

The skin is the largest organ of the body, and like any other organ, it obtains nutrients from foods and beverages. The physical appearance, as well as overall health of skin and hair is intimately related to a person's nutritional status.

## Skin Health & Beauty

### Focus On: Bioavailability

#### Nutrition for the Skin

Skin is not only nourished on the outside with moisturizing crèmes and topical solutions, but also with nutrients, to nourish from the inside out.

- **Vitamin A (carotenoids)** contribute to the maintenance and repair of skin tissue.
- **Vitamin C** helps reduce the damage caused by free radicals and UV exposure. Over time, free radicals can damage collagen and elastin, the fibers that support skin structure.
- **Vitamin E** also helps reduce the skin effects of free radicals and UV exposure.
- **PUFAs (polyunsaturated fatty acids)** play an important role in cell structure, barrier function, lipid synthesis, inflammation and immunity. PUFAs help reduce dry, scaly skin.
- **Probiotics** improve recovery of the skin and cellular defenses after UV exposure.



### Bioavailability of Nutrients for Skin and Hair Health

The bioavailability of an active ingredient is the fraction ingested that is absorbed by the intestine, and is subsequently used by the body's tissues.

Many factors affect the bioavailability of nutrients, including age, health status, and complexity of the food matrix, other foods consumed at the same time, rate of gastric emptying and intestinal transit time.

**Note:** Bioavailability does not apply to probiotics. Probiotics that demonstrate benefits for the skin interact with the gut wall to induce the synthesis of biological mediators. These substances are then released into the blood stream to aid skin cell regeneration and defense mechanisms.

### NRC Research Initiatives

NRC extends its expertise in nutrition research beyond foods and beverages, to nutritional supplements for skin and hair health and beauty. Research in this area focuses on selection of ingredients and the understanding and control of nutrient bioavailability in plasma, skin or hair, and the demonstration of the bioefficacy of these nutrients taken orally.

NRC collaborates with L'Oréal, in the following areas related to skin health and beauty:

- Maintenance of skin balance
- Enhancing skin firmness and delaying the effects of ageing
- Photoprotection
- Improvement of hair quality

### Enhanced Bioavailability of Nutrients for the Skin

NRC scientists developed a food ingredient, **Lacto-lycopene™**, to enhance the bioavailability of the carotenoid lycopene. Lycopene is a nutrient found commonly in tomatoes and tomato products.

A unique preparation of lycopene dispersed in whey milk proteins, Lacto-lycopene™ is highly

bioavailable in the body, equal to the most bioavailable food sources of lycopene.

innéov Fermeté, a joint venture of Nestlé Research and L'Oréal, contains Lacto-lycopene™ combined with vitamin c and soya extract in a nutricosmetic supplement that helps improve skin firmness and density.

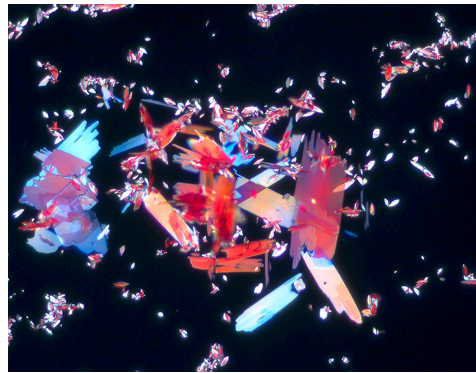


Fig 1: Lycopene crystals from tomatoes

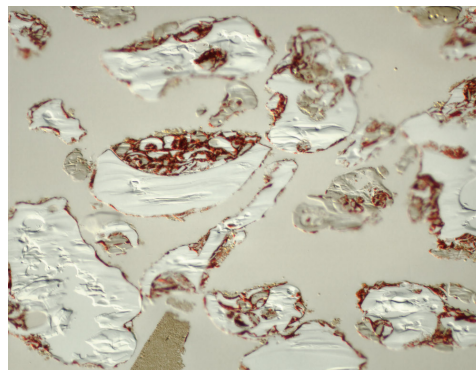


Fig 2: innéov Fermeté preparation with Lacto-lycopene™



## References

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