



HEIGHTENED PRODUCTION: RETINOL & ALTERNATIVES

by Kirsten Sheridan, licensed aesthetician

Retinol, a superstar ingredient for decades, is considered one of the most stable, fat-soluble vitamin A derivatives. Topical retinol is generally well tolerated and has many benefits, from slowing the visible signs of aging to treating acne and pigmentation.

METHOD OF ACTION

Retinol must first be converted to the bioavailable form of retinoic acid in skin. Retinoic acid can accelerate cellular renewal, reducing the appearance of fine lines and wrinkles while promoting a softer, brighter, more refined skin tone. It can also boost collagen while inhibiting degrading metalloproteinases and makes angiogenesis possible, which im-

proves blood flow. Retinoic acid is an effective tyrosinase inhibitor and can block the melanosome transfer to keratinocytes, making it a go-to ingredient for skin brightening.

Retinol's ability to loosen the desmosomal attachments between the keratinocytes of the epidermis encourages an increase in desquamation and subsequent cellular renewal. Retinol can penetrate the epidermis and slightly penetrate the dermis if the concentration and conditions are optimal.

Once topically applied, retinol penetrates the keratinocyte and binds to the appropriate receptor. Retinol undergoes a two-step oxidation process, converting to retinaldehyde (retinal) and then to retinoic acid. Retinaldehyde is considered more potent as it only takes one oxidation step in skin to convert to bioavailable retinoic acid and is believed to have improved photoaging fighting abilities compared to retinol.



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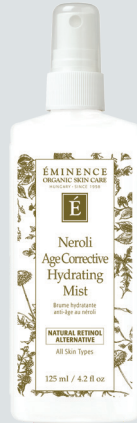
Serum 16

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Neroli Age Corrective Hydrating Mist

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Retinol esters take at least three steps to convert to retinoic acid. Examples of retinol esters are retinol acetate, retinyl linoleate, retinyl palmitate, and retinyl propionate. Therefore, these esters are considered milder topical applications. Retinol is often applied topically through delivery systems such as encapsulation or microencapsulation, improving its stability. Timed-release delivery methods also help counteract some negative effects of retinol, such as dryness, irritation, and sensitivity. The concentration of retinol plays a role in its suitability for different skin types, conditions, and efficacy.

As technology progresses, more and more complexes are being formed with this hero ingredient, from niacinamide and ferulic acid to ceramides, fruit extracts, peptides, and alpha hydroxy acids. When combined with hydroxy acids, the concentration of retinol is often reduced. Ingredients such as vitamin C and alpha hydroxy acids, previously considered incompatible with retinol, are making their way into retinol formulations. However, it should be noted that an ingredient in a formulation will have a different effect than simply layering often incompatible ingredients.

RETINOID DEFINED

Retinoid is a generic term given to all forms of derivatives of vitamin A. Retinol, for example, is generally considered non-photostable, meaning it may be broken down during exposure to ultraviolet light and may cause erythema and pigmentation if exposed. Retinol is therefore advised to be applied only at night, and a sunscreen with a sun protection factor of 30 or more should be used daily and frequently reapplied. Some of the newer generation retinoids like tazarotene are considered photostable, although sunscreen should still be applied avidly.

Retinoids may be natural derivatives of vitamin A or synthetically formulated, as in the case of prescription retinoid formulations. The difference between natural and synthetic variations is how they target skin. Natural retinol targets all the retinoic acid receptors in skin, while synthetic retinol can be programmed to target select retinoic acid receptors depending on the desired outcome. This can isolate specific responses and improve desired benefits. The targeting may reduce some of the sensitivity and irritation associated with retinoids, particularly at higher concentrations.

RETINOL-RICH INGREDIENTS

Bakuchiol is used in formulations as an alternative to retinol. It is not a derivative of vitamin A; however, studies indicate it is just as effective at improving the look of fine lines and evening skin tone. Bakuchiol is plant-based and sourced from the seeds of the Babchi plant, also known as *Psoralea corylifolia*, and is thought to have additional anti-inflammatory and antibacterial benefits. Bakuchiol has an affinity for the retinol receptors in skin and can work on a cellular level just like a retinoid would. Bakuchiol is considered a safe alternative for pregnant women who want the benefits of retinoids without the side effects.

Rosehip oil is rich in beta-carotene, a precursor to vitamin A, and a limited percentage of retinol. Rosehip oil may be considered an alternative to retinol for those contraindicated to retinol.

INCORPORATING RETINOIDS

Retinoids have received positive and negative press throughout the years. On the positive, they convert to retinoic acid in the stratum corneum and thicken the dermis via pro-



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liferation. The increasing production of glycosaminoglycans creates a plumping effect. On the other hand, the upper layers of the stratum corneum are thinned due to the retinoic acid releasing the desmosome attachments of the cells, promoting desquamation. Yet, this benefits overall skin health due to increased cellular turnover and encouraged lipid-barrier integrity.

Many products formulated for targeting the delicate skin around the eye area contain retinol or other vitamin A derivatives, and for good reason. Cellular turnover of this region is key to preventing the build-up of dead skin cells. Topically applied retinol can boost collagen and elastin, improving skin tone and firmness. Other concerns around the delicate eye area include the development of wrinkles and crow's feet. In addition, dark circles and puffy eyes are also a concern for many clients. Retinol, combined with hydrating ingredients such as hyaluronic acid, is a popular choice for the eye area. Retinoids around the eye should be used sparingly and in lower concentrations to start building up over time.

Retinol-based serums are a great way to add retinol to a routine, combined with other superstar ingredients like peptides, ceramides, and hyaluronic acid for enhanced results. Vitamins may be combined with retinol for their many skin benefits – ferulic acid, vitamin E (tocopherol), and niacinamide (vitamin B3).

Retinols can be found in many product formulations, including cleansers, masks, serums, eye treatments, and moisturizers. However, not every retinol-based product suits every client, and the focus should be on the desired results. The purpose of retinol products is for their lipid affinity to encourage penetration through the stratum corneum and, in some cas-

es, to the papillary dermis. This is where they will affect skin changes and provide the best results. Retinol formulations should achieve this goal while nourishing and hydrating skin.

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Kirsten Sheridan has a higher national diploma in beauty therapy from the United Kingdom and is a licensed aesthetician. She has 20 years of experience as an aesthetician and educator, holds a teaching qualification through City and Guilds London, and is a CIDESCO diplomat. Sheridan's other qualifications include massage therapy, aromatherapy, reflexology, and electrology. She has a personal training qualification through the National Academy of Sports Medicine (NASM), although not in active practice. In addition, she is the owner and founder of knowskin.com, an online learning hub for aestheticians. Sheridan has taught for Demalogica, among other aesthetics institutes.

