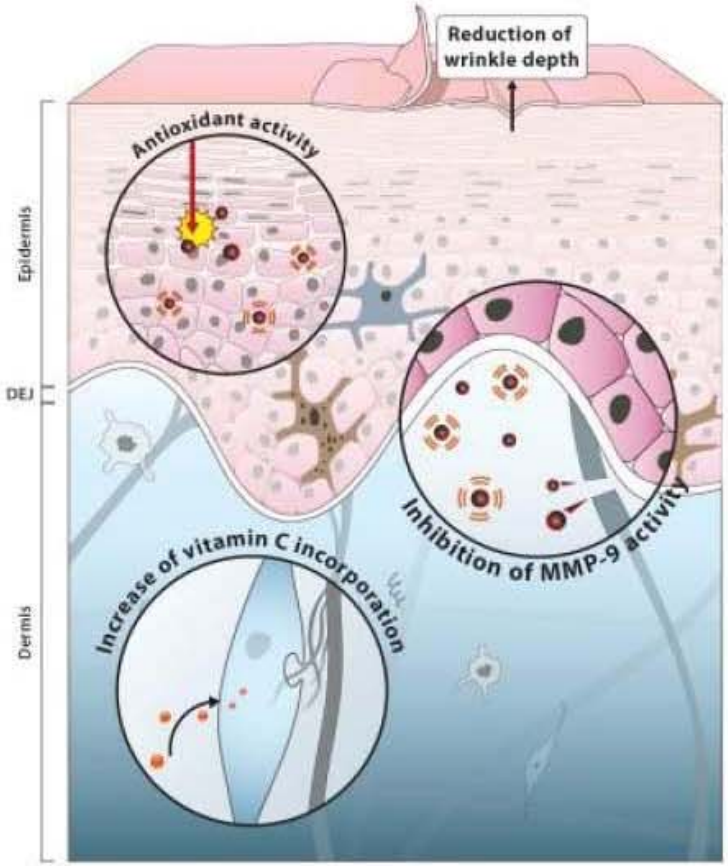


Polyphenols

• Thanks to its unique composition, Ellagi-C smoothes wrinkles and helps protect skin's youthfulness.

由于Eggi-C本身特有的成分，它能够消除皱纹和有助于保持皮肤年轻。

Mechanism of action作用机理



Three complementary activities to protect skin's youthfulness : 三种协同活性来保持皮肤年轻：

Antioxidant activity – Epidermis
抗氧化活性 – 表皮层
Ellagi-C is a potent antioxidant that limits the formation of Reactive Oxygen Species (ROS) to prevent oxidative stress and fight aging.
Ellagi-C是一种有效的抗氧化剂，能通过抑制活性氧（ROS）的形成，从而达到阻止氧化压力和对抗衰老。

Anti-MMPs activities - Dermo-epidermal junction
抑制MMPs活性 – 真皮表皮间连接
Ellagi-C inhibits MMP-2 and MMP-9 activities. These enzymes being responsible for collagen IV degradation mainly localized in the DEJ, Ellagi-C preserves the integrity of the DEJ .
Ellagi-C能抑制MMP-2和MMP-9活性。在DEJ这一局部地方，这些酶会导致四型胶原蛋白降解。Ellagi-C就能保护DEJ完整性。

Increase of vitamin C incorporation in fibroblasts – Dermis
增加在纤维原细胞中的维他命C - 真皮层
Ellagi-C, by increasing vitamin C incorporation in fibroblasts, helps to stimulates collagen synthesis.
通过增加纤维原细胞中的维他命C，Ellagi-C有助于促进胶原质合成。

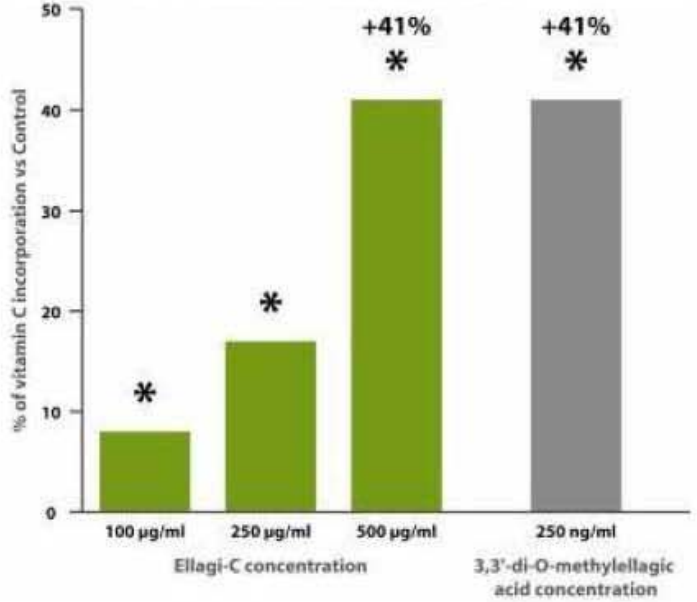
Stimulation of vitamin C incorporation – *In vitro* test

促进维他命C合成 – 体外测试

Protocol

Human fibroblasts were treated with Ellagi-C at different concentrations or 250 ng/ml of 3,3'-di-O-methylellagic acid and incubated during 48h. After adding 100µL of C14 ascorbic acid solution and a 4h-incubation, radioactivity was measured by scintillation.

人体纤维原细胞用不同浓度的Ellagi-C或250 ng/ml的3,3'-O-二甲基鞣花酸处理，并经过48小时培养。添加100µLC14抗坏血酸维生素C溶液后并经过4小时培养，通过闪烁现象来测试放射能力。



Ellagi-C significantly increases vitamin C incorporation into fibroblasts : + 41%

Ellagi-C明显地增加维他命C融入到纤维原细胞：+41%

By enhancing vitamin incorporation, Ellagi-C helps stimulate collagen synthesis

通过提高维他命融入，Ellagi-C有助于促进胶原质合成

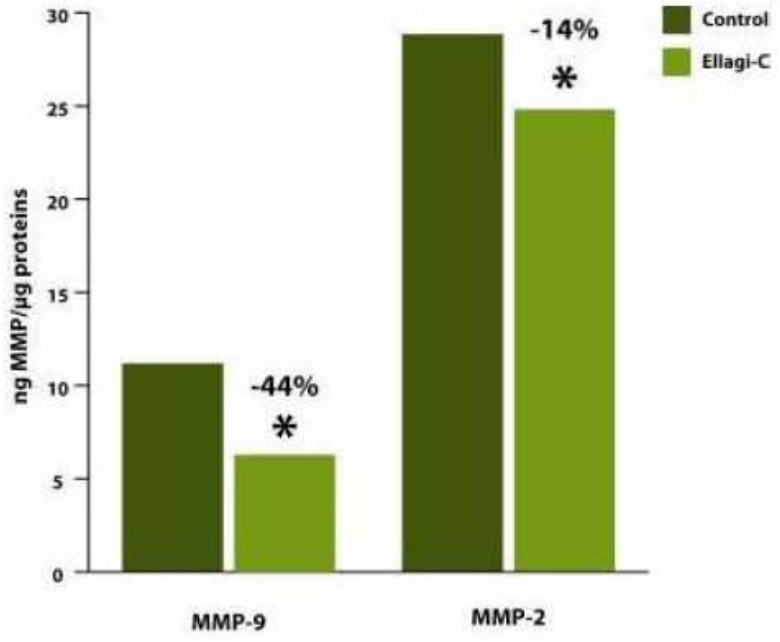
The biological activity is mainly due to Ellagi-C richness in 3,3'-di-O-methylellagic acid

这种生物活性主要是由于Ellagi-C含有丰富的3,3'-O-二甲基鞣花酸

Anti-MMPs properties– *In vitro* test
抗基质金属蛋白酶性 – 体外测试

Protocol

Human keratinocytes were treated with 100 µg/ml Ellagi-C during 48h and incubated with a pro-urokinase. MMPs cut specifically the pro-urokinase into urokinase, leading to a coloration measured at 450 nm. MMPs activity was assessed through the apparition of the colored urokinase using a spectrophotometer.人体角化细胞用100 µg/ml Ellagi-C并经过48小时和前尿激酶一起培养。基质金属蛋白酶明确地将前尿激酶切成尿激酶，变成一个规范的450nm的染色。通过使用分光光度计测试尿激酶的颜色度来评估基质金属蛋白酶活性。



Ellagi-C significantly inhibits the MMP-2 and MMP-9 activities

Ellagi-C明显地抑制MMP-2和MMP-9的活性

These enzyme are responsible for the degradation of collagen IV, specifically localized on the dermo-epidermal junction

这些酶能够降解在表皮-真皮层连接中的四型胶原蛋白。

By inhibiting these two enzymes, Ellagi-C protects the dermo-epidermal junction

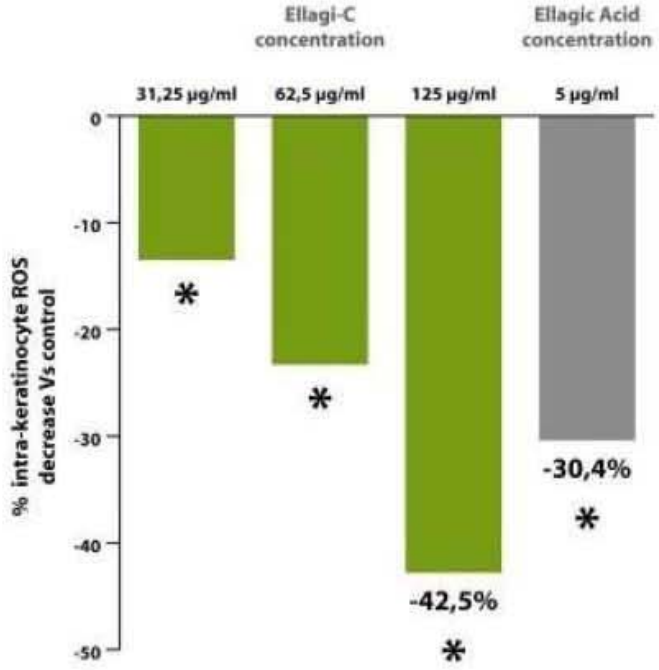
通过抑制这两种酶，Ellagi-C保护表皮-真皮层连接

Antioxidant activity – *In vitro* test
抗氧化剂活性 – 体外测试

Protocol

Human keratinocytes were treated with a probe emitting fluorescence at 529 nm when oxidized. The cells were then treated with Ellagi-C at different concentrations or Ellagic acid at 5µg/ml and subject to a stress (H2O2). The quantity of Reactive Oxygen Species (ROS) formed in the keratinocytes was measured by a spectrophotometer.

人体角化细胞用放射性荧光剂处理达到529nm并氧化。然后该细胞再用不同浓度的Ellagi-C或者5µg/ml鞣花酸处理并受到压力（H2O2).通过分光光度计来测量在角化细胞中所形成的活性氧数量。



Ellagi-C is a potent antioxidant that significantly decreases intracellular ROS formation to prevent aging

Ellagi-C是一种有效的抗氧化剂，能明显地减少细胞内的活性氧形成来防止衰老。

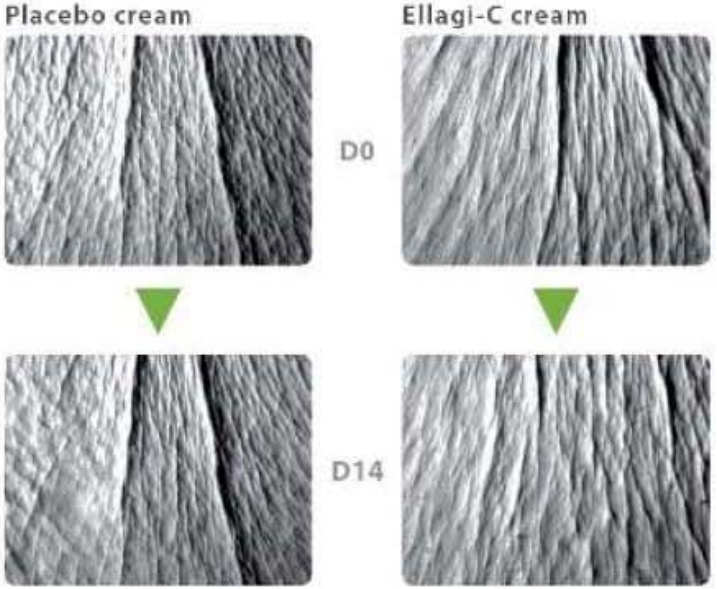
The biological activity is mainly due to Ellagi-C richness in ellagic acid

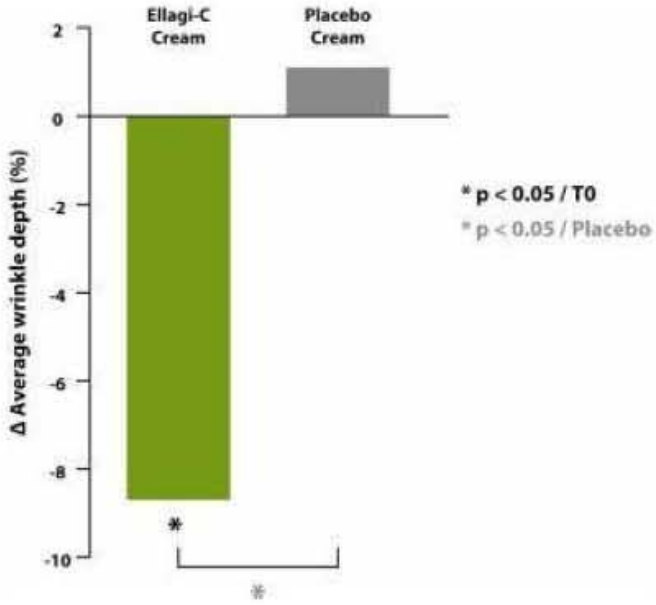
这生物活性主要是由于Ellagi-C含有丰富的鞣花酸。

Decrease of wrinkle depth – *In vivo* test
减少皱纹深度 – 体内测试

Protocol

A panel (19 volunteers, average age 43 years old) applied a cream formulated with 2% Ellagi-C on the left half face and a placebo cream on the right half face, twice a day for 14 days. Wrinkle depth was assessed by comparing silicone prints of the crow's feet using a specific software (Quantirides).一组测试人群（19名志愿者，平均年龄43岁）在左边脸使用含2%Ellagi-C 的膏霜，右边脸则使用安慰剂膏霜，每天两次，持续14天。通过用精确的软件（Quantirides)来对比鱼尾纹的硅胶印来测量皱纹的深度。





Ellagi-C visibly and significantly decreases wrinkle depth only in 14 days

仅需14天，Ellagi-C明显地减少皱纹深度。

Cosmetic uses 化妆品使用

Cosmetic applications 化妆品应用

- Anti-aging and anti-wrinkle products抗衰老和抗皱产品
- Eye contour and mouth contour products眼部轮廓和嘴巴轮廓的产品

Recommended dosage: 1 to 2 %

建议用量：1~2%

INCI name: Propanediol (and) Anogeissus leiocarpus extract

INCI名称：丙二醇和*光滑果榆绿木提取物*

Specifications 说明书

- Aspect: Liquid　　外　观：液体
- Color: Brown　　颜　色：褐色
- Preservative: None　防腐剂：无

Conclusion总结

- Three complementary activities to fight aging
  三种协同活性来对抗衰老
- Fast and visible decrease of wrinkle depth within 14 days
  在14天内能快速并明显地减少皱纹深度
- Biological markers: 3,3'-di-O-methylellagic acid and ellagic acid
  生物基因标记： 3,3'-O-二甲基鞣花酸 和鞣花酸

- ECOCERT approved
  ECOCERT认证