

Top Five **Best and Worst** **Anti-Aging** *Substances*



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TOP FIVE BEST AND WORST ANTI-AGING SUBSTANCES

By GreenMedInfo Research Group

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TOP FIVE BEST AND WORST ANTI-AGING SUBSTANCES

While you can't stop your chronological age from advancing, you can slow down and even reverse your body's biological age, thereby extending your longevity and, even more importantly, your health span, or the number of years you spend in good health.

BY GREENMEDINFO RESEARCH GROUP

Your body changes as you age, starting even before you're born. The “zero point” begins in utero during embryonic development, but as the embryo develops, so too does it age. Despite the ubiquitous nature of the aging process, there remains much controversy over what “aging” actually is, and there is no scientific consensus on its true definition.

The aging process, to some, is a loss of cellular stability or an end to cells' ability to recover from the daily burdens of life on Earth. Yet, this description could also be used to describe the phenomenon of disease, leading some to posit that aging and disease are one in the same. The popular theory of aging, however, is that it is not a “disease” but rather a natural, inevitable physiological process that, therefore, has no treatment.

“But, as we all know,” researchers wrote in the journal *Aging*, “everyone wants to live long yet no one wants to be old. With greater age comes a heavier burden of conditions and, subsequently, lower quality of life.” Yet, aging is also a highly individualized process. Your body at 70 years – your chronological age – could have a biological age that's much older or younger than the calendar dictates.

This is where the complexity comes in, as psycho-social, dietary and lifestyle factors play a significant role in your health span and your biological age, which can be estimated via epigenetic “clocks” based on human DNA methylation data.

Epigenetic clocks are now considered to be more accurate in assessing your biological age than your chronological age – which is good news because, while your chronological age is set in stone, your biological age can be reversed.

If you haven't yet delved into your body's regenerative potential, this is an exciting place to begin. Tissues such as your nerve cells, liver, heart and bones can all regenerate, as can your skin. It's important to understand that your body's default mode is that of regeneration – not degeneration – which makes sense since your body is made of an estimated 30 trillion cells that are highly dynamic, not static.



Life is ultimately a series of choices, each one influencing countless outcomes in your everyday minutia. Some of those outcomes are physiological in nature and occur inside your body, adding up to how quickly, or slowly, your body ages. It's true that you can't permanently stop the process, but you can certainly influence it for the better and, in some cases, possibly even reverse it.

SLOW DOWN AGING: TOP 5 SUBSTANCES

Your everyday lifestyle habits – your diet, sleep, stress levels, toxic exposures and more – are going to add up to have the greatest influence on your health span over your lifetime. The substances that follow represent natural options that you can add to your regular exposures to favorably influence aging and health.

To suggest that these are the only or “best” anti-aging compounds would be overly simplistic, as hundreds of natural substances have been researched for their anti-aging potential, but they’re intended to give you an idea of the powerful forces that exist in nature to support your body’s homeostasis and regeneration. For best results, consult with a holistic health care practitioner who can work with you on the substances that will best support your health, given your unique lifestyle, health goals and history.

1. CURCUMIN

Curcumin is a curcuminoid found in the bright yellow spice turmeric, which is valued for its impressive antioxidant and anti-inflammatory properties. Inflammation is at the root of many age-related diseases like cancer, atherosclerosis and Alzheimer’s disease, while aging is often said to be driven by an accumulation of damage caused by reactive oxygen species (ROS) in the mitochondria, which antioxidants like curcumin can help counteract.



Curcumin’s hormetic effects are also being explored. In a process known as hormesis, low doses of natural compounds can activate an organism’s stress response, while larger doses may lead to autophagy, which is your body’s way of clearing out damaged cells and making room for new ones, and cell death, or apoptosis, which is a normal and controlled part of growth and development.

It’s curcumin’s ability to induce autophagy and apoptosis, as well as disrupt molecular signaling, that leads to its anticancer effects, for instance, and may also explain some of its promise for antiaging. According to a study published in *Oxidative Medicine and Cellular Longevity*:

“The study of the role of natural agents [like curcumin] that induce beneficial cross-talk between apoptosis and autophagy to finely tune cell death is also at the forefront of new therapeutic discoveries in metabolic disorders and aging.”

Curcumin is also being explored as a therapeutic agent for age-associated cognitive decline, as it's known to augment processes that accelerate this process, including oxidative stress and systemic inflammation. While its efficacy for this purpose is still inconclusive, researchers noted in GeroScience, "Curcumin's molecular structure and its ability to cross the blood-brain barrier provide a promising avenue for neuroprotection."

2. FERMENTED VEGETABLES

Your body's microbial composition has emerged as a key player in aging, particularly in terms of biological age. In a cohort study, those who were the most biologically aged had more circulatory pathogenic bacteria including *Neisseria*, *Rothia* and *Porphyromonas*, while those who were "younger," biologically speaking, had more circulatory bacteria that were defined as salutogenic, or supportive of human health, including *Lactobacillus*, *Lachnospiraceae* UCG-004 and *Kocuria*.



The study's researchers, from the University of Glasgow, had previously demonstrated that low socioeconomic position (SEP) and an imbalanced diet exacerbated accelerated aging, which led them to explore whether an imbalanced diet can also drive microbiota changes that influence age-related health. Vegetable intake was one intriguing factor:

"We can propose a mechanistic link between the higher vegetable intake of those at higher SEP, and the provision of [anti-inflammatory] Nrf2 agonists due to the coding-capacity of Lactobacillus and Kocuria prevalent in this group.

This should intuitively provide cyto-protection and promote better health span. Conversely, this protection is lost in the lower SEP group, with a lower relative intake of fruit and vegetables, and with an increased prevalence of bacteria that have the potential to contribute to systemic age-related diseases ... Our data suggest a clear route to improving age related health and resilience based on dietary modulation of the microbiota."

Fermented foods also contain biologically active peptides that carry health benefits of their own, including lowering blood pressure and offering antimicrobial, anti-carcinogenic, anti-inflammatory, anti-diabetic and anti-atherosclerotic effects, all of which support healthy longevity.

The diversity of gut microbiota is also linked with aging, while the beneficial functions of the microbiota decline with age. Fermented foods may be useful in this area by countering decreased microbiome diversity and decreasing markers of inflammation.

3. GREEN TEA AND COFFEE

Depending on your preference, either green tea or coffee – or some of each – are excellent anti-aging beverages, provided your coffee isn't doctored up with sweeteners. Green tea, in particular, has been enjoyed traditionally by people in China and Japan, who valued it for optimal health and longevity.

Catechins are the most biologically active compounds in green tea, and epigallocatechin 3-gallate (EGCG) in particular has been researched for its health benefits, which include antifungal, anti-inflammatory and antioxidant effects.

When researchers looked into tea consumption (green, black or no tea) on aging in people aged 50 and over in Greece, drinking green tea was associated with a higher likelihood of successful aging.

Additional research has found that EGCG promotes fat oxidation and green tea consumption helps to optimize cholesterol, while L-theanine in green tea has antioxidant and vasodilation effects. Another compound in the beverage – gamma-aminobutyric acid (GABA) – may decrease blood pressure and boost antioxidative defenses and mood.

As for coffee, it provides a complex mix of more than 1,000 polyphenols and other beneficial compounds, making it the largest source of dietary antioxidants for Americans. Moderate coffee consumption of two to four cups daily is associated with a reduced risk of all-cause mortality compared with drinking no coffee, and although coffee sometimes gets a bad rap in the U.S., it's been recognized as a beverage for healthy aging that may lower the risk of heart disease and mild cognitive impairment.

For instance, one polyphenol in coffee, chlorogenic acid, has been shown to lower fat accumulation in animal studies, and also helps slow glucose absorption and lower blood pressure.

Another study followed 90,914 Japanese people between the ages of 40 and 69 for an average



of 18.7 years. Habitual coffee drinkers had a lower risk of total mortality, and coffee was inversely associated with death from heart disease, cerebrovascular disease and respiratory disease. Other research has linked coffee consumption with a lower risk of developing Type 2 diabetes.

Coffee also influences telomere length, which is a biomarker of the senescence of cells. Senescent cells have stopped dividing and tend to accumulate with age. Cellular senescence is believed to occur in stressed cells as a tumor-suppressor mechanism, stopping cellular reproduction in order to protect against cancer.

But these cells, even if they're non-cancerous, can become harmful as they accumulate, as they crowd out healthy, regenerating cell lines. As such, elimination of senescent cells is believed to promote longevity and antiaging. Research published in *Nutrition & Metabolism* in 2017 revealed that as coffee intake increases, telomeres tend to be longer, and for each cup of coffee consumed daily, cell aging was about 2.2 years less among U.S. adults.

Further, among coffee drinkers only, cell senescence was 2.6 years less for each cup of coffee consumed. The study concluded, "Because telomere length is a biomarker of the senescence of cells, the present findings suggest that cell aging may be ... decelerated as coffee consumption increases."

4. RESVERATROL

Resveratrol, an antioxidant polyphenol abundant in red grape skins, has pleiotropic action that protects against inflammation, oxidative stress and cancer, and may act as a mimetic for the antiaging effects of calorie restriction. It's resveratrol's ability to influence multiple biological activities that make it so exciting as an antiaging compound, particularly its ability to increase lifespan by regulating:

- Oxidative stress
- Energy metabolism
- Nutrient sensing
- Epigenetics, by activating sirtuin 1



Resveratrol's ability to activate sirtuin activity is noteworthy, as sirtuin delays cellular senescence, thereby extending lifespan. This compound is the most potent activator of sirtuin 1 known – other natural sirtuin-activating compounds include melatonin, curcumin and persimmon.

Resveratrol has also shown promise in helping to prevent a number of age-related diseases, including heart disease, Type 2 diabetes, neurodegenerative diseases and cancer, while also improving mitochondrial function, protecting against cardiovascular dysfunction and suppressing obesity and obesity-related diseases.

It's also likely that resveratrol may exert some of its therapeutic effects via its interaction with gut microbiota, leading to changes in gut bacteria composition that are associated with positive metabolic outcomes.

While resveratrol is available in supplement form, it has low bioavailability. Due to its rapid metabolization, oral bioavailability of resveratrol is believed to be less than 1%, however, as researchers noted in the journal *Molecules*, "Food items containing high levels of resveratrol may prevent age-related diseases among the general public." In addition to grape skins, resveratrol can be found in:

Red wine	Grape juice
Peanuts	Cocoa
Blueberries	Bilberries
Cranberries	

5. VITAMIN C

Vitamin C (ascorbic acid), with its potent anti-inflammatory and antioxidative effects, is essential for regulation of the immune response, wound healing, bleeding prevention, collagen synthesis and other essential functions. Notably, your brain has a higher concentration of vitamin C relative to other organs, and it has been heralded for its anti-aging effects in the brain, particularly.

Vitamin C is a key antioxidant in the central nervous system and is taken up by neurons, where it scavenges reactive oxygen species (ROS). As oxidative stress is a major player in neurodegeneration, vitamin C is protective of the brain in neurodegenerative disorders. Importantly, vitamin C also positively influences immunosenescence, which describes age-associated changes in the immune system, while epigenetically regulating genome integrity and stability, additional hallmarks of healthy aging.

It's also beneficial for targeting inflamm-aging, a term used to describe the increased expression of genes related to inflammation with age. Reducing inflamm-aging is important, as it's associated

with decreased nitric oxide and thereby endothelial dysfunction, and, as noted by Italian researchers in the journal *Nutrients*, “may be considered a biological background for both the aging process and the pathophysiological process of frailty in humans.”

Notably, vitamin C may also help to regenerate degraded hormones by contributing electrons to resurrect the form and function of estradiol, progesterone and testosterone. In one study, researchers noted:

“The reported results concerning the regeneration of hormones by the transfer of electrons from an electron donor [vitamin C] offer a new, promising method for the therapy with hormones. As a consequence of the regeneration of hormones, a decreased formation of carcinogenic metabolites is expected.”

Vitamin C is widely available in supplement form and in fruits and vegetables. Some of the most concentrated food sources include kiwi, berries, broccoli, green peppers, leafy greens, mango, citrus fruit and tomatoes.



SPEED UP AGING: TOP WORST SUBSTANCES

Most people do not want to intentionally speed up the aging process, but if you’re regularly exposed to any of the following, you could be aging prematurely.

As with the best anti-aging substances, the worst substances that accelerate aging are those you’re regularly exposed to on a routine basis, and making positive changes that influence your daily life can go a long way toward your longevity. The list that follows includes some of the worst substances that may accelerate the aging process.

1. ULTRAPROCESSED FOODS

The foods you eat can be a driving force behind premature aging, particularly if your diet is made of primarily ultraprocessed foods (UPFs). Ultraprocessed foods are those made from substances extracted from foods, such as unhealthy fats, hydrogenated oils, added sugars and starches, along with artificial additives and stabilizers. Fast food, lunch meat, hot dogs, frozen meals, packaged baked goods and potato chips are examples of ultraprocessed foods.



UPFs are associated with chronic diseases, including high blood pressure, obesity, metabolic syndrome, depression, Type 2 diabetes and cancer, and they also influence telomere length. A study of 886 people between the ages of 57 and 91 found that those who consumed three or more servings of processed foods daily were more likely to have shorter telomeres than those who did not.

These foods lack the vital energy and nutrients that your body needs to flourish and instead expose you to toxins. Those in the aforementioned study who consumed more UPFs also had a greater risk of depression, high blood pressure, overweight/obesity and all-cause mortality.

Consumption of UPFs is also strongly associated with frailty risk in older adults. In turn, frailty in older adults is linked to an increased risk of hospitalization and three-year mortality.

The fewer ultraprocessed foods you eat, the better, as even a 10% increase in the proportion of UPF consumption is associated with a 14% higher risk of all-cause mortality. To optimize health and longevity, focus your meals on fresh, unprocessed whole foods like fruits, vegetables, nuts, grass fed meats and seafood.

2. PSYCHOLOGICAL STRESS

Your physical health and psychological health are closely intertwined, and chronic stress, anxiety and worry will speed up the hands of time. As noted by University of Colorado School of Medicine researchers:



“Evidence suggests that chronic psychological stress stimulates the autonomic nervous system, renin-angiotensin system, and the hypothalamic-pituitary-adrenal [HPA] axis when the body attempts to resolve perceived threats to homeostasis.

Prolonged activation of these pathways can result in chronic immune dysfunction, increased production of reactive oxygen species, and DNA damage, which are known to contribute to the aging of skin and other tissues.”

Chronic psychological stress generally causes biological “wear and tear” that can increase inflammation and dysregulate endocrine function, with an end result of impairing neural structure and cognitive performance. Even unconstructive repetitive thinking, such as worrying and rumination, may be physically damaging to your body, contributing to inflammation, dysregulated HPA axis function and accelerated cognitive decline.

The adverse effects of stress are so strong that they may start in utero. As one study demonstrated, young adults whose mothers experienced severe stress during pregnancy had significantly shorter telomere length as young adults.

Declines in telomere length may serve as a biomarker of aging or possibly play a causal role in aging, and the researchers suggested the prenatal stress may have translated to a difference in aging rate of 3.5 years for men and five years for women.

The solution is to protect your emotional and psychological health as fervently as you do your physical health, via the methods that work best for you – “mental health days” to unwind, yoga, a walk in the woods, reading a book or calling a friend are all ways to prioritize your emotional health.

3. ELECTROMAGNETIC FIELDS (EMFS)

Oxidative-inflammatory stress is a primary underlying cause of age-related changes to your immune system, or immunosenescence. Long-term exposure to EMFs increases oxidation and inhibits the immune response, which may accelerate the rate of aging. In addition, exposure to Wi-Fi and other EMFs is known to cause at least seven deleterious effects, including: EMFs are difficult, if not impossible, to avoid entirely, but it’s prudent to avoid unnecessary and prolonged exposures, particularly for children, who are especially vulnerable to EMF damage.



Oxidative stress	Sperm/testicular damage
Neuropsychiatric effects, including EEG changes	Apoptosis
Cellular DNA damage	Endocrine changes
Calcium overload	

You can also lower your exposure at night by turning off Wi-Fi and keeping electronics out of your bedroom.

Going a step further, adding an EMF insulating system to your bed can be beneficial, with one study showing it led to a decrease in oxidative damage in DNA and a reduction in calculated biological age when used for two months.

4. SEDENTARY LIFESTYLE

A sedentary lifestyle is another factor known to accelerate the shortening of telomere length, which is linked with chronic disease, cellular senescence and apoptosis. One study revealed that older women who are sedentary are about eight years older, biologically speaking, than women who are physically active.

“Our study found cells age faster with a sedentary lifestyle. Chronological age does not always match biological age,” study author Aladdin Shadyab, Ph.D., from the Department of Family Medicine and Public Health at UCSD School of Medicine, said in a news release.

The effect can be dramatic when you consider that while a lifetime of physical inactivity accelerates secondary aging, such as speeding the reduction in bone mineral density and muscle strength, a lifetime of physical activity “totally prevents decrements in some age-associated risk factors for major chronic diseases, such as endothelial dysfunction and insulin resistance” at the age of about 60 to 70 years.

If you haven’t led an active lifestyle, you can’t go back in time to change that, but getting moving now can still make a positive difference. Even in previously sedentary middle-aged adults, exercising for two years led to significant improvements in fitness, including decreased cardiac stiffness and improved maximal oxygen uptake, suggesting it may help prevent some of the risks of sedentary aging.



Keep in mind that while exercise is important, so, too, is regular non-exercise movement, meaning you’re up and active most of the day instead of primarily sitting.

5. LACK OF SLEEP

Much remains to be uncovered about the mysteries of sleep, but it’s during the midnight hours that your body recharges and detoxifies. Thus, skimping on sleep is one of the most surefire ways to accelerate aging, with research showing that even one night of poor sleep activates biological pathways that promote biological aging.



Specifically, one night of partial sleep deprivation was found to cause cellular changes leading to increased susceptibility to senescence.

As noted by the American Academy of Sleep Medicine, “These findings causally link sleep deprivation to the etiology of biological aging, and further supports the hypothesis that sleep deprivation may be associated with elevated disease risk because it promotes molecular processes involved in biological aging.”

Inadequate sleep also accelerates skin aging, with chronic poor sleep linked to increased signs of intrinsic aging and diminished skin barrier function, while sleeping for five hours or less per night increases the risk of all-cause mortality. There are many ways to support healthy sleep hygiene – starting with making a concerted effort to get to bed on time.

Physical activity, stress relief, aromatherapy and avoiding electronics at night are other options for increasing your sleep quality. If you consistently have trouble falling asleep, melatonin can be useful for regulating your circadian rhythm and increasing total sleep time.

It also has anti-aging properties of its own, particularly when it comes to age-induced cardiac alterations, with researchers describing it as “a prospective candidate to become the fountain of youth for the heart.”

HEALTHY LONGEVITY IS THE GOAL

While it can be tempting to focus on finding the latest and greatest anti-aging tools to keep you young, focusing on singular anti-aging strategies can be counterproductive. The rate at which you age is complex and multi factored, and so, too, is the road to longevity.

The goal isn’t simply to extend life, but to lengthen health span – the number of years that you spend in good health. Toward that end, GreenMedInfo.com has compiled 383 promising natural substances that have been researched for their anti-aging potential, which include the substances listed above and many others, such as:

Ginkgo biloba	Nuts	Magnesium
Astaxanthin	Alpha-lipoic acid	Blueberries
Quercetin	Selenium	Bacopa
Pomegranate	Vitamin B12	Omega-3 fats
Pycnogenol (pine bark)	N-acetyl-L-cysteine (NAC)	Apples



By actively seeking out substances and lifestyle choices that **support your body's ability to regenerate, while proactively avoiding those that cause it harm**, you'll support your body's **natural restorative powers**, effectively **slowing down biological aging** and **increasing your health span**, even as your chronological age continues to advance.

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