

Anti-aging Therapies

Top 6 Antiaging Breakthroughs

Dozens of beauty products have hit the market, but do any of them truly deliver? WebMD asks the experts to separate the science from the hype.

By Colette Bouchez

Reviewed by Michael W. Smith, MD

Wanting to look young is not exactly a new idea -- the search for the fountain of youth has been going on for centuries. And while this past year didn't deliver the perfect elixir, the year did introduce some scientifically solid, significant advances in anti-aging skin care. To home in on what can truly make a difference in your skin, WebMD asked medical experts to evaluate the cream of the crop.

Antiaging Breakthrough No. 1: Fractional CO2 Laser Skin Resurfacing

The antiaging breakthrough of the decade, according to many doctors, is a skin-resurfacing treatment known as CO2 fractional laser therapy. Combining the effectiveness of traditional carbon dioxide lasers -- long thought to be the gold

standard in wrinkle removal -- with a new application technique, it delivers powerful results without the traditionally harsh side effects.

"Essentially, you are getting all the benefits of laser resurfacing, still the best way to remove wrinkles, but you're getting it without the downtime and without the horrendous complication rate," says David Goldberg, MD, director of Skin Laser and Surgery Specialists of New York and New Jersey and clinical professor of dermatology at the Mt. Sinai School of Medicine in New York City.

How does it work? The natural aging process, combined with exposure to sun and pollution, destroys collagen -- the main protein of connective tissue that keeps skin plump and line-free. Laser resurfacing uses beamlets of energy light to bore tiny holes in the skin, which works to put the body's natural collagen production on fast-forward. Here's what's new: Fractional CO2 laser resurfacing does this in a way that prevents damage to the top layer of skin, offering maximum results with minimal recovery time.

While laser resurfacing doesn't come cheap -- the procedure will cost you about \$5,000 -- it is quick, accomplished in one or two sessions, with about four days downtime. Goldberg says effects are thought to last eight to 10 years.

According to the American Society for Dermatologic Surgery, patients with darker complexions may be at risk for pigmentation loss with any laser surgery. Common minor side effects for fractional laser resurfacing include redness and swelling that lasts about two days.

Antiaging Breakthrough No. 2: The New Wrinkle Injections

Wrinkle injection technology soared to new heights last year when the FDA approved four fillers: Perlane, Juvéderm, Artifill, and Radiesse. Along with Restylane, approved in 2003, each uses a slightly different substance to fill wrinkles.

But according to Rhoda Narins, MD, professor of dermatology at NYU Medical Center in New York City, that's just the beginning. "What's really significant is that we can now use these fillers to volumize skin anywhere on the face, so you can really sculpt a lifted, youthful look without surgery," she says.

Dermatologist Bruce Katz, MD, the director of Juva Skin and Laser Center in New York City, agrees. "Unlike a face-lift, which pulls the skin taut and tight, volumizing plumps up the skin so the look is youthful but more natural," he says.

In even more good news about wrinkle injections, studies conducted by Frank Wang, MD, at the University of Michigan Medical School found that those containing hyaluronic acid (such as Restylane and Juvéderm) led to "robust collagen

production" while also interfering with collagen breakdown. So not only do you get a filling effect, says Narins, but you also have an actual increase in natural collagen production.

Currently, most fillers last up to one year, or longer. Only one -- Artifill -- offers permanent results, but not without concern. According to a published report by the FDA, it increases the risk of granulomas, bumps that form under the skin and may be permanent, as well as an increased risk of allergic reaction.

Still, Narins says all currently approved wrinkle injections have been used in Europe for several years, and the track record on safety is generally good. Most often, side effects are mild, usually limited to redness or swelling at the site of injection, she adds.

The cost of wrinkle-filling volumizers is between \$600 and \$1,000 per syringe.

Antiaging Breakthrough No. 3: Antioxidants

Topping the list of over-the-counter antiaging ingredients making the most noise these days are antioxidants. These skin-care nutrients fight aging by destroying free radicals, the unstable molecules that occur from sun exposure or pollution and that can literally gobble up the skin's collagen supply.

Antiaging Breakthrough No. 3: Antioxidants continued...

"Antioxidants are nutrients that, when topically applied, disarm and neutralize free radicals before they harm skin -- so they can play an important role in antiaging skin care," says Sumayah Jamal, MD, an assistant professor of dermatology and microbiology at NYU Medical Center in New York City.

Scores of studies demonstrate the power of topical antioxidants (particularly CoQ10 and vitamins C and E) to rejuvenate and protect skin. However, the ingredient generating the loudest buzz in 2007 was clearly coffee berry, which some experts now believe is the single most powerful antioxidant discovered to date.

Two independent studies found that the same plant that gives you your java jolt in the morning is ready to provide a powerful antiaging boost to your face. The research conducted by David McDaniels, MD, at the Institute of Anti-Aging Research in Virginia, and Zoe Draelos, MD, at Dermatology Consulting Service in North Carolina, reported that coffee berry extract significantly improved the appearance of fine lines and wrinkles without allergic reactions or skin irritations.

Although Goldberg says it will be a few years before the full extent of coffee berry's rejuvenating properties is known, he adds that it is "so powerful in its antioxidant rating that even if 1/1,000th of what's applied gets into the skin it's probably going to have an effect."

Dermatologist Ken Beer, MD, director of Palm Beach Esthetic in Palm Beach, Fla., says he's seen the science and he's impressed: "I think this is going to be a major cosmeceutical ingredient."

Other cosmeceuticals with new and powerful antioxidants include:

Prescriptives Super Line Preventor Xtreme with seven antioxidants (1 ounce, \$48)

Neutrogena Antioxidant Age Reverse Day Lotion and Night Cream (1.7 ounces, \$17.99 each)

Lumene Vitamin + Energy Cocktail (1 ounce, \$17.99)

Clinique Continuous Rescue Antioxidant Moisturizer with eight time-release antioxidants (1.7 ounces, \$39.50)

Antiaging Breakthrough No. 4: Peptides

Small proteins that stimulate the production of collagen, peptides have been on the cusp of antiaging skin care for a while. The excitement began several years ago with NIH-backed research on the ingredient Matrixyl (palmitoyl pentapeptide-3), showing its ability to stimulate collagen production in skin. Today, further studies on additional peptides continue to generate research news.

According to Jamal, studies on formulations such as Argireline (acetyl hexapeptide-3) show they can produce a mild, Botox-like effect, inhibiting the release of neurotransmitters that keep facial muscles from forming wrinkles. Even newer peptide formulations act like growth factors, stimulating skin cells to make a quicker turnover, much like young skin.

What's new for peptides? Formulations that seem to yield overall improved results. "They are really getting the science down now, learning how to stabilize the peptides and at the same time inhibit collagenase [the breakdown of collagen] so we have better, more tailored peptide products," says Beer.

Products containing the newest versions of that peptide technology include:

Olay Regenerist Micro-Sculpting Cream with amino peptide complex (1.7 ounces, \$29.99)

Lumene Premium Beauty Rejuvenating Instant Serum (1 ounce, \$29.99)

Avon Anew Clinical Eye Lift (0.5 ounce, \$28)

Osmotics Blue Copper 5 Face Lifting Serum (1 ounce, \$75)

Emerge Bio-Peptide Night Repair Cream with 10% peptides (1.12 ounces, \$43)

Antiaging Breakthrough No. 5: Vitamin A

Among the most medically studied topical antiaging treatments are the retinoids -- derivatives of vitamin A. They are offered as prescription treatments such as Retin A or Renova, but also available in weaker strengths in over-the-counter products, listed as the ingredient retinol.

Retinoids are "thought to work on aging skin by increasing collagen production and decreasing collagen breakdown," says Jamal -- and a ream of studies backs her up.

But while many doctors believed only the prescription-strength retinoids were powerful enough to cause significant change in the skin, 2007 was the year that idea changed. In a study published in the Archives of Dermatology in May, researchers from the University of Michigan found that 0.4% retinol lotion applied three times a week for 24 weeks yielded significant difference in skin wrinkling when compared with a similar lotion without retinol used on a separate group of people in the study.

Even more surprising: The average age of study participants was 87, meaning it's truly never too late to look younger.

"For those who can't or don't want to have an office procedure for wrinkles, I suggest starting with retinol products, and if there are no problems, such as redness or irritation, you can

work up to a prescription-strength Retin A product. But we now know that both have the power to produce measurable antiaging results," says Goldberg.

Products containing retinol include:

Vichy Reti-C Intensive Corrective Care (30 milliliters, \$31)

Neutrogena Healthy Skin Anti-Wrinkle Intensives with retinol and antioxidants (Serum, 1 ounce, \$16.99; Eye Cream, 0.5 ounce, \$16.99)

Clinique Zero Gravity Repairwear Lift with retinol, antioxidants, and peptides (1.7 ounces, \$52)

L'Oreal Advanced RevitaLift Double Lifting Gel (1 ounce, \$16.99)

RoC Retinol Correxion Deep Wrinkle Serum (1 ounce, \$19.99)

Antiaging Breakthrough No. 6: Antiaging Sunscreens

Among the most exciting new ways to fight skin aging are two dramatic breakthroughs in sun protection: Helioplex, a new technology that makes current sunscreen ingredients more effective, and Mexoryl SX (ecamsule), a new protective agent. Representing the first innovation in skin sun protection in more than 20 years, each is specifically designed to defend against the aging effects of short UVA rays.

"They are truly the best we have, and they are a major, major advance in terms of antiaging protection," says Katz.

Most of us know about the dangers of burning UVB rays, but you might be less aware of the damaging and aging effects of UVA. "These are the ones that go deep -- UVA rays cause the deep collagen and elastin damage that contributes to aging skin," says Katz.

While most sunscreens effectively protect against UVB rays, protection from UVA was mostly limited to the "long" waves, with ingredients that were unstable and frequently degraded in the sun.

But Mexoryl SX (ecamsule), a UVA-blocking sunscreen developed by L'Oreal, and Helioplex, a technology created by Neutrogena to stabilize traditional sunscreen ingredients avobenzene and oxybenzone, are proving not only to protect against the damaging short UVA rays, but to offer long-lasting protection without the need to constantly reapply.

"They have been available in Europe for some time now, and there is no question they work -- and from an antiaging standpoint, they can be your best friend," says Goldberg.

Even more exciting: these sunscreen advances were combined with antioxidants and other antiaging ingredients in

moisturizers and day creams that offer Fort Knox-level protection against the aging effects of the sun.

Products containing the latest Helioplex technology include:

Neutrogena Healthy Defense SPF 45 Daily Moisturizer (1.7 ounces, \$11.99)

Neutrogena Ultra Sheer Dry-Touch SunBlock SPF 70 (3 ounces, \$9.99)

Products containing Mexoryl SX include:

Vichy Capital Soleil SPF 15 Sunscreen Cream (3.4 ounces, \$29.99)

L’Oreal Revitalift UV Moisturizer and Sunscreen (1.7 ounces, \$22)

LaRoche-Posay Anthelios SX (3.4 ounces, \$29)

Lancome UV Expert 20 (3.4 ounces, \$35)

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The risks of anti-aging medicine

By Gretchen Voss, Health.com

Anti-aging isn't recognized by the American Board of Medical Specialties, meaning doctors can't officially be board-certified in it.

Story highlights

Thousands of physicians are catering to the baby boomers who are hoping to feel younger

Some unproven treatments for anti-aging are risky hormone therapies and fad diagnoses

Steven R. Goldstein, M.D., says two key nutrients for anti-aging are calcium and vitamin D

The anti-aging industry is expected to gross more than \$291 billion worldwide by 2015

Hanneke Hops wasn't afraid of dying. What concerned her was growing old and not being able to run marathons, ride horses, or fly planes. So the 56-year-old Hayward, California, woman turned to Alan Mintz, M.D. -- a radiologist who founded the Cenegenics Medical Institute in Las Vegas, which specializes in "age management medicine."

She was prescribed recombinant human growth hormone (HGH), a synthetic version of a pituitary hormone hawked as a miraculous fountain of youth. Though the U.S. Food and Drug

Administration (FDA) warns that taking HGH poses serious health risks, Hops -- unaware there was any harm -- began injecting it into her thigh six times a week.

She never did grow old. Six months later, in 2004, she was dead, her liver full of malignant tumors. While it is impossible to prove that HGH therapy contributed to Hops's death, the use of HGH has been linked to an increased risk of cancer. (Mintz said at the time of Hops's death that Hops would not have been treated if he knew she had cancer.)

Today, thousands of physicians are catering to the 78 million baby boomers who are hoping to feel younger, longer -- and willing to pay for the privilege. The anti-aging industry is expected to gross more than \$291 billion worldwide by 2015.

Health.com: Anti-aging doctors to avoid

The problem is, many of these so-called anti-aging doctors are making empty promises. "They're one step above snake oil salesmen," says Steven R. Goldstein, M.D., a professor of obstetrics and gynecology at New York University School of

Medicine. They prey on women who have legitimate medical concerns such as poor sleep, flagging energy, and libido loss, he says, yet they often lack the training required to treat those problems.

Even worse, they peddle therapies -- most notably, the unapproved use of hormones like HGH and customized drug cocktails -- which are unproven and can even be deadly.

The rise of the anti-aging doc

Once, middle-aged women sought out a gynecologist for menopausal symptoms, or an internist for fatigue. Now a new brand of doctor is promising to treat the above, and deliver much more: better sex, a fitter body, dewier skin.

"They often try to convince people that aging is their fault: 'If you listen to us, we can fix the problem,' " says S. Jay Olshansky, Ph.D., a research associate at the Center on Aging at the University of Chicago.

Health.com: Why sex is better after 50

Yet aging is a natural process, not a medical condition, and there isn't any therapy that can reverse it or slow it down, Olshansky says. Official medical associations from the Endocrine Society to the American Medical Association warn against using "anti-aging" interventions.

And while traditional doctors, such as endocrinologists (who specialize in hormones) and geriatricians (who focus on the elderly) are specifically trained to treat age-related conditions such as hormone imbalances, "not all anti-aging doctors have a degree or advanced expertise" in what they practice, Olshansky says.

In fact, anti-aging isn't a specialty that's recognized by the American Board of Medical Specialties, meaning doctors can't officially be board-certified in it. Yet it has its own professional society, the American Academy of Anti-Aging Medicine (A4M). Founded in 1992, A4M boasts some 24,000 members worldwide and offers a certificate in anti-aging medicine, available to any M.D.

Health.com: Erase 10 years from head to toe

Once a doctor sets up an anti-aging practice, she stands to make major profits. Many age-fighting treatments aren't covered by insurance, which means the M.D.s prescribing them are paid out-of-pocket, Olshansky says -- and that can add up to thousands per patient. At a time when physicians are getting lower and lower reimbursements under managed care, it's little wonder that doctors of all stripes, from emergency-room medicine to radiology, are flocking to this lucrative new specialty.

Unproven treatments

So how do you know if your doctor is making promises he can't keep? Here are the top dangers Health's investigation uncovered:

- Risky hormone therapies. The biggest weapon in the anti-aging doctor's arsenal is the willy-nilly prescribing of hormones. "The concept is that if you take a 60-year-old woman and duplicate the hormone environment from when she was 20,

she'll feel like she's 20," says Nanette Santoro, M.D., director of the Division of Reproductive Endocrinology & Infertility at the Albert Einstein College of Medicine. "It is essentially the idea of drinking the blood of young children."

It's also hazardous, because most age-erasing doctors aren't trained in using these powerful substances. "In this entire field, I've only encountered one board-certified endocrinologist," says Thomas Perls, M.D., an associate professor of medicine and geriatrics at Boston University School of Medicine. "It's outrageous that people think they can prescribe these toxic hormone soups."

The main ingredient in that soup is HGH, which naturally declines in our bodies as we age. Anti-aging doctors claim that by boosting HGH levels with injections that can cost \$12,000 or more per year, you can reduce body fat, build muscle, improve sexual function, and up your energy.

Health.com: 5 secrets to boost your energy

But "there is no scientific proof of this," Perls says. "And studies show that increasing HGH levels with drugs predisposes people to heart disease, diabetes, and cancer" -- suggesting that the hormone may have been a contributing factor in Hanneke Hops's death.

In fact, HGH is only FDA-approved for use in a handful of conditions in adults (including adult growth hormone deficiency, which is rare), and it is illegal to distribute a product containing HGH for anti-aging purposes.

Another hot hormone is bioidentical estrogen. For decades, women have relied on synthetic estrogen to relieve menopausal symptoms such as hot flashes and vaginal dryness. But when the Women's Health Initiative study on estrogen and progestin therapy was halted in 2002 -- due to a possible hormone-related increase in the risk of heart disease, stroke, blood clots, and breast cancer -- some doctors touted bioidentical versions, made from soy and yams, as safer (though there's no proof they're less likely to raise your disease risk).

Bioidentical creams and pills made by pharmaceutical companies are available via prescription and regulated by the FDA. Still, many anti-aging docs attempt to create their own bioidentical hormone cocktails tailored to their patients' special needs.

Health.com: Can supplements ease menopause symptoms?

It's this customization that is most troubling to mainstream doctors. It involves taking a prescription to a compounding pharmacy, where pharmacists mix ingredients as outlined by your physician -- and the resulting concoctions are not approved by the FDA. "When the FDA looked at compounded medicines, 43 percent of them didn't have the things that they were supposed to," Goldstein says. That means the drug you're getting may not work -- or may have unpredictable side effects.

Whether there's even such a thing as an optimal hormone level is unclear, notes Cynthia Pearson, executive director of the National Women's Health Network, a nonprofit group that advocates for women's health issues: "Women can have very different symptoms at the same hormone levels."

- Fad diagnoses. One of the newer anti-aging buzz phrases is adrenal fatigue. The theory behind the syndrome is that chronic stress causes a decrease in the production of adrenal hormones, which can cause fatigue and sleep issues.

But while there is a legitimate condition called adrenal insufficiency, which is diagnosed by an endocrinologist using a battery of tests, "adrenal fatigue is a bogus diagnosis," Perls says. What's more, the standard treatment -- hydrocortisone -- can lead to osteoporosis, diabetes, and organ dysfunction, says Jeffrey I. Mechanick, M.D., clinical professor of medicine, endocrinology, diabetes, and bone disease at the Mount Sinai School of Medicine.

Health.com: 11 foods for healthy bones

Heavy-metal toxicity is another trendy diagnosis. The concept: Removing the body's lifetime build-up of mercury, lead, and other metals can prevent or reverse age-related conditions such as heart disease. This is often attempted through chelation therapy, in which a synthesized amino acid called EDTA is run into patients' bloodstreams; the EDTA attaches to the metals, which are then flushed out of the body with urine.

The process can take 20 to 40 two- to four-hour treatments, at a cost of at least \$2,500.

But while chelation therapy may benefit those with heavy-metal poisoning (a rare problem), there's zero evidence it helps the rest of us. "It's quackery at its best," Perls says. "People have died from it." Case in point: In 2003, a 53-year-old Oregon woman died during her fourth round of chelation therapy. According to the medical examiner, the cause was a cardiac arrhythmia stemming from the EDTA infusion.

- Pill-a-palooza. Forget popping a simple multi-vitamin from the drugstore. "Many anti-aging doctors sell their own lines of nutraceuticals at very high prices," Perls says. "It's a profit margin that's better than what cocaine dealers get."

Don't waste your money, says Olshansky: "The vast majority of studies say anti-aging supplements don't work." Plus, they're not required to be FDA-approved before they're sold, so there's no guarantee that they're safe or effective. "We don't know if they could help, but they could be harmful," says Winifred K. Rossi, deputy director of the Division of Geriatrics and Gerontology at the National Institute on Aging.

Health.com: Mistakes women make in middle age

Age well -- and wisely

The good news is, no one is saying that you have to just deal with hot flashes, weight gain, or any other midlife change. Fifty-plus women may not have the biology of twentysomethings, but they can still feel vibrant, healthy, and even sexy.

"Our best advice is not very different from what our mothers told us: Maintain a healthy weight, be active, eat nutritious food, and don't smoke," Rossi says. Two key nutrients also help: calcium (get 1,200 milligrams a day, preferably from food; 1 cup of yogurt has 415 milligrams) and vitamin D (aim for 2,000 IU daily in a supplement, since it's tough to get otherwise), Goldstein says.

Then, make sure you have the right medical team in place. Most women use their OB/GYNs as their go-to, but in your 40s, consider seeing a family-practice doctor or internist, too, says

Pearson: "They're qualified to handle all the routine issues that come up as women hit middle age."

This back-to-basics approach may not sound as cutting-edge as special injections or souped-up supplements, but it's time-tested and a lot less costly -- for your wallet and your health. "Many of the benefits that are associated with HGH -- you can get those with exercise, for free," says Olshansky. "You don't have to spend \$12,000."

5 Anti-aging Supplements That Really Work

by John Perritano

In cages at McMaster University in Hamilton, Ontario sit a group of mice who don't act their age. Unbelievably, they don't seem to be aging at all. For several years, the Canadian mice have been drinking a cocktail of 30 dietary supplements and vitamins. The concoction seems to be keeping the rodents young [source: Food & Fitness Advisor].

Scientists say the mice that were given the anti-aging cocktail had an unusual spring in their step. They had no loss of physical

activity compared to a group of mice who didn't imbibe. In fact, those mice showed a 50 percent decrease in physical activity [source: Food & Fitness Advisor]. Astonishingly, the combination of vitamins and supplements lengthened the lifespan of the rodents that took it by 11 percent. Did the Canadian scientists discover the legendary Fountain of Youth? If you are a mouse, they did. But the McMaster researchers say the cocktail probably wouldn't work as well in humans [source: Dye].

For better or worse, whether we like it or not, all of us age. It's a natural, unpleasant fact. Why we age is open to conjecture. While molecular biologists know that our cells age at different rates, they don't know exactly why. They suspect that environmental factors, such as smoking, stress and exercise have something to do with it, and they also think genetics plays a role, too [source: Harrell].

No matter the reasons, many of us continue trying to stay young. That's why the sale of anti-aging lotions, supplements and other products is expected to top \$291 billion by 2015 [source: World Health.net].

Do these supplements work? What's the science behind them? While some might help your body function more robustly, the research behind most anti-aging supplements is based on common sense, rather than science. Our bodies, for instance,

need coenzyme Q10 (CoQ10) to keep running. Because CoQ10 decreases significantly with age, it makes sense that maintaining proper levels of the substance would make us healthier [source: Mayo Clinic].

The effects of most anti-aging supplements have not been studied, and some could even be harmful. Most doctors agree that the best way to combat the effects of aging is with a proper diet and exercise. Yet, that doesn't seem to stop us from trying anything to hold back the Grim Reaper. Read on to find out the top five supplements that claim to keep you young.

Our bodies produce CoQ10, a substance that's necessary for cells to function. It helps produce an important molecule known as adenosine triphosphate, or ATP. ATP is the fuel that helps power the energy-producing center of the cell known as mitochondria [source: University of Maryland Medical Center]. As we get older, our body produces less CoQ10, and as a result, our cells don't function as they should. In fact, those who suffer from chronic diseases such as Parkinson's, cancer, diabetes and cardiovascular disease have lower CoQ10 levels than healthy people [source: Mayo Clinic].

Researchers believe that taking CoQ10 as a supplement can help prevent heart disease. It helps prevent blood from clotting, and may act as an antioxidant, which protects our cells against the effects of free radicals that can damage cells and

cause heart disease. Moreover, researchers suspect CoQ10 supplements may improve the health of diabetics by managing blood sugar, cholesterol and blood pressure [source: University of Maryland Medical Center].

Consumers can buy CoQ10 as a supplement in several forms, including soft gel capsules. There is even an oral rinse that helps treat gum disease. The supplement also comes in hard-shell capsules and tablets. Our bodies tend to absorb soft gel capsules better than hard capsules. Cosmetic companies also add CoQ10 to various products. The recommended dosage for adults is 30 to 300 mg. daily [source: University of Maryland Medical Center].

CoQ10 supplements seem to have no side effects except for an occasional upset stomach. However, consult with your physician if you want to take the supplement and are on any other medications [source: University of Maryland Medical Center].

Take one aspirin and call me in the morning, because it seems there's nothing this little pill can't do.

Take one aspirin and call me in the morning, because there isn't anything aspirin can't do, or so it seems. Aspirin can help get rid of a headache, relieve minor pain and reduce low-grade fevers.

Those with heart conditions are often put on a low-dose aspirin regimen because it helps blood flow, which is important as our bodies age. One study showed that men who took aspirin every other day didn't need as much surgery to repair blocked blood vessels [source: Mother Nature].

Aspirin might also help a person avoid colon cancer. One study suggested that those who took aspirin 16 or more times a month had a 50 percent lower risk of developing colon cancer because the tiny, white wonder drug slows the down development of polyps that could be a tell-tale sign of the disease [source: Mother Nature]. Beware! Aspirin therapy doesn't work well for everyone. Studies show that men react differently to aspirin than women. And taking too much aspirin could cause stomach problems [source: Duenwald].

Produced in the liver and kidneys, and stored in the heart, brain, muscles and sperm, carnitine is a nutrient that helps the body turn fat into energy. Some people take carnitine pills because their bodies, for whatever reason, do not produce enough of the nutrient. Among its other benefits, several studies suggest that carnitine helps reduce the symptoms of angina, a medical condition in which a lack of blood to the heart causes severe chest pains [source: University of Maryland Medical Research Center].

Acetyl-L-Carnitine is a type of carnitine. It has been touted as a treatment for Alzheimer's disease and as an anti-aging supplement because it improves memory function. Carnitine is also used to help relieve depression related to senility and dementia. Several studies suggest that L-carnitine supplements may increase sperm count in men, too [source: University of Maryland Medical Research Center].

The recommended dosage for the supplement varies depending on what ailment is being treated. The usual dose is between 1 to 3 grams per day. Those suffering from heart disease should take between 600 to 1,200 mg three times a day. According to the University of Maryland Medical Research Center, other common dosages include the following:

Angina and heart failure: 1.5 to 2 grams per day

Peripheral vascular disease: 2 to 4 grams per day

Diabetic neuropathy: 3 grams per day

Male infertility: 300 to 1,000 mg 3 times daily

Chronic fatigue syndrome: 500 to 1,000 mg 3 to 4 times per day

Fish oil can help reduce the effects of glaucoma and coronary heart disease.

The key component of fish oil supplements is omega-3, which is a fatty acid. Doctors tout omega-3 as a way to keep your heart healthy. It can also reduce the overall risk of sudden death in patients with coronary heart disease. Some studies also show that fish oil is beneficial in lowering high triglyceride levels, which are fats related to cholesterol [source: WebMD].

Some older people use fish oil to stem the effects of glaucoma and macular degeneration. According to scientists, the body does not produce its own omega-3 fatty acids, so eating a lot of fish or taking fish oil supplements is important. Omega-3 has proven useful in reducing pain and swelling, and for preventing blood from easily clotting [source: WebMD].

However, there are some side effects. Taking too much fish oil can cause the blood to run too thin, increasing the chance of bleeding. High doses might also harm the body's immune system, reducing a person's ability to fight disease. Fish oil can interact with birth control pills, too [source: WebMD].

Fish oil comes in soft gel capsules. Doctors recommend taking 1 to 4 grams of fish oil a day if you're fighting high triglyceride levels. Those suffering from high blood pressure should take 4 grams a day. Those with depression can also benefit from fish oil. Doctors recommend taking 9.6 grams a day in conjunction with anti-depressant medications [source: WebMD].

If you want to hit old age out of the ball park, many people recommend taking human growth hormone, or HGH. HGH is made in the body's pituitary gland, and while it is important for normal growth in children, many books and articles have touted the hormone as a Fountain of Youth that reverses the effects of aging. That's because HGH levels decrease naturally the older you get. There's only one problem: There's no scientific evidence to back up the claim that HGH will help stave off the effects of aging. Those who use HGH might even be putting their health at risk [source: Childs].

Synthetic human growth hormone was developed in 1985 and approved for use in children who had growing problems. Since then, the FDA has approved the drug's use for adults who have various maladies, including a muscle-wasting disease associated with HIV/AIDS [source: WebMD]. In 2007, the Annals of Internal Medicine reviewed the published studies about HGH's effect on aging. The journal concluded that while there are minimal benefits associated with the hormone, there are potential side effects, such as diabetes, and the formation of breasts in men, so HGH is regulated by the government [source: WebMD].

Still, thousands of healthy Americans have received illegal HGH injections each year as an anti-aging drug. Athletes also use HGH as a performance-enhancing drug [sources: WebMD, Childs]. How do they get the drug if it is regulated by the

government? Nefarious doctors give their patients illegal HGH injections. People can also buy the synthetic hormone over the Internet and through anti-aging clinics [source: WebMD].

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## **14 Foods That Make You Look Older**

### **Age-accelerating foods**

by Kiera Aaron

There's a reason why your skin feels a little off after a series of holiday parties, BBQs, or mojito-filled beach days: "What you eat affects your skin—for better or worse," says Ariel Ostad, MD, fellow of the American Academy of Dermatology. While a few indulgences won't age you overnight, a continuously poor diet can accelerate the aging process of your skin (and teeth) over time. Here, 14 foods to consume in moderation in order to look as young as you feel.

### **Sweets**

Sugar overload may kick-start a process called glycation. The theory: When you eat more sugar than your cells can process, the excess sugar molecules combine with proteins, creating "advanced glycation end products" (appropriately referred to as "AGES"), explains Dr. Ostad. Ultimately, AGES may damage

your skin's collagen (the protein that keeps skin firm and youthful).

Unsurprisingly, too much sweet stuff is also bad for your smile. "Sugar sticks to your teeth, encouraging bacteria, decay, and discoloration," says Brian Kantor, a cosmetic dentist who practices in New York City. If you treat yourself to something sweet, swish water around your mouth afterward to remove any buildup.

## **Alcohol**

A healthy liver means healthy skin. "When your liver is functioning well, toxins that could potentially affect the skin are expelled naturally through your body," says Dr. Ostad. "But if toxins build up in your liver, and aren't broken down properly, your skin can develop a variety of issues, like acne, sallowness, and wrinkles." Drinking can also trigger rosacea outbreaks.

To top it off, alcohol is dehydrating and bad for your sleep, which was associated with accelerated aging in a Case Western Reserve University study. "Inadequate sleep is linked to wrinkles, uneven pigmentation, and reduced skin elasticity," says Dr. Ostad.



## **Charred meat**

That black char on your burger? It may contain pro-inflammatory hydrocarbons, which could present a problem since inflammation breaks down the collagen in your skin, explains Dr. Ostad. You don't necessarily need to banish BBQ from your vocab, but at least make sure you scrape off the black stuff, and clean the grill afterward so you don't contaminate your next meal.

## **Salty foods**

You might not cook with salt, but that doesn't guarantee your intake is low. "Many canned foods are preserved with sodium, which can make you retain water and cause a 'puffy' look," says Ranella Hirsch, MD, former president of the American Society of Cosmetic Dermatology & Aesthetic Surgery, and dermatologist practicing in Massachusetts. Watch out for these 13 foods that are saltier than you realize, and if you need a quick fix, combat fluid retention with a moisturizer that contains caffeine (it's known for reducing puffiness when applied topically).

## **Processed meats**

Think: Deli meat, sausage, and bacon. "Many of these meats have sulfites and other preservatives, which can trigger inflammation in the skin, and accelerate the appearance of

aging," says Dr. Ostad. They also tend to be high in salt, which can make you look puffy. (Not to mention, processed red meats have been linked to heart disease.) Try swapping the deli meat on your sandwich for chicken or turkey. If you can't say goodbye for good, use less meat, and load up on veggies.

### **Spicy food**

Spicy food aggravates rosacea-prone skin, but it can also do damage during menopause. "It's believed that the blood vessels in the skin are more reactive then," says Dr. Ostad. Since spicy food dilates your blood vessels, menopausal women may find their skin looking blotchy and less youthful during this time. Don't worry about indulging in the occasional spicy curry, but regular flare-ups could lead to spider veins, puffiness, and/or permanent redness, says Dr. Ostad. Order your food mild when possible.

### **Red meat**

"Fatty meat generates free radicals," says Dr. Ostad. Free radicals are in search of missing electrons, they snag electrons from healthy cells, damaging them in the process. This damage ultimately affects your skin's ability to protect itself and generate collagen.

While it's fine to eat a burger here and there, don't make it a daily habit. "You're better off with leaner meats, like a turkey burger or chicken," says Dr. Ostad. And remember to load up on antioxidants, both in your fridge and in your beauty bag: "Antioxidant-rich foods and serums help combat age-promoting free radicals," says Dr. Ostad. Look for serums that have vitamin C (also known as ascorbic acid).

### **Energy drinks**

Energy drinks may make you feel like you have the pep of a kid, but they have a not-so-youthful effect on your teeth. In fact, teeth exposed to energy drinks were stripped of more enamel than sports drinks, according to a General Dentistry study. Energy drinks were also found to be more acidic—no coincidence there. (Remember: Acidity makes your teeth more vulnerable to stains.) If you really need your energy drink fix, sip from a straw: "The less contact with your teeth, the better," says Kantor.

### **Anything caffeinated**

"Caffeine is like any other diuretic; it can make you excrete fluid, and deplete your body of moisture," says Dr. Hirsch. And yes, that includes your skin: "Anything dehydrating can dehydrate your skin, making it look dull and aged."

Good news: It's simple to combat the consequences of one too many cups of coffee. "Moisturizer, hands down, is the easiest way to look younger instantly," says Dr. Hirsch. Try one that has hyaluronic acid, a super-moisturizing ingredient that holds 1,000 times its weight in water.

## **Trans fats**

In case the risk of heart disease isn't enough to make you swear off trans fats for good, they may also be bad for your skin.

"Trans fats promote inflammation," says Dr. Ostad.

(Inflammation is also bad news for your collagen.) Plus, the unhealthy fats may make you more vulnerable to UV damage, which is the number-one cause of aging, according a preliminary mouse study published in *Lipids*. Don't be fooled by a label that says "0g trans fat," as it can still contain under 0.5g of the artificial fat. Make sure to avoid products that list a partially hydrogenated oil on the ingredient label, too.