



# Telomerase DNA Cell Rejuvenation & Longevity



Research Compilation  
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## Introduction

Recent studies ensure that people who live 100 years do so with a better quality of life than those who do not exceed 85. A natural substance found in grapes, wine, chocolate and nuts stimulates the activity of a "DNA protector" gene. How to slow down aging ...

According to the works of the University of Boston headed by the geriatrician Thomas Perls, those who live 100 years do so with a better quality of life than those who do not exceed 85 years.

In short, what the studies of that house of studies suggest is that some individuals resist the passage of time better than others. They not only live longer, but they live better.

In these people, genes play a fundamental role and are responsible for longevity, correcting errors that occur in the cellular DNA over the years. The so-called protective genes allow a select group of centenarian individuals to age more slowly, delaying the onset of age-associated diseases such as dementia (Alzheimer's), cancer, Parkinson's, cardiovascular and cerebrovascular diseases, diabetes and obesity, among others. and slows down the progression of this type of pathology.



## **But can any person live 100 years or more?**

The new evidence provided by the genetics team headed by Dr. David Sinclair of Harvard University, showed that if one of these protective genes is activated, as is the case of SIRT1, (longevity gene) living longer is possible.

Data from studies published by Sinclair recently in the journal *Cell Metabolism* revealed that a natural substance can activate that gene in those who have them "turned off."

That substance is resveratrol, a phytoalexin found in very small amounts in grapes, red wine, chocolate, nuts, chia seeds, cranberries, and blackberries. And although in the concentrations found in food it has a proven antioxidant action, it is not enough to stimulate the longevity gene.

For example, to consume the necessary amounts of this substance and "activate" the longevity gene, it would be necessary to drink 16 liters of Pinot noir, 28 of Cabernet Sauvignon or 50 of white wines a day. Hence, one of the great challenges for the researchers was the development of a pharmaceutical form that allows the population to access the benefits of resveratrol.



Now that I have clearly identified resveratrol as one of the best sources of water-soluble antioxidants, there is still one question that remains ... What is the best way to ensure sufficient intake of this powerful antioxidant?

Just as there are problems with other fruits, vegetables, nuts, and red wine, the same is true with grapes.

The skin and seeds of grapes provide the most potent supplies of antioxidants ... not the fruit itself.

The flesh of the fruit contains sugary fructose which could increase insulin levels.

Most people do not like to eat the seeds as they tend to have a bitter taste, but it is the most appropriate form of consumption to be able to consume the resveratrol that the body needs to activate the aforementioned gene.

It is proven that this substance stimulates the activity of the SIRT1 gene, increasing the levels of enzymatic proteins called sirtuins, which have a protective action on cellular DNA and modulate metabolic activity.

The intake of resveratrol is recommended for all people over 30 years of age and even more so for those who have a personal or family history of diabetes, altered cholesterol levels, Parkinson's, Alzheimer's, Cancer, cardiovascular and cerebrovascular disease or similar.



## **The incredible discovery to rejuvenate**

I remember my surprise and irony when I discovered, a few years ago, the existence of the "Life Extension Foundation", an American foundation dedicated to research on life extension (as its name in English indicates). These are "long-lived" or "researchers", or "extensionists", who believe that discoveries in tissue rejuvenation with stem cells, molecular repair, and organ replacement (via transplants or artificial organs) will one day allow human beings to live indefinitely and in good health, thanks to a complete and continuous rejuvenation of your body. For me, it was clear; it was about smart people taking advantage of the credulity of people on the verge of sectarianism, or a slightly crazy billionaire financing experiments on the freezing of the elderly. Therefore, it took me a long time and a lot of reading to change my opinion. Today I have to admit that there are VERY curious discoveries in the field of "rejuvenation" that can interest us all, including people who do not intend to stay forever in this world. I'm going to talk about one of the most promising, and basically simple, techniques for rejuvenating the cells of the body. This is the reactivation of telomerase, which is an enzyme formed by a ribonucleic acid protein complex with polymerase activity that is present in cells of the germ line. But before that, I'd like to talk about the "anti-aging medicine" that's proliferating in the United States.

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Few Europeans suspect that there is a widespread war that Americans, or at least the middle and upper classes of the population wage against aging.

The whole world is shaken at this moment by an amazing discovery. Some scientists believe they could effortlessly help rejuvenate every cell in the body and turn every cell in the body back decades, including the eyes, brain and heart.

### **Live several centuries?**

You have to know what a telomere is to understand why and how it can literally make your body's cells and organs look younger by several years. Since the cells rejuvenate, it means that your organs (heart, brain, lungs, and also skin, eyes, eardrums, etc.) can theoretically go back to working as they did decades ago, attention: I write "theoretically", because the aging of the human being is not limited to the aging of the cells. For example, the cells of a cancerous tumor that reproduce at full speed are all "young", but they do not stop causing death if they are allowed to proliferate.

However, an experiment led by Dr. DePinho was a success in the laboratory: doctors treated mice to age prematurely. Within a month, their fertility had declined and they were suffering from age-related diseases such as diabetes, osteoporosis or neurodegeneration. Dr.



DePinho and his team then gave the mice the substance that I am going to tell you about, and that makes them rejuvenate. The shriveled testicles returned to normal and functioned as before. Other organs such as the spleen, liver or kidney had been restored. Even the brain, which had shrunk, returned to its normal size. Nerve cells, which produce new neurons and maintain brain cells, started working again. So what is this miracle substance? I am going to explain it to you, but in order for you to understand what it is, I have to go back to the story of telomeres.

### **Everything is played at the chromosome level**

As is known, chromosomes are made of DNA strands, usually in the shape of an X. These strands are made up of nucleic acids, called "nucleotides", that contain your genetic information. However, DNA is a substance that tends to stick to everything, especially when passing close to another piece of DNA, which causes problems in the cell, which can degenerate and become cancerous. To prevent this, each branch of the X of its chromosomes has a protective cap, which in turn is also made up of nucleotides, called a "telomere". Thus, these telomeres protect your genetic information at the heart of your chromosomes. But they also have another important function: to help your DNA replicate more easily, to allow cell division and therefore the birth of a new cell. The longer the telomeres, the better the cells



are protected against the risk of cancer and the more easily they can reproduce and thus regenerate their organs. This is how scientists have theorized that the longer you have telomeres, the longer you will stay young, since your organs renew themselves correctly. You understand? Very well. And now we come to the problem of telomeres (because in this life there is always a problem). The problem is that, with each cell division, telomeres lose tens or hundreds of nucleic acids. Human telomeres are programmed to shorten by about 100 base pairs per cell division. This means that as the years go by, your telomeres get shorter and shorter. Your cells take longer and longer to divide, until they don't divide at all. They "go into senescence," a medical term for politely saying they're old and shrunken. That's when you realize your organs are aging.

Also, when telomeres shorten, your genetic material is not as well protected. Then the risk of anarchic mutations in their chromosomes increases and the risk of cancer. It was also observed that short telomeres are risk factors for arteriosclerosis, hypertension, cardiovascular diseases, Alzheimer's, infections, diabetes, fibrosis, metabolic syndrome and cancer. Telomere length was analyzed in 150 people over 60 years of age. Those with the shortest telomeres were eight times more likely to die from infectious diseases and three times more likely to have a heart attack. Why? Because immune cells would



not replicate fast enough to effectively fight infections.



## Cells Become Immortal

The Dr. Andrea Bodnar of the Californian company Geron Corporation dramatically demonstrated this theory of cellular aging by telomere attrition in January 1998. A substance that lengthens telomeres was introduced into foreskin cells, vascular cells and cells of the retina. While these cells usually die after a defined number of divisions, the treated cells were cultured for one year, maintaining all the properties they had on the first day. In other words: cellular aging had been arrested. The cells had become immortal. Yes, I have written correctly: IM-MOR-TALS. These results unleashed a wave of enthusiasm among researchers around the world, prompting University of Michigan medical professor Michael Fossel to say these startling words at a longevity conference in 2005: "The researchers have already rejuvenated skin cells in the laboratory and we can reverse the entire aging process in humans." What we do is reprogram cells to force them to do what they did when they were young. If we change the time of the internal clock by rewinding our telomeres, then we don't know what the limit will be. Personally, I'd say it would probably be a few centuries, but I really don't know." There are many products that stimulate the production of "telomerase", the enzyme that favors the elongation or stretching of telomeres. The discovery of telomerase was such a revolution that it earned Elizabeth Blackburn and Carol



Greider the Nobel Prize in Medicine in 2009. Today, many private companies market nutritional supplements that promote the reactivation of telomerase. For legal reasons, it is forbidden to quote the exact products, as I can be accused of advertising, and even "illegal practice of medicine" or pharmacy. But I have already said the essential: "reactivation of telomerase". This is one of the most exciting leads in current research to delay or even reverse telomere shortening with an all-natural product.

### **Rejuvenation through telomerase activation**

Every human cell contains the chromosomes that contain our DNA, the blueprint for every feature and function in our body. At the end of each chromosome there are 92 telomeres, which are responsible for maintaining the quality of our DNA.

However, every time our cells divide and reproduce, the telomeres shorten until they become so short that the cell dies. When cells die, the organ they compose deteriorates and cannot function as efficiently, thus accelerating aging.

The speed of this process depends on genes and lifestyle, and according to a study conducted by the University of California, those with short telomeres have three times the risk of dying from heart disease than those with longer telomeres.

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## TREATMENT: TA-65

The enzyme called telomerase is activated, which helps protect the telomeres, thus protecting the cell. TA-65 is taken as a nutritional supplement and is produced by concentrating one of the compounds found in astragalus root, an herb used in Chinese medicine.

### Opinions of Renowned Scientists

For Dr. Marie Blasco, deputy director of research at the Madrid National Oncology Center (CNIO) and director of research for the telomere group, assisted by Dr. Martinez, telomere length is a predictor of mortality from cardiovascular diseases and age-related infections. according to them, the absence of telomerase led to a gradual shortening of telomeres. Upon reaching a critical stage, cells lose the ability to regenerate tissues, leading to often fatal degenerative pathologies.

The work of Dr. Blasco and her team suggests that the activation of telomerase allows the control of cellular aging and the pathologies associated with this process rejuvenating telomeres, thus reinforcing their regeneration capacity and, in fact, delaying aging. Waiting for the arrival of genetic engineering, Dr. Blasco comments that at



present, natural telomerase activators are available in the form of nutritional supplements based on plant extracts (Astragalus) and clarifies that in experiments with mice as a model organism, with the increased telomerase they have a 40% more life expectancy.



Professor Trygve Tollefsbol, a researcher at the UAB Comprehensive Cancer Center, said he was able to make cells in his laboratory immortal by feeding telomerase.

Telomerase is found in all cells, good and bad, but he says that "telomerase" does not cause cancer. For this researcher, polyphenols are useful for the stimulation of telomeres. These polyphenols are found in tea and in certain extracts such as astragalus root.



A study conducted by researchers from Stanford and the University of California - San Francisco, concluded that a vital region of the brain is in danger when telomeres shorten, failing which the "fuel" that is the enzyme telomerase, its lack increases the risk of memory loss and Alzheimer's disease. These conclusions are confirmed by other similar studies. Experts at Stanford University have demonstrated this link for the first time in humans, after conducting studies in mice whose brain aging has been reversed by carefully telomere lengthening. According to Professor Emily Jacobs, lead author of this cognitive study of 47



fully-faculties women, chromosomal aging is related to more general aspects of physiological aging according to her colleague Dr. Nathalie Rasgon, professor of psychiatry and science, acting on the longitud of telomeres could reduce vulnerability to senile dementia.



An international team of scientists, including Dr. Hakon Hakonarson, has identified a genetic mutation that causes aplastic anemia, a serious blood disease in the bone marrow that is unable to produce normal amounts of blood cells. As we know, telomeres shorten with each cell division and gradually lose their protective function. Therefore, they are subject to accelerated aging, with short telomeres, cells become more vulnerable to DNA and cell death.

Parallel to the aging process, hereditary diseases can also cause a shortening of telomeres and block the rapid division of hematopoietic cells produced in the bone marrow, leading to a lack of the latter, an example is this form of anemia.

Without telomerase to stimulate and maintain telomeres, cells lose their structural integrity and die, leading to bone marrow failure and aplastic anemia.



A team led by David Sinclair, Professor of Medicine at UNSW, South Country at the University of New Wales - Australia, in collaboration



with Harvard Medical School and following his work on telomeres, found that restoring cell communication It could not only slow down aging, also reverse it, understanding this as rejuvenation. In addition to caloric restriction and the consumption of Resveratrol, the breakdown in intracellular communication, the basis of aging, is slowed down. A technique with strong implications in the treatment of muscle atrophy, diabetes and cancer.



Comments from Dr. Nigel Turner, UNSW Department of Pharmacology: "If the compound is given early enough to stop the aging process in just one week, muscles indistinguishable from the aging guinea pigs of younger animals" are rejuvenated. Looking for indicators of insulin resistance and muscle inflammation in patients, it appears that in comparison, a 60-year-old man can look younger until the age of 20.



The Scripps Research Institute (IRST) is one of the largest independent companies in the world, a non-profit organization focused on research in the biomedical sciences. The IRST is internationally recognized for its contributions to science and health. Professor Eros Lazzerini Lillium, conducted a study on the mechanisms of cancer related to telomere shortening.

According to his results, published in 2014 in the journal Cell, the



accumulation of DNA damage can cause aggressive forms of cancer and accelerated aging, concluding that the repair of DNA mechanisms are the key to good health.



Other studies around the world have already shown the interest of preserving and stimulating the growth of telomeres, Dr. Lazzerini Gucci, reveals that the loss of the protective cap of telomeres when they are shortened also cause fusions between chromosomes, they join at its extremes (end-to-end deleterious fusion), this type of fusion is an extremely unstable genome arrangement during cell division, in the cycles of fusions and failures, the chromosome joints can break causing an endemic level of mutations that DNA cannot repair and aberrations that later become fertile ground for cancer. Hoping to be able to inhibit the recently identified protein, Ring1 that is critical to not letting telomeres reach a size of no return; the standardization of DNA synthesis and telomerase production is the only combination to ensure optimal cell duration and production over time.



Barbara Quinn, in charge of diabetes-related diseases at the Monterey Community Hospital - United States, has pointed out that diets deficient in some essential nutrients are correlated with defects in short telomeres. According to her, to avoid premature aging and



chronic diseases, it is necessary to enrich our diet with specific phytochemicals, which protect our telomeres, as has been pointed out by many scientists, and we must consume nutrients that support methylation, a biochemical process that promotes health of our genes, we must not forget vitamin D, associated with longer telomeres or vitamin C and vitamin E, selenium, which are also essential.



The body handed over to science by Hendrikje van Andel-Schipper, who died at the age of 115, represents a valuable source of information, made public by Dr. Henne Holstege for researchers at the Medical University of Amsterdam. If the system blood of this super centenarian did not show any trace of cancer or diseases, it is thanks to its ability to repair or evacuate mutant cells. A faculty deployed throughout Hendrikje's life, the medical team discovered that his blood regenerated repeatedly, until the stem cells were exhausted. In fact, throughout life, the number of active cells decreases with the length of the telomeres, these are burned with each cell division. With his telomeric function, Hendrikje van Andel-Schipper ended his life with only two cells, which were still generating two-thirds of his white blood cells at the time of his death.





Andrew Weil, a Harvard University graduate in medicine and botany, worked for the US National Institute of Mental Health. Director of the Department of "integrative medicine" at the University of Arizona in Tucson, he is also the author, among other things, of "full of healthy aging". In 2005, Time Weekly cited him among the 100 most influential people on the planet. A strong advocate of alternative medicine, Dr. Andrew Weil is particularly interested in aging, although aging is inevitable, there is a wide range of things we can do to keep our bodies and minds healthy with good health throughout our lives. About the latest research in biogerontology, action of the enzyme telomerase, links between cancer and diabetes, male/female differences... and the drawing of different recipes on longevity, says to be, advocate for a healthier way of life.



"The psychological suffering experienced by depressed people has a significant, detrimental impact on the wear and tear of a person's body, resulting in accelerated biological aging," said Josine Verhoeven, a researcher at the Free University of Amsterdam, in collaboration with Dr. Owen Wolkowitz. The results of a large study of 1,900 people ages 18 to 65 published in the journal Molecular Psychiatry attest to their discovery: With the loss of 14 base pairs of DNA per year, normally you run the risk of increasing diseases related



to aging (cancer, diabetes), even when lifestyle and health factors are taken into account and the question is: Does depression accelerate aging and telomere shortening, or do telomeres cause physiological stress? Telomeres are shorter in patients in psychological distress (stress, depression .....) which consequently also suggest that it accelerates physiological cell aging.

Josine Verhoeven reminds us that telomerase enzyme 'l' lengthens telomeres by adding nucleotides to the ends of chromosomes, and changes in our habits can increase telomerase activity and extend our telomeres.



Dr. Brent Bauer of the Mayo Clinic, the world-renowned American health institution, compares our telomeres to the pieces of plastic at the ends of straight strings. If this piece of plastic breaks, the frame begins to wear down. Also, if you wear a telomere, the DNA in the chromosome is exposed and can be damaged. And when our bodies 'launch a new copy' at the time of cell turnover, well, this modified version of the cell will serve as a blueprint and the same failure can lead to health problems, particularly those associated with aging. According to him, some research suggests that when telomeres shrink, the DNA is exposed, in fact, if this DNA comes into contact with other DNA, it can lead to a gene mutation that could cause cancer in the



next replication. According to Dr. Bauer, several factors are associated with short telomeres, including aging, stress, too much UV light, pollution, and poor diet.

Studies involving men with short telomeres between 2008 and 2013, including some with prostate cancer, lengthened their telomeres by supplementing their diet with pure, whole natural plant-based substances. During the five years of follow-up carried out on these men, it has been verified that they have persevered and have seen their telomeres grow again, as a consequence, they reduced the symptoms associated with aging and health problems.



Professor Titia De Lange and his team from the American Cancer Society are the winners of the 2014 Gairdner Prize (Canada), awarded to the most revolutionary global medical discoveries.

Her work has helped lift the veil on the mechanism of the telomere protein, whose function is to suppress the deadly damage of genome replication in non-replicating mammals during cell turnover phases.

The scope of this discovery is fantastic, because it allows to solve an ancient biological puzzle for many decades. Thus, the absence of telomerase, implies a shortening of protective telomeres is the basis of aging and a wide range of serious diseases such as cancer. It's an



unprecedented impact on the way DNA synthesis for telomere function. Professor De Lange says that in the human genome of cancer and instability, it is the result of loss of function of the telomere. A conclusion that clearly focuses on prevention.



Geneticist Richard Cawthon and his team from the University of Utah, United States, specialized in the study of telomeres, reached some enlightening conclusions:

1° In People over 60 who compared shorter telomeres, they have eight times more infectious diseases and three times more likely to die of heart disease. After age 60, the risk of death doubles every 8 years and more than chronological age, telomere length is the indicator of good health, (so a 60-year-old with adequate telomere length can expect to live better and more than a young person with short or defective telomeres, the risk percentage is 37% in the former and 63% in the latter.

2° People with short telomeres face a higher risk of life-threatening infections, such as leukemia and other blood cancers, cirrhosis of the liver, pulmonary fibrosis, sclerosis of lung tissue, there is also evidence of telomere linkage short with Alzheimer's disease, hardening of the arteries, high blood pressure, type 2 diabetes and weakening of the



bones..... In a more superficial way, these people are more prone to early baldness, gray hair, poor circulation blood, skin spots, intestinal problems, poor wound healing, learning disorders, etc.

3° The observation of volunteers with long telomeres showed that they live an average of several years longer than those with shorter telomeres.

And since scientists have been able to observe human cells dividing beyond their normal limits via telomerase without any problems, this study even suggests that life could be multiplied by five. PR Cawthon goes even further, according to him, if we eliminate the entire aging process, human beings could theoretically live a thousand years.



Dr. Dave Woynarowski, a renowned physician and specialist in the fight against aging, recently published an article in August 2014 entitled "The challenge of cancer is your future", where he exposes how accelerated aging is to blame for many diseases of the civilization. Through his research on the enzyme telomerase, he says not only is it possible to slow down the aging process to live longer, but it's crucial to staying healthy. according to him, adequate nutritional supplements can be of great help to achieve this, in addition to a better quality of life.

Since 2000, Dr. Woynarowski has focused exclusively on the study of



telomeres. He therefore explains how telomeres are linked to various types of cancer and how maintaining their length allows them to be avoided. Dr. Woynarowski is considered by many to be the expert on the enzyme telomerase and astragalus. He received numerous awards throughout his career, including being named "Physician of the Year" by the Chairman of the Committee on Health Reform in the United States.



"Cancer or structural damage due to a heart attack or even arthritis sends a silent command to your cells to repair the damage and regenerate tissue. Even a few years ago, we didn't know that this reconstruction by cells was possible, but "Today we know that each of our organs seems to recruit telomerase-rich stem cells. The first emergency cells have the important mission of preventing the dismantling of telomeres. "Remarks by Dr. Michael F. Roizen", president of the Wellness Institute in the Cleveland Clinic, USA.

## THE ASTRAGALUS MEMBRANACEUS

Astragalus, a plant with many virtues that is very easy to grow, the Astragalus (*Astragalus propinquus*, *membranaceus* or *mongholicus*) is a perennial plant that is often cultivated for its beautiful flowers in yellow pods, and for its roots with medicinal properties.



It is grown essentially from seed germination in spring or autumn in full sun, in sandy soil, and needs to be watered regularly. To favor the crop, a little natural fertilizer can be added from time to time.

The Astragalus is a perennial herb native to China and Mongolia, but it is also common in Europe and is often found in thickets, forests, or grasslands. It is a plant that can easily reach up to 30 cm in height, and is also called Chinese Astragalus, Huang Qi or Bei Qi. Its leaves are alternate and have leaflets, whose lower faces are often covered with small, short, dense hairs. Flowering occurs from July to August and the flowers are usually yellow and form clusters; the fruits take the form of pods also covered with small black hairs. Astragalus are usually grown for their roots, which must be dried beforehand and are traditionally used to treat various ailments such as inflammation of the respiratory system, chronic gastritis or adrenal insufficiency and to relieve the symptoms of arthritis or certain rheumatic pain. In the pharmacopoeia, many drugs are made from this plant.

## PROPERTIES AND MEDICINAL USES OF ASTRAGALUS

The scientific name of astragalus is *Astragalus Membranaceus*. It belongs to the Fabaceae family. Astragalus root (*Radix Astragalus*), is the part of this perennial plant native to Mongolia and northern provinces of



China that is used for medicinal purposes. This plant has been known since ancient times, traditionally used against fatigue, weakness in the elderly, people prone to infections, fever, uterine prolapse, stomach ulcers or allergies.

Modernly it is mainly used as an immunostimulant. The latest studies carried out on this root are focusing on the effectiveness of various polysaccharides present in astragalus in various pathologies. Thus, various clinical studies have been carried out in patients with angina pectoris and heart failure where a notable improvement has been observed in patients who were supplemented with astragalus root.

Astragalus contains at least 8 flavonoids identified through high-throughput mass spectrometry. That means it has an antioxidant effect. These flavonoids can significantly inhibit membrane lipid peroxidation generated by superoxide, hydrogen peroxide, and ultraviolet rays.

Among the minerals that have been found in the root of the astragalus we have zinc, iron, copper, magnesium, manganese, potassium, calcium, sodium, cobalt, chrome molybdenum, vanadium and tin.



## SOME OF THE MOST IMPORTANT PROPERTIES ATTRIBUTED TO ASTRAGALUS IN TRADITIONAL CHINESE HERBAL MEDICINE

One of the most important properties of this root is its ability to increase the immune response. In experiments with astragalus, it was shown to decrease immune hyperactivity in patients with systemic lupus erythematosus and myasthenia gravis (two severe autoimmune diseases). Likewise, it also improves immunity against respiratory infections, especially upper respiratory infections.

Other of its most notable properties is its effectiveness as an antiviral since it acts by inhibiting the replication of the virus, as occurs in the case of the "coxsackie" virus, responsible, for example, for the myocarditis, polio or hepatitis A. In other pathologies such as chronic viral hepatitis or HIV, its positive effect has been demonstrated by increasing the immune response. In hepatitis C, treatment for six months with astragalus showed a significant improvement in liver enzymes.

Some of the studies carried out focused on the antineoplastic activity of astragalus and it was shown that there was an increase in interleukin-2 (a substance that acts against cancer cells).

Other positive effects of astragalus are:

- Stimulates pituitary-adrenal cortex activity;



- Helps restore the formation of red blood cells in the bone marrow;
- It is very helpful in cases of glomerulonephritis (inflammation of the internal structures of the kidney)
- Help in cases of male infertility;
- It also helps control cholesterol and triglyceride levels. On the other hand, it is important to note that astragalus has been shown to possess in vitro antibacterial activity against *Shigelladysenteriae*, *Streptococcus hemolyticus*, *Diplococcus pneumonia*, and *Staphylococcus aureus*.

Astragalus also has a fibrinolytic as well as anti-inflammatory effect. It improves memory by inhibiting acetylcholinesterase which breaks down acetylcholine.

Counteracts the suppression of the immune system caused by cyclophosphamide. It also counteracts the immunosuppressive effects of cortisone. It inhibits the production of leukotriene C4, prostaglandin E2 and thromboxane A2.

This plant also strengthens the movement and muscle tone in the intestine, especially the jejunum, to increase movements in the digestive tract. This has been demonstrated by its positive effects on the cycle length of the Inter-digestive bioelectrical complex.



## INDICATIONS

Orally, astragalus is used to treat the common cold and upper respiratory tract infections, to stimulate red blood cell production, particularly in individuals with chronic degenerative disease or in individuals with cancer who are receiving chemotherapy or radiation therapy.

It is also used orally for chronic nephritis, diabetes, as an antibacterial, antiviral, liver protector, anti-inflammatory, antioxidant, as a diuretic, vasodilator and as a hypotensive agent, in multiple sclerosis, in otitis media, to accelerate the scarring, stomach ulcers, uterine bleeding and prolapse, digestive disorders, chronic hepatitis including hepatitis C, against chronic fatigue syndrome, to increase sperm motility and others.

## POSOLOGY

According to Chinese medicine, astragalus is used in soups, teas, extracts, and pills.

Various doses of astragalus have been used or studied, including 250 to 500 milligrams of extract given four times daily; that of 1 to 30 grams of dried root administered daily, or that of 500 to 1000 milligrams of root capsules administered three times a day (High doses of up to a maximum of 60 grams daily have been reported). Doses of tinctures or



liquid extracts depend on the potency of the preparations. A tincture (1:5) has been used in doses of 3 to 6 milliliters three times a day orally, or fifteen to thirty drops twice a day orally. It is important to note that tinctures can be high in alcohol.

According to experts in natural medicine, the best results are achieved with the intake of Astragalus for continuous periods of long duration.

The Astragalus is also often taken in the winter to combat or prevent colds and flu.

## WARNINGS

There are no known confirmed side effects, although it should be noted that the astragalus should not be used by people who are undergoing treatment with severe anticoagulants or by insulin dependent people due to its hypoglycemic nature.

Based on laboratory studies, astragalus may inhibit the actions of immunosuppressants and increase the effects of immunostimulatory herbs such as echinacea or Panax ginseng.

Based on laboratory studies, astragalus may also potentiate the effects of herbs and supplements that protect against radioactivity.



## **Astragalus Culture Conditions • Astragalus Membranaceus**

The Astragalus is a very easy plant to grow, and its seeds can be found in many specialized stores, online, in nurseries or in garden centers. The Astragalus belongs to the Astragalus genus, of which there are numerous varieties available on the market, whose cultivation varies according to the species. If you want to buy seeds to obtain seedlings by germination, before buying make sure they are of good quality and preferably from organic crops. If you want to buy seedlings, check also the bulbs and the quality of the root ball, and also that they come from organic cultivation.

The Astragalus grows very well in relatively rich, sandy, constantly moist soil. Make sure your plants don't lack water, and you can also supply them with some compost or mulch during planting to help them grow.

The Astragalus are perennial plants that quickly become invasive. It is also important to carry out an annual pruning so that they do not take up too much space and at the same time their roots grow more.

Root harvesting is normally done in spring or fall, and so is seed germination.

The Astragalus also multiply naturally; when harvesting the roots, make sure that there are no fragments left in the ground to prevent shoots from appearing without you noticing.



## Astragalus Cultivation

Normally, the astragalus are planted in the ground in a very loose soil and free of stones or foreign bodies. A sandy soil is ideal, as it allows for good root growth. To proceed with the plantation it is important to provide a hole of about 60 cm in diameter and 50 cm deep. You can also put a little compost or fertilizer in the bottom before you cover the hole again. The cultivation of astragalus is also possible in pots, but it is important that they be in light-colored pots to avoid the temperature rise typical of a dark container. To transplant the astragalus in a pot into the ground, a hole of about 60 cm in diameter must be provided.

Since sandy soils do not retain water well, it is important to give the plants regular watering. For pot cultivation it is important to keep the root mat moist, especially during the winter. Astragalus pruning is usually done in the spring, and consists mainly of removing dead leaves and stems. The multiplication is generally done through root cutting. It is important to choose those that have three buds and a length of at least 40 cm. Another possibility is to divide the clump of the adult plant, keeping in mind that each resulting fragment can produce 4 or 5 additional shoots. If a little fertilizer is supplied, care must be taken not to plow the soil too deeply so as not to damage the roots of the seedlings; fertilization should be done rather superficially.



## Astragalus Root

The root is cylindrical, some of them have branches.

The upper part is a little thick, slightly crooked; 30-90 cm long, 0.7-3.5 cm in diameter (Average size 50 cm long x 2 cm in diameter). Surface color is light brown or sepia with irregular longitudinal wrinkles and long horizontal lenticels.

Some have visible mesh fiber bundles. Its flavor is slightly sweet to taste, with a bean flavor.

## Astragalus the Plant that Activates Telomerase

Astragalus is a plant from northern China that is harvested after four or seven years. What makes it wonderful at its root, because it activates the vital telomerase. An enzyme that protects, repairs and lengthens the length of short telomeres, but also prevents long ones from shortening, delaying cell aging. This is one of the most impressive discoveries in recent years and will serve both to lengthen life, something that in itself is important, and to improve its quality. Scientific studies have put on the table a possibility that until recently seemed like a utopia, living a third age with perfect eyesight, sexual vigor and smooth skin.

In short, emulating the words of Manuel Serrano, from the National



Cancer Research Center, "we are not programmed to grow old." He says that in our body throughout its life there are scheduled changes. He says that children lose their teeth, adolescents grow hair, that is, they are changes that have a biological function. However, he maintains that gray hair and wrinkles are not programmed, they are useless, they occur because something it worked in the system and it has stopped working.

### A Product For Eternity

That is why there is hope for the human being if he takes care of himself and protects himself. He may be immune to many diseases, lengthen your life by gaining in quality. Just as aging will be a slow and long process, taking astragalus will also be, since its benefits are seen in the long term. This standardized plant offers an opportunity for the most farsighted and people who want to invest in their future.

### Production Performance

In 100 m<sup>2</sup>, 400 astragalus plants would be cultivated with an approximate yield of 150 to 200 kg in each harvest, 1 harvest every 4 years, being able to sow in spring and autumn. A plantation of 500 m<sup>2</sup> will produce approximately 750/1,000 kg, enough for 8/10 people for the next 4 years in which the new harvest would be harvested.

After harvest, new seeds will be sown again and the extracted seeds will



be stored with the harvested plants for later drying and future planting. (seeds can also be collected annually and staggered sowing in small plots staggered by years as needed).

### Astragalus Root Preparation

Once the astragalus plants have been collected from the 4th year and the existing seeds have been collected, the roots of the plants will be separated, leaving the scrub to make humus. Once we have the root, it is thoroughly cleaned with water, cut into slices and dried by means of a process to remove the water. This can be done in a conventional kitchen oven, setting it at a temperature of between 40°C and 45°C, with the In order to preserve all the properties present in it in the best conditions, once the root is dried, when it has approximately 10% humidity, it will be crushed, leaving as a result a semi-yellowish powder.

### How to Take Astragalus

Astragalus powder can be taken mixed with bifidus preferably 0% fat, or juice of any fruit in the appropriate doses indicated above.

By J. Bilbao