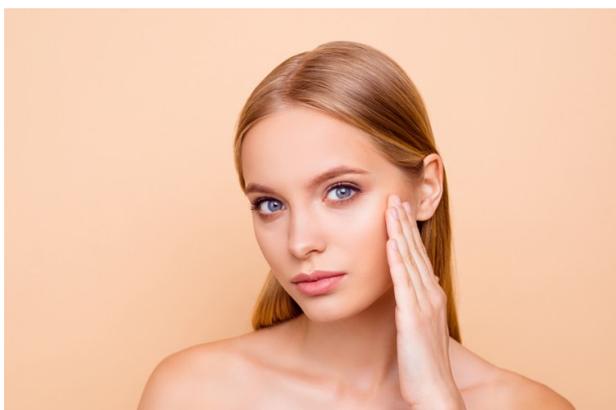


RETINOL = Vitamin A



Vitamin A is considered a star asset among existing anti-aging agents as it is a multifunctional ingredient and with important applications not only in anti-aging but also as a skin tone balancer that allows visible results 4 weeks after the first utilization.

In aging (photoaging of the skin) it is a complex process whose visible consequences: expression lines, wrinkles, hyperpigmentation, lack of firmness and softness, continue to be the key to meet the needs of consumers around the world.

The efficacy of retinol is well known and well documented. Discovered more than 80 years ago, it is still considered the gold standard in the cosmetic industry today, being one of the best allies of women in their fight against aging.

Skin aging is a gradual process that results in multiple visible signs, such as fine lines and wrinkles, loss of skin elasticity, uneven skin tone, or pigmentation and blemishes. Retinol has multiple benefits for the skin.

Scientific studies have shown that, at the topical level, in the dermis and epidermis, it increases the production of collagen in the skin, stimulates the proliferation of keratinocytes and epidermal thickness, and inhibits tyrosinase activity.

Retinol's effects on skin appearance are truly impressive, visibly improving the appearance of fine lines and wrinkles, increasing skin firmness, tone and smoothness, and equalizing hyperpigmentation and age spots.

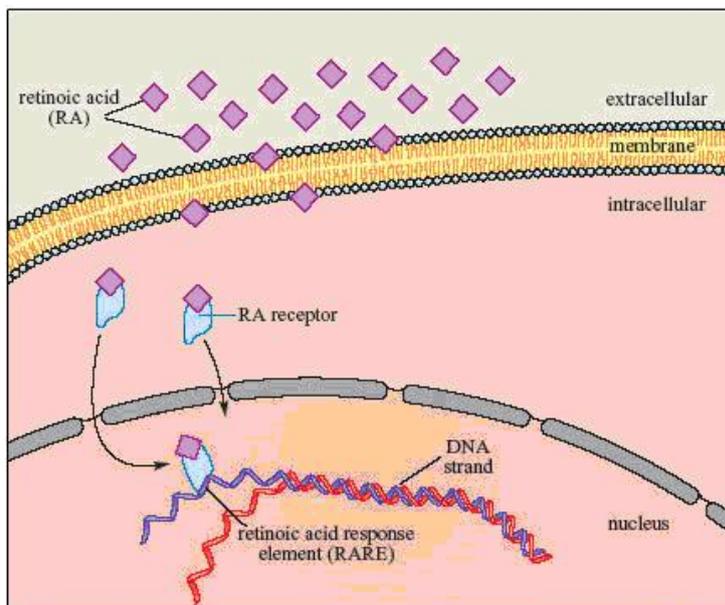
- **Anti-aging / anti-wrinkle effect:** Stimulates the formation of collagen, repairing the dermal matrix. Increases cell turnover.

- **Anti-acne effect:** Exfoliates and regenerates. Regulates keratinization by increasing cell turnover (preventing pores from clogging).

- **Anti-stain effect:** Exfoliates and regenerates (by increasing cell turnover). Modulates the hyperactivity of melanocytes (spots).

Mechanism of action

Retinol increases the expression of specific cellular receptors such as cellular retinoic acid binding protein type 2 (CRABP-2). Retinoic acid is transported from the cytoplasm to the nucleus by CRABP-2. Once inside, retinoic acid binds to its specific receptor (RAR: Retinoic Acid Receptor) which forms a heterodimer with retinoid receptor X (RXR). This complex acts as a transcription factor for regions called retinoic acid response elements (RARE) and acts as a mediator in gene expression for: type I procollagen (COL1), elastin (ELN), glycosaminoglycans (GAG), tyrosinase (TYR) and the Ki67 protein.



Anti-aging properties:

- At the gene and molecular level:

- Increases the synthesis of collagen.
- Inhibits matrix metalloproteinases (MMPs) reducing collagen degradation.
- Stimulates the expression of the Ki-67 protein.
- Stimulates the incorporation of Glycosaminoglycans in the epidermis.

- At the structural and functional level:

- Improves the organization of collagen and elastin fibers in the dermal papilla.
- Improves the structuring of the Dermo-Epidermal junction.
- Increases epidermal proliferation.
- Thinner epidermis.
- Compact the stratum corneum.
- Inhibits the transfer of the melanosome.

- On a cosmetic level:

- Reduces the appearance of wrinkles and expression lines.
- Improves firmness and elasticity.
- Provides softness.
- Decreases roughness.

Skin tone:

- At the gene and molecular level:

- Decreases the synthesis of tyrosinase.
- Decreases the melanin content.

- At the structural and functional level:

- Inhibits the transfer of the melanosome.

- On a cosmetic level:

- Reduces discoloration and pigmentation.
- Improves skin tone.