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SKIN | ANTI-AGING

Harvard Scientists Discover How to Repair DNA Damage and Reverse Cellular Aging — What It Means for Skin-Care

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MARCH 29, 2017

It doesn't take a rocket scientist to tell you your skin is aging. (I don't care if you're 20 — your skin has taken some hits since infancy.) But it does take one heck of a geneticist to figure out how to throw that whole chain reaction in reverse. Scientists have known for a while that the molecule NAD (mercifully short for nicotinamide adenine dinucleotide) helps lessen the damage that oxidation from pollution, the sun, and you know, generally not living in a bubble, does to your skin cells. But new research from Harvard Medical School just revealed exactly how that process can be controlled.

See, when cells are exposed to radiation, a bad-guy protein known as DBC1 binds with PARP1, an innocent protein that would otherwise repair your messed-up DNA. Think of DBC1 as the deadbeat boyfriend distracting your really talented friend from fulfilling her life's purpose. Discovering the fountain of life, perhaps. Anyway, let's bring NAD back into the picture. When NAD is around, it binds to that deadbeat dude, DBC1, so he can't hook up with PARP1 anymore and she can do her anti-aging thing!

Which brings us to another important point: Your body naturally has NAD, but those levels sink as you get older. That's where the Harvard researchers' real breakthrough comes in: They figured out that by lacing mice's water with absorbable building blocks of the NAD molecule, they were able to bring those levels back up to the levels of mice that were years younger. And it made a huge difference in their bodies: It not only repaired existing damage, it prevented further damage.

Which — listen up — has everything to do with your skin: "If one is able to repair DNA at the cellular level, it's possible to reverse cellular abnormalities and stop not only the progression of skin cancer, but also sun damage, collagen, and elastic damage that causes wrinkles and lines," says Dr. Gary Goldenberg, assistant clinical professor of dermatology at the Icahn School of Medicine at Mount Sinai. In essence, if we (well, the author of the study and his colleagues) can figure out how to make NAD work to our advantage, it would be a recipe for clear, smooth, line-less skin — without the gallons of skincare products and injectables and fillers we're currently using to get the same effects.

But will it work for us? We'll know soon. Testing will start in six months in humans (where can we sign up?), and if it works, "could protect skin from sunburn and the effects of time," says senior author David Sinclair, professor in the Department of Genetics at Harvard Medical School. "We will know by the end of this year if it's safe and next year if it has benefits in people," he adds. Though even in a perfect world, it would take three to five years to see it turn into a drug you and I can buy (or be prescribed).