

Sun-damaged skin does not improve with estrogen treatments

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Treating the skin with estrogen can stimulate collagen production—which improves the appearance of the skin—in areas not typically exposed to the sun, according to new research from the University of Michigan Health System.

But in sun-damaged skin, the same treatment does not increase collagen production, the study found. The findings elucidate why it is so difficult to reverse the effects of sun damage on the skin, says lead author Laure Rittie, Ph.D., research investigator in the U-M Department of Dermatology.

"Frankly, we were very surprised to find that stimulation of collagen production by topical estrogen treatment was restricted to skin not chronically exposed to sunlight. These results suggest that sun exposure alters the ability of skin to respond to topical estrogen, and point out how difficult it is to repair photoaged skin," Rittie says. The study appears in the new issue of the *Archives of Dermatology*.

Seventy seniors—40 post-menopausal women and 30 men—participated in the study. Researchers analyzed biopsies of skin taken from the patients' hips, and either forearm or face, before treatment began and after it ended two weeks later.

The study participants all had photoaged skin—that is, sun-damaged skin that appears dry, with coarse wrinkles and uneven pigmentation.

Participants were treated topically with the estrogen medication called estradiol. They were given doses of 0.01 percent, 0.1 percent, 1 percent or 2.5 percent, or a vehicle that contained no estradiol.

Estradiol was found to increase collagen levels in women's hip skin more than threefold, on average, compared with the inactive medication. This included procollagen I and III mRNA levels. In men, the collagen levels increased by a factor of about 1.7 on average. The improvements were higher when the doses of estradiol were higher.

In contrast, collagen levels in the photoaged skin on the forearm and face did not improve significantly with treatment, no matter the dosage of estradiol.

Source: University of Michigan

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