

# The Skin Benefits of Retinol and other Retinoids

## The Benefits of Retinoids

Retinol could be your second best anti-aging tool after broad-spectrum sunscreen of course!

Retinol is a vitamin A derivative and part of the retinoid family along with retinaldehyde (retinal), retinyl palmitate and retinal acetate. Retinol is considered to be a cosmetic ingredient and found mostly in skin care products. Prescription retinoid products such as tretinoin (Retin-A, Retin-A Micro, Renova), aldapalene (Differin) and tazarotene (Tazorac) are more potent than retinol, but have a higher chance of irritation.

Dr. Albert M. Kligman was a dermatologist who, along with his colleagues, first identified the use of retinoid acid as a treatment for acne and wrinkles in 1986 [1]. Over 40 years of established research and more than 700 published studies show that retinoids are helpful in treating aging skin by increasing firmness, reducing fine lines and wrinkles, and improving skin tone and texture [2]. Retinoids have also been shown to reduce acne and pore size appearance [3]. The benefits of retinol can be noticed as early as 6 to 8 weeks.

## The Science of Retinoids

The beneficial effects of retinoids are mediated by their interaction with specific nucleic acid receptors in the nucleus of cells [4]. Retinoic acid regulates the expression of cellular genes (DNA) via the activation of two classes of nuclear retinoid receptors, known as retinoic acid receptors (RARs) and retinoid X receptors (RXRs).

The current definition of a retinoid is any molecule that, by itself or through metabolic conversion, binds to and activates the retinoic acid receptors, thereby eliciting transcriptional activation of retinoic acid-responsive genes that results in specific biologic responses [5].

It is the action of retinoic acid on DNA that accounts for its biological effects on the skin such as the control of epithelial cell proliferation and differentiation, immune modulation, stimulation of the creation of new blood vessels, and production of collagen [6,7]. Retinoids also reduce the expression of MMP 1 (collagenase 1) [8,9]. In addition, retinol is an antioxidant, which protects DNA, cell membranes and proteins from UV-induced free radical damage.

## The Bioavailability of Retinoids

Retinoic acid is the only form of retinol that the body can use. Therefore, specialized enzymes in skin cells must be used to convert other forms of vitamin A into retinoic acid. Some forms of vitamin A are more easily converted to retinoic acid than others.

## Retinoic Acid Conversion Pathway:

Retinyl Palmitate > Retinol > Retinaldehyde > Retinoic Acid

As shown above, it takes two metabolic steps to convert retinol to retinoic acid and three steps to convert retinyl palmitate to retinoic acid. The overall rate of conversion from one form of vitamin A to another

is low. Therefore, a relatively large amount of retinol and even larger amount of retinyl palmitate need to be delivered into a cell to boost retinoic acid levels and produce clinically meaningful effects. Retinoic acid is the strongest retinoid followed by retinaldehyde and retinol.

## Usage Tips

- **Avoid jars.** All forms of vitamin A eventually break down and oxidize when exposed to air and light turning a deeper yellow and then brownish. Only buy a retinoid product if it is packaged in an opaque pump container that minimizes exposure to light and air.
- **Start low and go slow.** If you are new to retinoids, start using it every 2 to 3 days or mix it with your moisturizer. Gradually increase frequency to nightly as your skin adjusts.
- **Look for encapsulated retinol.** A polymer or wax encases the retinol, which protects it while on the shelf and then slowly releases it into the skin. This creates a time-release delivery that reduces irritation and gives the body more time to convert the retinol into retinoic acid.
- **Use a broad-spectrum sunscreen with SPF 30 or greater.** Daily use of sunscreen can help prevent premature signs of aging.
- **Use retinoids in the evening and wash your face in the morning.** Vitamin A in all forms is destroyed by UV light and can make skin more sensitive to the sun. In addition, a study by the National Toxicology Program, which is a U.S. government research group, has concluded that retinyl palmitate may speed up the development of skin tumours when applied to the skin in the presence of sunlight [10].

**Note:** Do not use retinoids if you are pregnant, lactating or planning to become pregnant.

AlumierMD always recommends conditioning the skin by starting with a low-percentage retinol product like Retinol Resurfacing Serum 0.25 or 0.5, since mild redness, peeling and irritation can occur when you begin using retinol products. AlumierMD's Retinol Resurfacing Serums contain encapsulated retinol using cutting-edge technology to allow for a gradual time release overnight. By encapsulating the retinol and adding soothing and hydrating ingredients like niacinamide (vitamin B3), aloe and sodium hyaluronate, maximal results can be achieved in comfort.

**References:**

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