

Anti-Aging: The Way You Manage The Age

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Abstract: *There are many reasons our bodies change as we get older, including perceptual, physiological, and general age-related conditions. These changes all impact the performance of our bodies as a whole, in turn, impacting our eating, nutrition The benefits of proper nutrition for mental capacity and higher energy levels to a stronger resistance to illness and disease rational intake, and overall health. The topic that currently attracts maximum attention is ways to maintain healthy and delay ag-ing. Skin is the primary barrier that protects the body from external aggressions. Skin aging is a complex biological process, categorized as chronological aging and photo-aging, and is affected by internal factors and external factors. With the rapid breakthrough of medicine in prolonging human life and the rapid deterioration of environmental conditions, it has become urgent to find safe and effective methods to treat skin aging. For diet, as the main way for the body to obtain energy and nutrients, people have gradually realized its importance to the skin..*

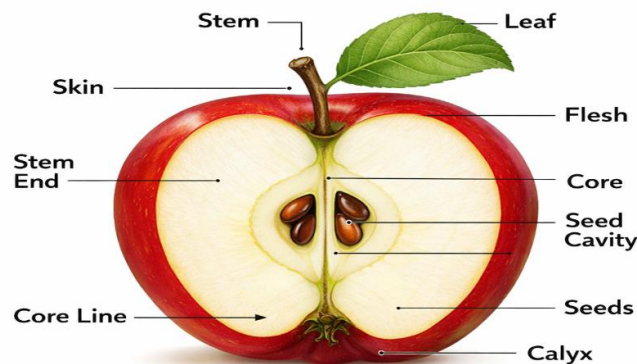
Keywords: Antiaging, Nutrition, skin.

I. INTRODUCTION

Aging, progressive physiological changes in an organism that lead to senescence, or a decline of biological functions and of the organism's ability to adapt to metabolic stress.

Aging takes place in a cell, an organ, or the total organism with the passage of time. It is a process that goes on over the entire adult life span of any living thing. Gerontology, the study of the aging process, is devoted to the understanding and control of all factors contributing to the finitude of individual life. It is not concerned exclusively with debility, which looms so large in human experience, but deals with a much wider range of phenomena. Every species has a life history in which the individual life span has an appropriate relationship to the reproductive life span and to the mechanism of reproduction and the course of development. How these relationships evolved is as germane to gerontology as it is to evolutionary biology. It is also important to distinguish between the purely physicochemical processes of aging and the accidental organismic processes of disease and injury that lead to death.

Gerontology, therefore, can be defined as the science of the finitude of life as expressed in the three aspects of longevity, aging, and death, examined in both evolutionary and individual (ontogenetic) perspective. Longevity is the span of life of an organism. Aging is the sequential or progressive change in an organism that leads to an increased risk of debility, disease, and death. Senescence consists of these manifestations of the aging process.



Apple Diagram

Figure.01 Apple Fruit

The viability (survival ability) of a population is characterized in two actuarial functions: the survivorship curve and the age-specific death rate, or Gompertz function. The relation of such factors as aging characteristics, constitutional vigour, physical factors, diet, and exposure to disease-causing organisms to the actuarial functions is complex. There is, nevertheless, no substitute for them as measures of the aging process and of the effect of environmental or genetic modifiers.

centenarian; supercentenarian: This elderly grandmother, who gave her age as 115 when photographed in 1900, would today be considered a supercentenarian (age 110 or older). In the first decade of the 21st century in the United States, centenarians—those who live to age 100 or older—were the fastest-growing segment of the population.

The age-specific mortality rate is the most informative actuarial function for investigations of the aging process. It was first pointed out by an English actuary, Benjamin Gompertz, in 1825 that the mortality rate increases in geometric progression—i.e., by a constant ratio in successive equal age intervals. Hence, a straight line, known as the Gompertz function, results when death rates are plotted on a logarithmic (ratio) scale. The prevalence of many diseases and disabilities rises in the same geometrical manner as does the mortality rate, important exceptions being some infectious diseases and diseases arising from disturbances of the immunological system. Although the life tables of most species are remarkably similar in form, even closely related species can differ markedly in the relative incidence of the major causes of death.

For humans in industrialized countries, life expectancy has increased significantly. Indeed, at the beginning of the 20th century, life expectancy in those countries was between 30 and 45 years. At the century's close, life expectancy averaged about 67 years, thanks in large part to improvements in health care, nutrition, and standards of living. In the early 21st century, demographic projections suggested that life expectancy for men and women who maintained the healthiest lifestyle patterns would continue to increase. In the first decade of the 21st century in the United States, centenarians—those who live to age 100 or older—were the fastest-growing segment of the population.

2) There is, however, no single theory that explains all of the phenomena of aging.

2.1 Genetic theories

Know how unlike humans some organisms like naked mole rats, rock fish, lobsters, and bristlecone pines can pause their aging process

Know how unlike humans some organisms like naked mole rats, rock fish, lobsters, and bristlecone pines can pause their aging process

The aging process in an organism may depend in large part on its ability to repair the chromosomes in its cells. Learn about differences in the aging process between human beings, naked mole rats, and the jellyfish *Turritopsis dohrnii*.

One theory of aging assumes that the life span of a cell or organism is genetically determined—that the genes of an animal contain a “program” that determines its life span, just as eye colour is determined genetically. This theory finds support in the fact that people with parents who have lived long lives are likely to live long themselves. Also, identical twins have life spans more similar in length than do non-twin siblings.

Know how telomeres protect the ends of the chromosomes and over a while, it causes cellular aging

Learn how telomeres affect the aging process at the cellular level. See all videos for this article

The genetic theory of aging centres on telomeres, which are repeated segments of DNA (deoxyribonucleic acid) occurring at the ends of chromosomes. The number of repeats in a telomere determines the maximum life span of a cell, since each time a cell divides, multiple repeats are lost. Once telomeres have been reduced to a certain size, the cell reaches a crisis point and is prevented from dividing further. As a consequence, the cell dies.

Mutations of genes that affect telomere length lend support to another genetic theory of aging, which assumes that cell death is the result of “errors” introduced in the formation of key proteins, such as enzymes. Slight differences induced in the transmission of information from DNA molecules of the chromosomes through RNA molecules (the “messenger” substance) to the proper assembly of the large and complex enzyme molecules could result in a molecule of the enzyme that would not “work” properly. This is precisely what happens in the instance of mutations in the TERC gene. Such mutations disrupt the normal function of the telomerase enzyme.

As cells grow and divide, a small proportion of them undergo mutation. This change in the genetic code is then reproduced when the cells again divide. The “somatic mutation” theory of aging assumes that aging is due to the gradual accumulation of mutated cells that do not perform normally.

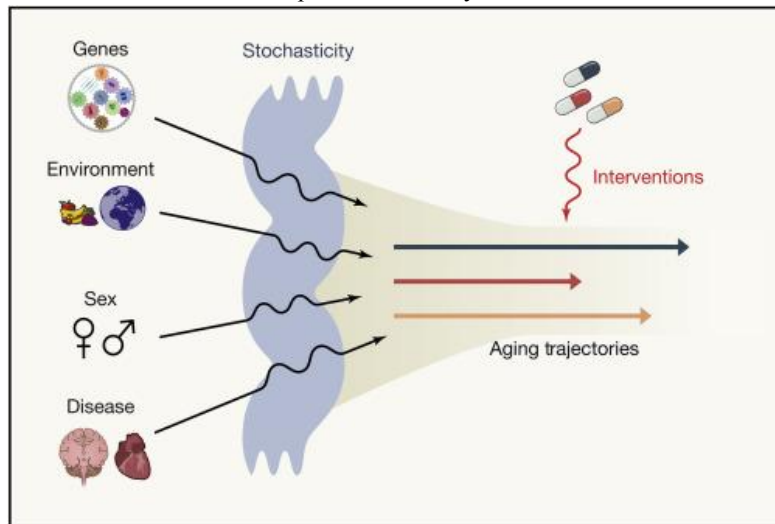


Fig 02 Genetic theory

2.2 Nongenetic theories

Other theories of aging focus attention on factors that can influence the expression of a genetically determined “program.” These theories all attempt to explain aging in terms of cellular and molecular changes. Actually, age changes are much more marked in the overall performance of an individual than in cellular processes that can be measured. The age decrement in the ability to perform muscular work is much greater than any changes that can be detected in the enzyme activities of the muscles that perform the work. It is possible that aging in an individual is actually due to a breakdown in the control mechanisms that are required in a complex performance. Aging could also be the result of an accumulation in cells of damaging reactive molecules produced as byproducts of day-to-day cellular activities, such as cellular respiration. Other nongenetic theories consider aging as a complex psychosociological process.

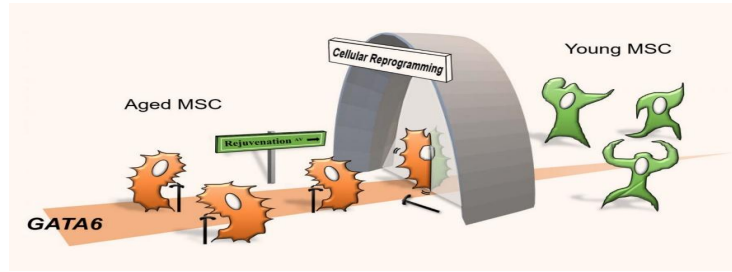


Fig 03 nanogenetic theor

2.3 Wear-and-tear theory

The “wear-and-tear” theory assumes that animals and cells, like machines, simply wear out. Animals, however, unlike machines, have some ability to repair themselves, so that this theory does not fit the facts of a biological system. A corollary to the wear-and-tear theory is the presumption that waste products accumulate within cells and interfere with function. The accumulation of highly insoluble particles, known as “age pigments,” has been observed in muscle cells in the heart and nerve cells of humans and other animals.



Fig 04 wear-and tear theory

2.4 Cross-linking theory

With increasing age, tendons, skin, and even blood vessels lose elasticity. This is due to the formation of cross-links between or within the molecules of collagen (a fibrous protein) that give elasticity to these tissues. The “cross-linking” theory of aging assumes that similar cross-links form in other biologically important molecules, such as enzymes. These cross-links could alter the structure and shape of the enzyme molecules so that they are unable to carry out their functions in the cell.

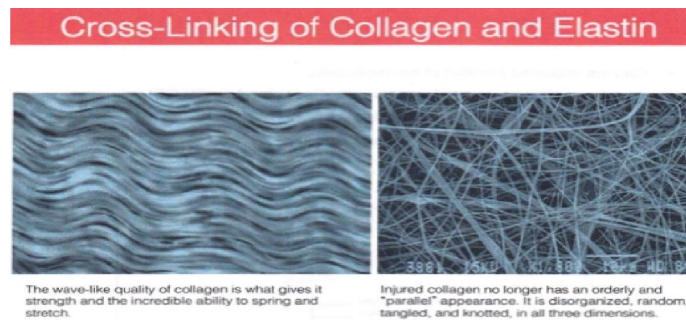


Fig 05 Cross-linking theory

2.5 Autoimmune theory

Another theory of aging assumes that immune reactions, normally directed against disease-producing organisms as well as foreign proteins or tissue, begin to attack cells of the individual's own body. In other words, the system that produces antibodies loses its ability to distinguish between "self" and foreign proteins. This "autoimmune" theory of aging is based on clinical rather than on experimental evidence.

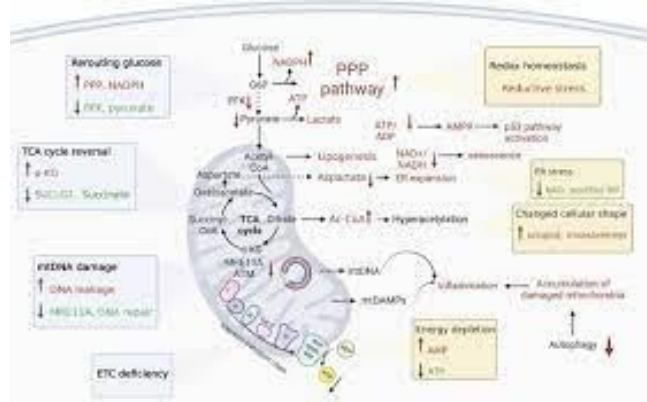


Fig 06 Autoimmune Theory

2.7 Oxidative damage theory

Reactions that take place within cells can result in the oxidation of proteins and other cellular molecules. Oxidation entails the loss of electrons from these molecules, causing them to become unstable and highly reactive and leading to their eventual reaction with and damage of cell components such as membranes. Such reactive molecules are known as free radicals—any atom or molecule that has a single unpaired electron in an outer shell.

Oxidative damage (oxidative stress) accumulates with age, and this has given rise to the free radical theory of aging, which is concerned in particular with molecules known as reactive oxygen species (ROS). This theory was first proposed in the 1950s by American gerontologist Denham Harman and was supported in part by evidence that antioxidant proteins, which neutralize free radicals, are more abundant in aging cells, indicating a response to oxidative stress.

The initial free radical theory of aging was later extended to include ROS derived from cellular organelles known as mitochondria, which are the primary sites of energy production in most eukaryotic organisms (eukaryotic cells are cells with clearly defined nuclei). The mitochondrial theory of aging was based on the idea that there exists within mitochondria a vicious oxidation cycle, in which the mutation of mitochondrial DNA impairs the function of proteins in the organelle's respiration machinery, thereby enhancing the production of DNA-damaging oxygen radicals. This in turn results in the accumulation of mutations in mitochondrial DNA and a bioenergetic impairment, characterized by the failure of mitochondria to produce sufficient energy for cells to carry out their daily activities, which leads to tissue dysfunction and degeneration.

A similar mitochondrial theory of aging proposes a mechanism in which electrons leaking from the electron transport chain (ETC), the central component of the organelle's respiration machinery, produce ROS and then damage ETC proteins and mitochondrial DNA, leading to further increases in intracellular ROS levels and a decline in mitochondrial function.

Oxidative stress

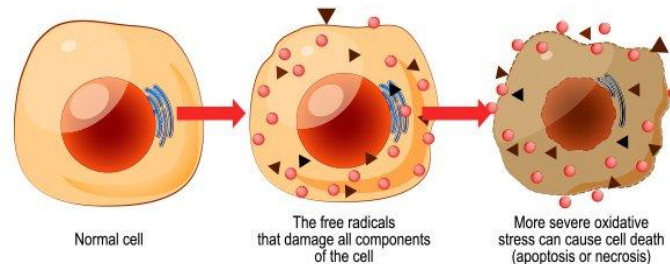


Fig 07 Oxidative damage theory

2.8 Theory

In addition to theories of aging based on molecules and cells, there also exists a “psychosociological” theory of aging. As people grow older, their behaviour changes, their social interactions change, and the activities in which they engage change. The psychosociological theory of aging can be divided roughly into four component theories: disengagement, activity, life-course, and continuity theories. Disengagement theory is based on hampered relationships between a person and other members of society. Activity theory emphasizes the importance of ongoing social activity and suggests that a person’s self-concept (self-perspective) is related to the roles held by that person. Life-course theory is based on the developmental stages proposed by German-born American psychoanalyst Erik H. Erikson. According to Erikson’s stages, maturity is a process that continues into old age, and in each stage the individual encounters new psychosocial demands. Continuity theory states that older adults try to preserve and maintain internal and external characteristics (e.g., values, personality, preferences, and behaviour patterns) throughout life, despite changes in their health or life circumstances.

3. Natural history of aging

Reproduction and aging

Cereal crops such as wheat are semelparous, meaning that they die after their first reproduction.

Reproduction is an all-important function of an organism’s life history, and all other vital processes, including senescence and death, are shaped to serve it. The distinction between semelparous and iteroparous modes of reproduction is important for an understanding of biological aging. Semelparous organisms reproduce by a single reproductive act. Annual and biennial plants are semelparous, as are many insects and a few vertebrates, notably salmon and eels. Iteroparous organisms, on the other hand, reproduce recurrently over a reproductive span that usually covers a major part of the total life span.

In semelparous forms, reproduction takes place near the end of the life span, after which there ensues a rapid senescence that quickly leads to the death of the organism. In plants the senescent phase is usually an integral part of the reproductive process and essential for its completion. The dispersal of seeds, for example, is accomplished by processes—including ripening and falling (abscission) of fruits and drying of seed pods—that are inseparable from the overall senescence process. Moreover, the onset of plant senescence is invariably initiated by the changing levels of hormones, which are under systemic or environmental control. If, for example, the hormone auxin is prevented, by experimental means, from influencing the plant, the plant lives longer than normal and undergoes an atypical prolonged pattern of senescent change.

4. Manage The Age With Diet

4.1) Blueberries:

Blueberries are an excellent source of vitamin C, fibre, and antioxidants.. Blueberries have undergone lots of research that shows impressive findings in promoting and preserving cognitive function (brain health) with age, promoting heart health, lowering your risk of certain cancers, and more, says Bazilian.

"When you look at a blueberry, its phytonutrients are looking right back at you: The deep blue color comes from anthocyanin, a key phytochemical and antioxidant." In addition to fighting aging-oxidation, the vitamin C in blueberries helps promote cellular protection and skin health as we age



Fig no. 8 Blueberries

4.2) Walnuts: Walnuts are a real multitasker when it comes to longevity. A study published in 2020 found that women who regularly consumed nuts, particularly walnuts, at midlife were more likely to age healthfully compared to those who didn't eat nuts.³

("Healthy aging" was defined as having no chronic diseases, reported memory impairment, and physical disabilities, as well as having intact mental health after the age of 65.)

Walnuts also play an important role in heart health. "The [first research](#) on cardiovascular health and walnuts was published over 25 years ago in the New England Journal of Medicine, and since that time, there have been dozens and dozens of studies on heart health," says Bazilian.



Fig 09 Walnuts

4.3) Avocado:

involving 39 females suggests that consumption of one avocado daily for 8 weeks may boost skin firmness and elasticity. A pilot study is a small-scale test of procedures that researchers will later use in a larger investigation, and more research is necessary to confirm the results.

Avocados are good sources of monounsaturated fatty acids, such as oleic acid. They also contain: the antioxidants zeaxanthin and lutein, vitamin A, vitamin E, folate, niacin, a B vitamin



Fig 10 Avacado

4.4) Spinach :

How can we forget green leafy vegetables when discussing the best anti-aging foods for the skin? Spinach is full of antioxidants and fibers that keep the heart and the digestive system healthy. You may cook spinach or consume it in the form of a smoothie, salad, or soup.



Fig 11 Spinach

4.5) Papaya :

Skin health is associated with an individual's digestive and gut health. Papaya does precisely what it takes to strengthen the latter. They contain chymopapain and papain that enhance the digestive and gut health of the person. The result is healthier skin that stays young for a long time.

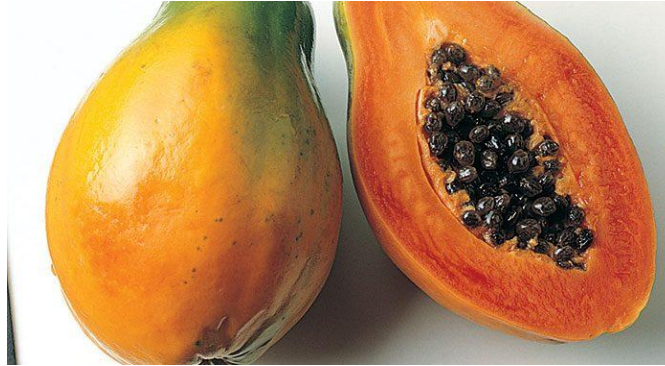


Fig 12 papaya

4.6) Dark Chocolates

Dark chocolates! Dark chocolates moisturize skin and enhance blood flow and circulation. They also help prevent the development of wrinkles as you age. Additionally, the high antioxidant content helps reduce inflammation. We hope this article on the best anti-aging foods for younger-looking skin was informative enough



Fig 12 Dark chocklate

4.7) Red Wine : Red wine has properties to make you younger. Just a glass or two a day has amazing anti-aging benefits. Red wine has been reported to have a multitude of health benefits. Numerous scientific studies support some benefits of red wine



Fig.13 Red Wine

4.8) Broccoli: In addition to lots of vitamins, minerals, and fibre, broccoli has a molecule called lutein, which researchers have found can help preserve your brain's memory function later in life. One of broccoli's biggest advantages is its nutrient content. It's loaded with a wide array of vitamins, minerals, fibre and other bioactive compounds.

One cup (91 grams) of raw broccoli packs:

Carbs: 6 grams

Protein: 2.6 gram

Fat: 0.3 grams

Fiber: 2.4 grams

Vitamin C: 135% of the RDI

Vitamin A: 11% of the RDI

Vitamin K: 116% of the RDI

Vitamin B9 (Folate): 14% of the RDI

Potassium: 8% of the RDI

Phosphorus: 6% of the RDI

Selenium: 3% of the RDI



Fig 14 Broccoli

9) Olive oil: There's a mountain of research demonstrating the health benefits of olives and olive oil, so they are one of our favourite anti-aging foods. Full of polyphenol antioxidants and Omega-3 fatty acids, olive oil can help you feel and look younger



Fig 14 olive oil

10) Green tea: Is abundant in antioxidants, which might aid the body combat free radicals. Unstable chemicals produced by regular cellular action create free radicals. They can also arise in reaction to environmental stresses such as ultraviolet (UV) light or tobacco smoke. Free radicals in large concentrations can be harmful to cells. Antioxidants are molecules that bind to free radicals and prevent them from causing damage. Green tea is abundant in polyphenols, which are antioxidants that make it one of the healthiest anti-aging foods. It contains a lot of epigallocatechin gallate (EGCG), catechins, and gallic acid which may lower your risk of cardiovascular illnesses and other chronic disorders that cause premature aging.



Fig 15 Green tea

Conclusion : Many anti-aging foods, such as berries, leafy greens, and nuts, are rich in antioxidants. Antioxidants help combat oxidative stress, a process implicated in aging and various a Foods like fatty fish, turmeric, and green tea have anti-inflammatory properties. Chronic inflammation is linked to aging, and a diet that helps reduce inflammation may contribute to overall health and longevity.ge-related diseases.

Anti-aging foods are often nutrient-dense, providing essential vitamins, minerals, and other bioactive compounds. A well-balanced and nutrient-rich diet supports overall health and can potentially slow down the aging process.

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