Lower Your Biological Age by Removing Senescent Cells to Help Remain Healthier and More Active Longer

As we grow older, damaged cells that are malfunctioning and contributing to disease build up in our tissues and organs. In scientific terms, these damaged cells are known as senescent cells, which stop growing but continue releasing harmful inflammatory and tissue-degrading molecules. These are now known to accelerate aging and age-related diseases.

Senescent cells are cells that have stopped dividing and entered a state of permanent growth arrest without undergoing cell death. These are sometimes referred to as 'Zombie Cells' as they are considered both dead and alive, since they have stopped functioning and cause havoc to the body's natural organs and their medical functions. While this process is a natural part of aging and the body's response to damage, the accumulation of senescent cells over time can contribute to, and accelerate age-related diseases and overall biological aging.

Initially, senescence serves as a protective mechanism. Cells may enter senescence to prevent damaged or stressed cells from dividing uncontrollably. This process can be triggered by various factors, such as DNA damage, oxidative stress, and the shortening of telomeres (the protective caps on the ends of chromosomes).

How Senescent Cells Will Damage Your Body

Senescent cells secrete various inflammatory molecules, growth factors, and proteases, collectively known as the senescence-associated secretory phenotype (SASP). These secretions can have both beneficial and harmful effects. In younger individuals, they can help with tissue repair and immune surveillance. However, by adult middle age, senescent cells accumulate and the SASP can lead to chronic inflammation, tissue damage, and disruption of normal cellular function.

Normally, the body uses a process called apoptosis to remove the senescent cells from the body before they can accumulate in organs. The immune system in young people eliminates senescent cells. However, when the body is no longer successful in removing these cells, as it happens around adult middle-age, it can lead to conditions such as heart disease, frailty, dementia, osteoporosis, diabetes, and kidney, liver, and lung diseases.[1] Senescent cells also produce proteins that accelerate aging in the brain, joints, vital organs and skin.

Why Aging Affects Some People More Than Others

Excess senescent cells are a contributing factor to these age-related diseases and are often not recognized. In other words, even top doctors are unaware of the true impact of senescent cells on our health.

Yet, research shows that having too many senescent cells can lead to a pro-inflammatory response and sabotage health.[1] Inflammation leads to a process called inflammAGING, which refers to how inflammation causes you to age faster. If you've ever wondered why some of your age-compared family members are less active and lively and are more affected by aging compared with others, excess senescent cells may be to blame. On the other hand, clearing senescent cells may delay aging and extend a person's health span, which means keeping you healthy and active into old age.[1]

One important key to promoting health as we age is to remove senescent cells safely.

In this whitepaper, I'm going to show you exactly how to accomplish this with a formula called Expelcell so that you can remain healthy and continue to do the things you enjoy and appreciate as you grow older.

How Old Are You Really?

We all have a chronological age based on the year we're born. We also have a biological age, which refers to the age of our cells. How healthy you are as you grow older is driven more by your biological age than your chronological age. Senescent cells participate in the importance of differentiation of an individual's chronological vs. biological age. The more senescent cells, the older your biological age.

Your biological age - as well as your ability to clear senescent cells - is often determined in part by a process called epigenetics, which is the process of modifying the expression of genes without changing the genetic code.

Epigenetic changes caused by healthy lifestyle practices like exercising, eating the right types of foods, avoiding smoking, and reducing exposure to toxins can make it easier for the body to clear senescent cells. However, participating in unhealthy lifestyle practices that lead to harmful epigenetic changes can contribute to the buildup of senescent cells in the body.[1] This means to a certain extent, we have some control over our ability to clear senescent cells throughout lifestyle, but that's only part of the story.

Research Shows Using Senolytics to Clear Damaged Cells

Researchers have been investigating the role of certain drugs and natural substances in clearing senescent cells from the body. They call these agents senolytics. One group of scientists from the Mayo Clinic studied senolytic agents in nine people with diabetes-related kidney disease.[2] For three days, the patients used a combination of the drug dasatinab and the botanical quercetin. Although the combination left the body in a few days, it cleared senescent cells for at least 11 days.

"Senescent cells can develop in all mammals in response to disease, injury, or cancerous mutations. Senolytic drugs do not interfere with generation of senescent cells, which could lead to cancer. However, once formed, senescent cells can contribute to developing cancers, multiple other diseases, and consequences of aging," James Kirkland, MD., Ph.D, senior author of the study, said in a Mayo Clinic news article.

In previous animal studies using senolytics, stopping senescent cells in mice reduced insulin resistance, cellular dysfunction, and other processes involved in disease progression and complications. Insulin resistance occurs when the body starts ignoring the signals insulin sends to lower blood sugar. Consequently, the body must release higher and higher levels of insulin in order to have any effect.

"By targeting senescent cells with senolytics in mice, we can delay, prevent, or treat multiple diseases and increase health and independence during remaining years of life," said Dr. Kirkland. "As we increase our understanding of these drugs and their effects, we hope there may be benefits for a range of human diseases and disorders."

Defend Against Age-Related Issues

The Expelcell formula contains seven research-backed natural senolytics that work together to clear excess senescent cells from the body, thereby defending against age-related issues and helping keep you active throughout your middle-aged and senior years. Fisetin, quercetin, luteolin, apigenin, theaflavins, piperlongumine, and bioperine are all included in the formula as powerful, natural ingredients that clear damaged cells. Since it takes weeks for new senescent cells to build up, you can take natural senolytics intermittently—for example, three days per month.[3]

Fisetin

Fisetin is a dietary flavonoid found in certain fruits and vegetables. Researchers have studied it for its ability to help remove excess senescent cells from the body.[3] You can get fisetin from eating strawberries, apples, mangoes, persimmons, kiwis, grapes, tomatoes, onions, cucumbers, and nuts. Still, it is difficult to get enough from your diet to keep up with the senescent cell production that occurs with aging.

Fisetin triggers apoptosis, the process responsible for removing senescent cells.[4] It has many impressive health-promoting effects, and

scientists have studied its role in neurological health, blood sugar support, enhanced memory, weight loss, and heart health.[4] Its beneficial effects are partly due to its ability to support a healthy inflammatory response.[4] Studies have shown that 40 minutes after taking fisetin orally, it can be detected within the brain's blood vessels for two hours, indicating it's easily absorbed and bioavailable to organs.[4]

Quercetin

Quercetin is another ingredient in the Expelcell formula that is well-researched for its ability to promote apoptosis in senescent cells.[5] Remember, apoptosis is how your body clears out damaged cells.

Quercetin is similar in structure to fisetin.[6] It's found in foods like apples, berries, cherries, red leaf lettuce, onions, and asparagus. It's in lesser quantities in pepper, broccoli, peas, and tomatoes. As with fisetin, it is difficult to get enough of it in the diet to counteract the effects of aging on cells.

Quercetin supports a healthy inflammatory response[7] and is an antioxidant that protects against free radical damage.[8] It protects the mitochondria, the energy source of our cells.

According to one group of scientists, "Accordingly, quercetin is now largely utilized as a nutritional supplement and as a phytochemical remedy for a variety of diseases like diabetes, obesity, and circulatory dysfunction, including inflammation, as well as mood disorders." [1]

Luteolin

Another flavonoid found in Expelcell is luteolin, which regulates the expression of inflammatory proteins known as cytokines. Research in mice shows it inhibits senescent lung cells, suggesting it can support a healthy lung inflammatory response.[9] Its ability to inhibit an excess of senescent cells is thought to be due to its anti-inflammatory and antioxidant actions and its ability to trigger apoptosis in damaged cells.[9] Luteolin can also reduce damage from solar radiation in skin cells, indicating it can promote youthful-looking skin.[10] Luteolin works with other flavonoids like apigenin, which speaks to the synergy of the Expelcell formula.

Apigenin

Like the other flavonoids in Expelcell, apigenin triggers apoptosis in damaged cells[11] and is one of the most effective natural senolytic agents.[12] It supports a healthy inflammatory response and is an antioxidant.[11] Research has shown that it can support the health of the liver, lungs, kidneys, and heart, promote neurological health, maintain healthy blood sugar levels, and encourage oral health and healthy skin.[11] It can also protect the brain after injury.[13]

Theaflavins

Theaflavins are the primary polyphenols responsible for the dark-reddish color of black tea. They protect against excessive cellular senescence caused by free radical damage.[14] They're antioxidants with significant anti-inflammatory actions.[9] Treatment of middle-aged mice with theaflavins reduced senescence in hypothalamic neural stem cells while improving damage related to senescence.[15]

Theaflavins help the body better utilize insulin and thereby help reduce obesity and other associated metabolic issues.[16] They also protect the mitochondria.[16] Human research shows that theaflavins significantly improve body fat percentage, subcutaneous fat percentage, and skeletal muscle percentage compared with the placebo.[17]

Piperlongumine

A compound found in long pepper, piperlongumine works especially well with other natural senolytics like quercetin to eliminate senescent cells from the body.[18] In one cell culture study, researchers triggered senescence in cells and then exposed them to piperlongumine.[19] The piperlongumine killed the senescent cells by triggering apoptosis.

Enhancing Bioavailability with Bioperine

Bioperine is an easily absorbed type of piperine, a component of black pepper. It enhances the absorption of other nutrients in the formula,[20] so they can go right to work in promoting

healthy aging. Bioperine also has effects on senescent cells, and it modifies the potentially harmful SASP secretion.[21] It can restore the function of healthy senescent cells while inhibiting those cells that lead to disease.[21]

The Secret to Healthy Aging

As senescent cells build up in your body, they contribute to age-related health issues and even make you age faster. Keeping your senescent cells under control is the best way to lower your biological age now, and help you stay more vital and healthier throughout your senior years.

Eliminating senescent cells should be at the top of your health priority list, assuming that you want to extend your life and quality of living - to continue interacting with loved ones, without becoming a burden, and also continuing to do what you love to do.

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