

# The Sunscreen Vitamin

For sun damage and aged skin,  
**vitamin C shines**

**M**ost people get their daily dose of vitamin C from a glass of orange juice each morning, but that gift from the sunshine state isn't doing anything for the skin. It's the topical vitamin C, in creams, lotions and serums that can benefit several common skin concerns including texture, pigmentation and fine lines.

Lately, vitamin C, or L-ascorbic acid, has been getting more attention, particularly from skin care companies that have launched several new C-based products in the last few months. Obagi, SkinCeuticals, PCA Skin, Glytone, Lumixyl, Vichy and others include vitamin C in new topicals.

People have understood that vitamin C is important for health since sailors started eating lemons to stave off scurvy. Topical vitamin C is nearly as important for healthy skin. Scottsdale dermatologist and PCA Skin

chief science officer Jennifer Linder, MD, calls vitamin C one of the most important ingredients for skin care. "It's been known for a long time, but it's one of those things that we're just really appreciating how useful it actually is," says Dr. Linder.

"It's one of the most important ingredients for collagen synthesis," says Charleston, SC, dermatologist Todd Schlesinger, MD. As a cofactor for collagen, it increases collagen production, but on top of that it reduces collagenase, so it slows down the

breakdown of collagen. This not only helps reduce fine lines, but prevents existing lines from worsening.

After collagen synthesis, vitamin C's next most important job is chasing down free radicals as an antioxidant, so it can be an added help for sun-damaged skin.

Vitamin C also frequently turns up in products designed for skin lightening. "It reverses the

chain reaction that causes pigmentation," explains Dr. Linder. While vitamin C won't reduce pigment that already exists, it does stop more pigmentation from occurring. "When you use it with products that lift pigmentation, they really work well together," she adds. Dr. Schlesinger recommends vitamin C as a maintenance product for people who have gone through a hydroquinone regimen for hyperpigmentation. He recommends a minimum solution of 10 percent, while Dr. Linder says the ingredient is most effective at 15 or 20 percent.

One of the newer findings with vitamin C is that it may also have a photoprotective quality—it acts as a sunscreen. A study published in the *Journal of the American Academy of Dermatology* looked at the photoprotective effect of a 15 percent solution of L-ascorbic acid, 1 percent ditocopherol and 0.5 percent trans ferulic acid. The solution was applied to skin, then exposed to 2 to 10 minimal erythema doses

**C FOR SUNSCREEN.**  
 Recent research suggests that vitamin C includes promising photoprotective qualities which may make it a valuable component of sunscreen.



JEFFREY LEESER



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product makers is to develop more stable forms and more efficient delivery methods to make sure it gets to the skin and works. Makers use methods of encapsulation, suspension and esterification to help stabilize the ingredient so that it penetrates the skin before oxidation occurs.

Dr. Linder notes that while derivatives like ascorbyl palmitate and ascorbyl phosphate may be stable forms of vitamin C, they're not as effective as ascorbic acid.

Dr. Schlesinger recently completed a clinical study on a form of vitamin C (Vitivia) which placed the product in single-dose silicone capsules. That method ensured that each dose was fresh. Other makers use microencapsulations that open when the solution is rubbed into the skin.

of ultraviolet radiation. The study found the solution very effective, particularly in reducing thymine dimer mutations, which are associated with skin cancer.<sup>1</sup>

For all its benefits, and no one disputes them, C has a problem. It's inherently unstable. A little time out in the air and it starts to convert to an oxidized form that makes it useless, and in fact may make it do the opposite of what we want. The challenge for

While vitamin C can be effective on its own, it also works well with other vitamins such as A and E. In Dr. Schlesinger's study, which was presented as a poster at the 2010 American Academy of Dermatology meeting in Miami, he used a 10 percent solution of ascorbic acid combined with 0.1 percent retinol, and all participants saw improvement in skin tone, texture and pigmentation. ■

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1) Way N., O. MacCarrer, M. Vasshani, J. McCoy, J. MacCallister 2009; 39(2) 910.