MICAH™

A DISRUPTER FOR THE ANTI-AGING SUNSCREEN MARKET

HALLSTAR

with expert Dr. Paolo Giacomoni

Hallstar spoke with international anti-aging expert and skin care consultant Dr. Paolo Giacomoni for an independent perspective on common questions about Micah™, Hallstar's revolutionary anti-aging technology. Dr. Giacomoni has published more than 100 scientific studies in biochemistry, cellular biology, photobiology and skin aging. He previously served as Estée Lauder's Executive Director of Research and was the lead scientific speaker on behalf of the Clinique brand. Prior to this, he led the Department of Biology for L'Oréal.

HOW WOULD YOU DEFINE AGING?

In a beauty and personal care context, aging is simply an accumulation of damage. And while genetics, diet, lifestyle and stress all play a role, the single most efficient mechanism for this aging is an inflammatory response to ultraviolet (UV) radiation associated with oxidation.

WHAT ARE THE TYPES OF LIGHT-INDUCED DAMAGE?

You have on the one hand primary, direct damage to the DNA from UV light. As I have written in other articles, the DNA in human skin is repaired by an excision process that removes the damaged areas by introducing single-strand breaks or "nicks." This activates enzymes that contribute to DNA repair but compete with energy production, thus causing cell death and the consequent inflammation and degradation of the skin's appearance.

But you also have normal molecules that absorb UV and visible light. These endogenous chromophores absorb photons and enter an "excited" state. At this excited state, these molecules

can become skin photosensitizers by transferring the energy to oxygen, generating harmful reactive oxygen species (ROS) and free radicals that damage the skin's lipids and proteins. These ROS wreak havoc, causing a peroxidative cascade: for one singlet oxygen generated, you can estimate to have 1000x damage to lipids. The fused-ring cyanoacrylates chemistry behind the Micah™ breakthrough blocks the formation of ROS — particularly of singlet oxygen, the most dangerous — and hinders oxidative stress.

HOW EXACTLY DOES MICAH™ STOP FREE RADICALS?

We know that in the oxidative process, the skin's chromophores are molecules that absorb either ultraviolet or visible light and can transfer their energy to generate reactive oxygen species. Can we do something to this energy before it is transferred and ROS develop? Molecules such as fused-ring cyanoacrylates accept the energy transferred from these photosensitizers and return them to a ground state. You have a complex of molecules that alters the energy balance, so there is no way the chromophores will transfer the energy to the oxygen. It's a really unique technology because there is nothing else that proactively stops the harmful oxidative stress provoked by singlet oxygen *before* it begins.

IS MICAH™ SAFE? IS THERE ANY PROOF OF CONCEPT?

There appear to be no harmful effects of the transfer in energy that occurs with Micah™ and no effect on metabolism. Micah™ has been tested for phototoxicity *(in vivo)*, skin and ocular irritation, and assessed for mutagenicity. Results from these studies were deemed favorable for Micah™. Research has shown that Micah™ effectively prevents UVA-induced ROS and reduces several markers associated with skin inflammation, redness and aging in *ex vivo* female human skin explants.

WHAT MAKES MICAH™ SUPERIOR TO ANTIOXIDANTS?

An antioxidant can "scavenge" or hunt down ROS and free radicals and neutralize them. But some can always escape and start causing damage. So antioxidants are a limited, after-the-fact response. There are very good scavengers of singlet oxygen out there, but Micah™ is a killer, if you will. It stops the ROS generation rather than chasing after it. You're not putting out fires — you're taking the matches away.

WHY IS THE INDUSTRY FOCUSING ON SINGLET OXYGEN NOW?

Earlier in my career, researchers were focused on antioxidants, specifically the superoxide blocked by Vitamin E. At that time, beta-carotene was the only known molecule which could be used efficiently against singlet oxygen, but it would turn creams bright yellow. There was no aesthetically acceptable way to stop singlet oxygen — until now. Being able to not only quench but hinder the generation of singlet oxygen, in a colorless formula, is a long-awaited breakthrough. I've been waiting years for a development like Micah™.

Micah™ can transform sun, skin and cosmetic formulations, and is proven to stop the aging process before it starts. **Want to learn more?**

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