Skin Repair Creams Eliminates 'inflamm-aging' linked to Many chronic diseases in the Elderly

by University of California, San Francisco

Skin is the body's largest organ, and scientists at UC San Francisco and the San Francisco Veterans Administration (VA) Health Care System think it may be to blame for body-wide inflammation linked to numerous chronic diseases of aging. The good news is that properly caring for the skin with a moisturizing cream may lower inflammation levels and potentially prevent age-related diseases, according to a new clinical pilot study.

As humans get older, we experience a low-level of inflammation—dubbed "inflamm-aging"—driven by an increase in molecules in the blood called cytokines. This age-related inflammation has been linked to serious chronic diseases, including Alzheimer's disease, cardiovascular disease, and diabetes. Scientists initially thought that the inflammation stemmed from the immune system or the liver, but a group of dermatologists at UCSF have a different theory.

"The inflammation must come from an organ big enough that very minor inflammation can affect the whole body. Skin is a good candidate for this because of its size," said study senior
author Mao-Qiang Man, MD, a research scientist in the UCSF Department of Dermatology, who is based at the San Francisco VA Health Care System and is also a visiting professor at Southern Medical University in Guangzhou, China. "Once we get old, we have dermatological symptoms like itchiness, dryness, and changes in acidity. It could be that the skin has very minor inflammation, and because it's such a large organ it elevates circulating cytokine levels."

Our skin starts to deteriorate around age 50 with changes to epidermal pH, hydration, and the permeability barrier, which keeps water in and bacteria and other potential pathogens out. A loss of moisture and breaks in the permeability barrier cause the skin to release inflammatory cytokines. Ordinarily, these cytokines help to repair defects in the barrier, but in aging skin the barrier can't be fixed as easily, so the inflammatory signals continue to be released, eventually reaching the blood.

"Until recently, the scientific community didn't believe that skin could contribute to systemic inflammation and disease. But in the last five years, studies of psoriasis and dermatitis have shown that skin inflammation from these diseases likely increases the risk of heart disease," said study lead author Theodora Mauro, MD, a professor of dermatology at UCSF and the San Francisco VA Health Care System. "Aging skin is much more common than psoriasis or dermatitis, so the overall risk to the population from aging skin could far outweigh that seen from skin diseases. Decreasing inflammation simply by treating the skin dysfunction seen in aging could have profound health effects."

In the study, published March 5, 2019 in the Journal of the European Academy of Dermatology and Venereology, Mauro, Man and colleagues attempted to reverse age-related skin damage using an over-the-counter skin cream formulated based on prior research by Man and colleagues, and which the researchers had previously shown to contribute to skin repair based on its beneficial ratio of three types of lipids (cholesterol, free fatty acids, and ceramides) that are vital for skin health.
Thirty-three older adults between the ages of 58 and 95 applied the cream all over their bodies twice a day for 30 days. After a month, the researchers measured blood levels of three cytokines—interleukin-1 beta, interleukin-6, and tumor necrosis factor (TNF) alpha—that have all been implicated in age-related inflammatory diseases. Using the cream reduced the amount of all three cytokines compared to both the participants' levels before using the cream and the levels of similarly aged adults who did not use the cream. In fact, using the cream lowered participants' cytokine levels to be nearly equivalent with people in their 30s, suggesting that rejuvenating the skin can reverse "inflamm-aging." The cream also improved skin hydration, lowered pH, and repaired the permeability barrier.

The scientists now plan to conduct a longer, larger study to test if lowering cytokine levels with the cream can delay or prevent age-related inflammatory diseases.

"We're going to see whether using the cream to keep epidermal function normal as people age will prevent the development of those downstream diseases," said co-author Peter Elias, MD, a UCSF professor of dermatology based at the San Francisco VA Health Care System. "If we do, the implication would be that after the age of 50, you would want to be applying an effective topical barrier repair preparation daily for the rest of your life."

Explore further

Investigational cream may help patients with inflammatory skin disease

When acne breakouts, redness, or flakiness flare up, your skin is delivering a clear message: that irritants like UV exposure, allergens, and chemicals from skincare products are throwing things off. Acute inflammation is a good sign that your immune response has been triggered and is doing its thing. But if you don’t act fast, these inflammatory responses could turn chronic and produce harmful hormones, enzymes, and free radicals that damage skin tissue.

You could go the prescription drug route and tackle conditions like rosacea and eczema with corticosteroids; that’s definitely effective, but not without side effects (e.g. thinning of the skin and immunosuppression). Or, you could look to
the many botanical ingredients that have been well-researched for their anti-inflammatory superpowers. Here are some of nature’s most potent skin saviors.

**Problem-Skin Heroes**

**Turmeric**

This golden spice is by far one of the most well-known thanks to its dozens of anti-inflammatory compounds, including curcumin. To pacify skin that’s worked up with acne, dryness, or even eczema or psoriasis, whip up your own turmeric face mask by mixing 1 teaspoon turmeric powder with 3 tablespoons plain coconut yogurt. Leave that on for 20 minutes, then rinse and moisturize. For a ready-made alternative, reach for [Juara Turmeric Antioxidant Radiance Mask](#).

**Maracuja Oil**

Chronic dryness with an acne breakout to match is the worst double-whammy ever, and an obvious sign that your skin is not happy. Maracuja oil, derived from the seeds of passion fruit, rebalances skin’s moisture levels and regulates excess sebum production. It provides antioxidant protection as well. Treat skin to a rich drink of [Tarte Pure Maracuja Oil](#).

**Calendula Extract**

Also known as marigold, calendula is a medicinal flower that relieves eczema and treats acne with protective antioxidant carotenoids. [Odacité Oleosomes Time Release Delivery Crème](#) complements calendula with cooling aloe, revitalizing carrot seed oil, and oleosomes that time-release active ingredients and moisture throughout the day for long-lasting effects.

**Senna Seed Extract**

The senna plant is native to India, and the extract from its seed is known to mimic the moisture-retaining capabilities of hyaluronic acid. [Josh Rosebrook Advanced Hydration Mask](#) boasts a high concentration of senna seed extract, with
polysaccharides that hydrate, plump, condition, and repair the skin while improving circulation for greater vitality.

**The Acne Fighters**

**Blue Tansy**

Blue tansy gets its signature hue from a compound called azulene, which has amazing anti-inflammatory properties for battling cystic and hormonal acne. *May Lindstrom The Blue Cocoon* is a concentrated balm that not only calms the skin, but also the mind with the sensuous fragrances of frankincense, myrrh, lavender, and geranium rose.

**White Willow Bark**

Bark from the white willow tree is a source of anti-inflammatory compounds called flavonoids that give it inflammation- and pain-relieving abilities comparable to aspirin. *Odacité Mint + Green Tea Hydra-Purifying Treatment Mist* deeply purifies pores and quickly banishes inflammation-induced acne breakouts.

**Redness Rescue**

**Chamomile**

Whether in the form of chamomile flower or blue chamomile oil (also rich in azulene), this herbal ingredient is gentle enough for sensitive skin, which tends to be the most affected by inflammation. Bisabolol is an anti-irritant that naturally occurs in chamomile and gives it a healing quality. *Pai Skincare Chamomile & Rosehip Calming Day Cream* soothes redness and rosacea and possesses essential fatty acids to repair and regenerate damaged skin.

**Damage Control  Green Tea**

A cup of green tea is associated with zen vibes, and the herbal remedy can do the same for balancing the complexion. Epigallocatechin gallate (EGCG) is a polyphenol in green tea with both antioxidant and anti-inflammatory properties
and is known to protect against UV damage. Kypris Clearing Serum strengthens skin’s natural healing process while diminishing blemishes, scarring, and irritation.

**Prickly Pear Seed Oil**

Prickly pear seed oil (also known as prickly cactus seed oil) is super luxurious and abundant in vitamins E and K, essential fatty acids, and antioxidants to soften skin, restore elasticity, and neutralize free-radical damage. You might notice it popping up as an up-and-coming ingredient in creams, serums, and masks, but if you’re in need of lots of moisture, don’t be afraid to try it in its purest form. Kahina Giving Beauty Prickly Pear Seed Oil is 100-percent organic and ethically sourced.

**Tamanu Oil**

Extracted from the nut kernels of the tamanu nut tree, this anti-inflammatory oil promotes collagen production, which restores skin’s suppleness and fades scarring and sun damage. Try Root Science Bare Facial Serum to improve skin’s clarity and texture.

**Irritation Soothers**

**Licorice**

Licorice root or licorice extract have been used in ancient Chinese medicine to treat inflammation for centuries. With an arsenal of dozens of anti-inflammatory compounds and a powerful antioxidant called glabridin, licorice is a heavy-hitter when it comes to treating sensitive skin prone to itchiness, redness, eczema, and psoriasis. Regenerate and renew stressed skin with Gressa Dirty Pretty Things mask.

**Aloe**

It’s no secret that aloe is the ultimate sunburn soother, but it’s also a hero ingredient in everyday cooling toners and serums. Juice Beauty is known for skipping the fillers and sticking to straight up actives like aloe leaf juice. The
brand’s Antioxidant Serum is just the thing skin needs for a daily dose of nourishing hydration.

Witch Hazel

Witch hazel is an old standby used to tighten pores and alleviate itching, swelling, minor burns, and other irritations. While Thayer’s is pretty great with its formulas ranging from astringent to alcohol-free, Captain Blankenship Aloe & Rose Toner offers the anti-inflammatory trifecta of witch hazel, aloe, and white willow.

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