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Review Article

Why Do We Grow Old: An Extensive Review

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Abstract

Ageing is a ubiquitous and fundamental phenomenon that results from the progressive changes in the organ, which produces a decline in function. The concept of ageing is very old in the Unani system of medicine. Since the Hippocratic era (460-370 BC), physicians have been interested in preserving the health of the elderly, extending life, and preventing age-related illnesses. Ageing is primarily influenced by lifestyle, environmental changes, dietary habits, occupation, chronic illness, psychosocial conditions. Small steps in eating — such as dividing a whole day's diet into three to four meals — moderate exercise, and acquiring healthy habits, are a good, healthy start to a better quality of life for the elderly.

Ageing is a biological process that affects people at varying speeds. Aging has been defined as a general deterioration in physiological processes that leads to failure to adjust to environmental demands (for example, adaptability to stress) and eventually death.

Keywords: Ageing, Cellular Senescence, Telomere Shortening, Mitochondrial Dysfunction, Oxidative Stress, Autophagy, Stem Cell Aging

Introduction

Ageing is an inevitable, non-pathological, natural, essential, and universal process that results from the continuous changes in different parts and organs of the body, which causes reduction in organ function, diminished vitality, and weakening in muscular power.[1,2] Advancements in the medical field and public health[3] humans' life expectancy has increased in recent decades. The elderly population has encountered numerous challenges, including physical, psychological, and socioeconomic concerns. It is predicted that two-thirds of deaths in developing countries will be attributed to age-related illnesses.[4] The concept of ageing is very old in the Unani system of medicine. Since the Hippocratic era (460-370 BC), physicians have been interested in the preservation of aged health, the extension of life, and preventive methods for age-related illnesses. While illustrating the body condition (Halat-e-Badan), Jalinoos (Galen) mentioned a third state known as Halat-e-Salisah (neither complete health nor diseased), rather than the two states of the body described by Ibn Sina (Avicenna) as health and disease, and referred to this third state as 'La Sehat wa La Mardh'. Galen placed the old in the third group.[5,6]

Elderly Care Among Unani Physicians by Lifestyle Modification

In the Unani medical system, prevention and promotion of health are extremely important. Regimes, diets, non-pharmacological methods, and even pharmaceuticals are given and indicated for the prevention of illness, maintenance of health, and promotion of health in healthy but weak people who are susceptible to disease. Renowned Unani physicians, such as Rabban Tabri (780-850 AD), discuss elderly care in his books. Zakaria Razi (860-925 AD), Ali bin Abbas Majoosi (930-994 AD), Abu Sahel Masihi (972-1010 AD), Ibn-e-Sina (980-1037 AD), Ismail Jurjani (1042-1136 AD), Ibn Rushd (1126-1198 AD), and Ibn Hubal Baghdadi (1121-1213 AD) define Tadabeer-e Mashaikh as the regimen or systemic plan for maintaining the equable

temperament of Mashaikh.

According to Sabia et al. (2012), encouraging lifestyle change among Mashaikh (elderly) reduces mortality and morbidity while also improving the quality of life of older adults. An ideal preventive health package should include several components, including knowledge and awareness of illness conditions and methods for prevention and management, adequate nutrition and a balanced diet, and physical activity. To promote a positive mindset and produce a sense of well-being, motivation for meditation and prayer should also be included in the techniques.[7]

The current objective of productive and effective ageing is to add life to the years rather than years to the life. Tadabeer-e-Mashaikh, directly or indirectly, can help the elderly enhance their health and quality of life. Promoting the adoption of Tadabeer-e-Mashaikh into the routines of the elderly through lifestyle and behavioural adjustments will assist in addressing many of the age-related problems that have become increasingly prevalent in the current context?.

Arastu (Aristotle) (384-322)

According to Aristotle, it is assumed that a fixed amount of intrinsic heat or vital spirit (calidum innatum) is present at birth, which is gradually consumed over time, leaving only small amounts in old age. He also proposed that Hararat-e-Ghariziyah (innate heat) cannot be returned to its birth level, but rather reinforced.

Jalinoos (Galen) (131-201 AD)

According to Galen's view, ageing is a natural physiological and unavoidable process, not a pathological one, caused by innate heat loss. According to him, ageing causes the Barid-Yabis constitution of the organism, decline in function, and muscular strength.[8] Jalinoos (Galen), while describing the status of the body, mentioned the three phases: sehat, marz,la sehat wa la marz. This third phase of the body is known as Halat-e-Salasa, or La sehat wa La marz.Galen put the elderly in Halat-e-Salasa.[9,10] While discussing the Shaikhukhat in the Unani system of medicine, it is must to describe about Mizaj (temperament), Ratubat-Ghariziya, (innate fluid) Hararat -e-Ghariziya (Caladum innatum). Asnan-e-Arba'a and Mizaj-e-Asnan, factors affecting the temperament, (Taghayyurat-e-Mizaj).[2]

Asnan-E-Arbah: (Four Stages Of Life)

According to the ideology of UnaniTib, physicians have classified the entire life span into four stages depending on the amount of Rutubat-e-Ghariziyah orRutubat-Ustuqussiyah (protoplasm) in the body. These stages are called Asnan-e-Arba'a (four ages), and they are the following:

1- Sin-al-Numu (the period of growth and development): It begins at birth and lasts until thirty (30) years. During this stage, Rutubat-e-Ghariziyah exceeds the amount required to maintain Hararat-e-Ghariziyah (normal body heat). It is also known as Sinn al-Hudathat. During this period of life, the body's organs continue to grow.

2- Sin-al-Shububiyah or Sin-al-Waqoof (manhood): Aged thirty to forty (30-40) years. In this stage, Rutubat-e-Ghariziyah is only equal to the amount required for the preservation of hararat ghariziyah; neither growth nor dissolution occurs.

3- Sin-al-Kuhulat (Aetus verselis): From 40 to 60 years. It is the period during which the amount of Rutubat-e-Ghariziyah is less than what is required to maintain Hararat-e-Ghariziyah in body metabolism. However, there is no dominance of Rutubat-e-Gharibah Ballah (an aberrant metabolic product). Power deterioration begins, but no significant disintegration occurs.

4- Sin-al-Shaykhukhah (old age or Aetus cripita): It is the phase in which the quantity of Rutubat-e-Ghariziyah is insufficient and less than the quantity required for the preservation of Hararat-e-Ghariziyah and to sustain normal body metabolism and is superadded with and dominated by Rutubat-e-Gharibah Ballah (abnormal metabolic product). During this phase, Hararat-e-Ghariziyah (Calidum innatum) and Rutubat-e-Ghariziya are much reduced, and the body's power and faculties deteriorate. Consequently, the mizaj becomes Barid (cold) and Yabis (dry).[2,7,8]

An organism can only survive if it responds to environmental changes in accordance with the requirements of its adaptability. Each animal or organism, as a part of nature, is a complex and integral system whose internal forces work so long as it exists, and at every moment they are equilibrated according to age with the external forces of the surrounding medium. Thus, life is a long series of equilibration with the external environment.[11] The organism's equilibrations are reflected in its reactivity to external factors.

Concept and Process of Ageing According to USM

The concept of aging is very old in the Unani system of medicine. Even old age was referenced in the Edwin Smith papyrus (600 BC), where the metamorphosis of old people into young people was portrayed. There has been attention paid to the extension of life span and maintenance of health of elderly people, as well as the prevention ofage-related illnesses. The gradual and persistent loss of Hararat (heat) from the body is thought to be the cause of aging, resulting in the Barid Yabis. Due to the lowered Hararat in the old to the flame, there is a need for a minimum fuel in the form of Giza (diet), which would be extinguished by consuming a lot of food.[4]

Why Age Grows and Decline Occurs

The accumulation of cold and moisture (Barudat wa Ratubat) causes aging to occur more quickly. Ibn-e-Sina defined this as follows: "The action of wakefulness is the dissolution of moisture (Ratubat), evacuation of matter, and speeds up the production of innate heat, and the action of sleep is the digestion of the substances which we consume to provide energy and moisture (Ratubat)." Oversleeping aggravates morbid heat, dissipates intrinsic heat, and causes the body to become dry. Organ decline also occurs.

Due to the dominance of dryness in old age sleepiness is decreased, and the body becomes rough. Because of this dissolution of innate heat (Calidum innatum) takes place, therefor why demise and decline of health occur.[12,13]

Conventional Concept of Ageing

Definition: The process of aging is linked to the body's physiological and biological decline; it is a universal deterioration in several physiological systems pertaining to the psychological, physical, and biomedical domains, and it is all caused by an imbalance in homeostasis. Personal habits, environment, and diet have a significant influence on the declineof the homeostatic reservoir. (14). Many people think that aging is just the result of gradual degradation brought on by oxidation, mechanical wear and tear, other molecular damage, or other natural processes. According to stochastic theories, aging results from a build-up of random alterations that have a detrimental impact on biological systems. Aging could be the result of the accumulation of hazardous by-products, damage caused by to nuclear radiation, or other slow deteriorative processes.[15] The aging process is a biological phenomenon that impacts people at varying speeds and is universal but not uniform.[16] Aging has been defined as an overall decline in physiological processes that results in failure to adapt to the environmental demands (e.g., adaptation to stress) and culminates in death.[17]

At the cellular level: The study of aging focuses on the basic functions of molecules within cells and cells within tissues. The goal of such investigations is to establish universal principles capable of understanding aging and to find ways to prevent or alleviate the disease of aging. Cellular and molecular theories of aging suggest that intrinsic (genetic) processes occurring in the cell in combination with Extrinsic/ external (environmental) variables are responsible for aging. Elucidating the genetic and epigenetic processes underlying the causes of aging and death is one of the hardest elements of modern biology.[18]

Ageing involves two opposing types of changes: evolution and involution, which occur simultaneously, but involution or atrophy dominates in old life. Atrophy does not occur simultaneously in all organs and populations. Senescence or senility is a physiological process; if involution occurs irregularly, senility becomes pathological. There is a variance in biological ageing among individuals of the same chronological age.[14]

Types of Ageing

Chronological ageing: A person's age calculated from birth?

Biological ageing: signifies physical changes that diminish the function and efficiency of organs

Psychological ageing: refers to the changing roles of a person within the social structure.

Social ageing: is the changing roles of the person in the social structure[19]

Furthermore, ageing is also classified as intrinsic and extrinsic, based on components participating in the ageing process. Ageing induced by genes is known as intrinsic ageing, and ageing caused by environmental factors is called extrinsic ageing.[19,20]

Ageing is associated with old age, but it starts from our birth.[20] We see average physiological changes in normal ageing, while in successful ageing is characterized by minimal functional deterioration.[17]

According to Seneca, old age is an incurable disease, and in the words of Sir James Sterling Ross, “You do not heal old age but you protect it, you promote it, you extend it".[3] The definition of Mashaikh (old age) varies to condition and purpose, international agencies define Mashaikh (elderly) a person whose age is 60 years and above.[16]

While developed countries adopt the chronological age of 65 years as the definition of the elderly. Ageing is a multifaceted process that refers to "acquiring maturity with the passage of time". It begins with conception and continues until the end of life. Aging is progressive, widespread, and unavoidable for all living things. Normal aging and define Mashaikh are two distinct phenomena.

Normal aging refers to the natural deteriorative processes that all humans will go through if they live long enough, such as decreased bone mass, osteoarthritis, and lens cataracts. Dementia, hypothyroidism, stroke, and congestive heart failure are examples of diseases associated with aging but not define Mashaikh and do not occur in all people (i.e., probabilistic aging); define Mashaikh, they are not unavoidable for all people, and not all older adults will develop them.

Homeostasis is the belief that normal aging reduces the body's ability to endure stress and difficulties as homeostatic processes weaken over time. Our functional capacity and ability to respond to stress gradually deteriorate in a linear or exponential manner beginning in the third decade. Each system's decline is unaffected by changes in other organ systems and is regulated by genetics, nutrition, environment, and individual habits. Frailty in certain elderly persons is a direct outcome of diminution of these typical reserves.[21]

Theories of Ageing

There are several theories about aging, and the majority of them are still controversial. These theories can be classified as classed as molecular, cellular, or systemic. Molecular Theories and Genetic Connection: These These theories emphasize the importance of genetic regulation and assume that a genetic program or variations on this program These theories emphasize many stages of each species' life cycle.

List of Principle Theories of Aging

Molecular Theories: The link between genes, DNA repair, and somatic mutation: heat shock and error catastrophe proteins Genes that ensure lifespan, telomeres, and cerontogenes beta precursor amyloid/ protein gene mutation, Apo protein E.

Cellular Theories: Wear-and-tear and rate-of-living theories Disposable soma theory Free radical theory Cross-linking theory: system-level theories.

System-Level Theories: Cellular theories, neuroendocrine theory, immune theory, and Neuro-immune-endocrine theory.

Neuro-Endocrine and Immune Theories: This category includes two major theories: neuro-endocrine and immunological. According to both, command cells would operate as pacemakers, regulating a "biological clock" or genetically based program that governs development and aging.[22,23] The clock would degrade with time and eventually cease to function. Similarly, the connection to effector organs (such as muscles and glands) would break down. Aging would be manifested through a slowing or imbalance of critical neuro-endocrine organ or system, such as the hypothalamus, pituitary gland, adrenal cortex, and thyroid gland.[24,25] or an immunological organ or system, such as thymus, lymph nodes, spleen, or histocompatibility complex.[26-28]

Unified Neuroendocrine-Immune Theory: The declining effectiveness of homeostatic adjustments with aging leads to a failure of adaptation and survival.[29]

the link between genes, DNA repair, and somatic mutation: heat shock and error catastrophe proteins Genes that ensure lifespan, telomeres, and cerontogenes beta precursor amyloid/protein gene mutation, Apo protein E.The pituitary gland controls the activity of several endocrine glands, including the adrenal glands, gonads, and thyroid, directly and indirectly through signals (e.g., hormones, neurotransmitters) received from nervous centres, primarily the hypothalamus, as well as signals (e.g., cytokines) from immune system cells. Immune cell function responds to hormone stimulation or inhibition. Nervous, endocrine, and immunological signals must be coordinated and responsive to the needs of the many systems they govern in order to adapt. The neuro-endocrine and immunological theories of aging have now combined into a single neuro-endocrine-immune theory.[28,30,31] With aging, the efficiency of the hypothalamo-pituitary-immune signals is lost or altered, and this results in decreased cell function and increased pathology.

Single Versus Multiple, Interdependent Theories of Aging: A comprehensive examination of aging theories reveals that, while it may be intellectually appealing to imagine a single explanation for aging, most gerontologists today agree that a single theory cannot account for all of the changes that occur with aging, particularly in higher organisms such as humans. Our improved understanding of disease disease pathophysiology, as well as the more advanced biotechnological tools at our disposal, allow us to see aging from a new viewpoint, involving multiple interactive and interdependent processes that work together to determine health, longevity, and successful ageing. Synchronization is dependent on environmental stimuli that affect aging cells, tissues, and organs, as well as genetic control of the response to these factors.[32]

Somatic Mutation and DNA Repair: The somatic mutation theory was originally based on data that irradiation shortens life spans. Ionizing radiation induces genetic mutations, which lead to cell degeneration and death. Somatic mutations are no longer thought to be the most likely cause of aging because their frequency in the natural environment is insufficient to account for general changes in ageing, and DNA repair mechanisms may be adequate to fix the damage. However, when additional harmful agents, such as reactive oxygen species and UV light, impinge on the cell for an extended length of time, DNA repair systems may fail. Failure to appropriately repair DNA damage would cause malfunctions in genes, proteins, and cells, jeopardizing function and survival. The ability to repair DNA damage by utilizing the many enzyme systems in the cell designed for this purpose has been linked to the duration of the lifespan.[33] DNA damage and repair occur at varying rates in species, cells, and within a particular organism. Nuclear DNA is more resistant to damage than mitochondrial DNA in germ cells, which are the most efficiently repaired. Humans can repair DNA faster than mice and other animals with shorter lifespans. Defects in DNA repair have been seen in patients who have a genetic predisposition to cancer. The higher incidence of cancer in Mashaikh (older people) could be explained by a reduction in DNA repair activities with age.

Error Catastrophe and Heat Shock Proteins: Errors in the transmission of information through RNA to proteins would be responsible for aging.[34] Errors, such as the incorporation of incorrect molecules into messenger RNA (mRNA) during transcription, can modify the triplet codons (three bases) in mRNA molecules. Accurate codon reading would then be impossible (as in the codon restriction theory); instead, the introduction of incorrect amino acids into proteins during translation might alter the amino acid sequence. The initial error in proteins may be modest, but it will increase exponentially with the passage of time, leading to "error catastrophe" and cell death.[35] While many reports contradict the occurrence of errors in proteins with aging.[36]

Other research points to the potential significance of certain proteins, such as heat shock proteins. These proteins are created in cells that have been subjected to various stimuli (for example, poisonous chemicals or high temperatures). They may contribute to cell protein metabolism by assisting cells in disassembling and disposing of damaged proteins, as well as facilitating the transport of new proteins. The production of these proteins diminishes with age.[37] The mechanisms by which heat shock proteins are formed and act are still unknown. Some experiments indicate that these proteins may be related to the adrenal cortical response to stress.[38] And to alterations in brain proteins that are possibly involved in dementia.[39] Not only progressive accumulation of defects may generate aging; multiple abnormal processes are likely to operate in parallel.[40] Rather than a single factor being responsible for aging, a “network” of cumulative causes like free radicals, alterations in photolytic enzymes, and errors in proteinswould be responsible for aging.[19,41]

The Genetic Connection: Senescence can be caused by specialized genes for longevity or death, as well as changes in gene expression beyond reproductive maturity. The demonstration in Drosophilae that genes are linked to life span has paved the path for additional research into the genetic connection with longevity. Some genes found in yeasts, nematodes, and fruit flies boost longevity, whereas others may reduce life expectancy. Only a few such genes have been found thus far, but it is thought that many more may be active. Gene expression is the process by which genes generate proteins, including structural proteins that control cell morphology and enzyme proteins that control cell function. Changes in gene expression may

alter protein synthesis and thereby cause aging. Certain genes trigger cell proliferation (e.g., the proto-oncogenes, c-fos or rus genes), whereas others interfere with cell proliferation.[42]

In the nematode (Caenorhabditis elegans), mutation of a certain gene more than doubles the normal 3-week life span.[43]

Telomere length indicates how many divisions a cell has undergone and how many divisions remain before it becomes senescent. Telomeres are chromosome tails that have the same short sequence of DNA bases repeated thousands of time; they stabilize the chromosome during division, but with each cell division they lose a number of bases. While cancer cells divide indefinitely, normal somatic cells undergo only a limited number of cell divisions, during which they age and finally die.[44] Therefore, the study of telomeres provides a model for studying the aging cell, its "programmed death," and the means to prevent or delay it.[45]

The study of genes and telomeres that trigger or inhibit cell growth is one area where aging research interacts with hormone research. Other proteins involved in aging include apolipoprotein E (apoE) isoforms, particularly apoE4. Apo-proteins are part of the lipoproteins that carry the primary blood lipids. They have long been linked to the pathogenesis of atherosclerosis and cardiac disease: apoE is a component of triglyceride-rich very low density lipoprotein (VLDL) and cholesterol-rich intermediate low density lipoprotein (IDL), both of which participate in cholesterol metabolism.[46] Apo-E_1 proteins are implicated in nerve function and repair as well,[47] whereas apoE_3 stimulates axon production, Apo-E_4 inhibits it.[48] Genetic defects in Apo-E_3 may lead directly to increased incidence of cardiovascular and nervous degenerative diseases or may increase the probability of mtDNA mutations, which, in turn, could be the cause of old age pathology.[49] Other mutations that may induce aging are those involving the amyloid proteins (discussed above): a mutation of the amyloid beta protein (at codon 717 of the amyloid beta precursor protein gene) causes early onset of Alzheimer's disease.[50,56] It may also induce other types of amyloidosis and lead to cell pathology and death.

Gene-Controlling Theory: Life science is presently in the era of "gene" and "genome." The discovery of regulating genes is regarded asproviding a solution to aging. We refer to this concept as a gene-control theory. Many scientists' primary focus is now on finding "aging-related genes" and "lifespan-related genes."[51-54]

The belief in gene control over aging is fundamentally similar to gene programming theory, which holds that the aging process is genetically pre-programmed in the same way that development is.[55] The concept of programmed aging may have originated from the practice of intentional death (biological suicide) in certain animal species. Individuals of semelparous salmon and female octopuses die shortly after breeding. Hormone signaling has been established as the mechanism behind programmed death. However, unlike the aging process, this programmed death occurs abruptly and quickly. In actuality, individuals of the same species living in various settings, whether protected or not, may have very diverse life lengths.

Even if in the same environment, the individuals die at different ages. As for the concept of "Hormonal Inhibition of Feeding and Death in Octopus: Control by Optic Gland Secretion," programmed aging.[56,57]

Many aging-related genes and lifespan-related genes have been identified; however, their exact roles in aging are not known yet. In our view, the belief in aging genes is misleading because this idea has severe defects.

(A) Even if some genes are associated with life spans, they are not essentially aging-related.

(B) Even if some genes are aging-related, they are not essentially the elements that control the aging process completely and independently.

(C) If aging is controlled by certain genes, the distribution of aging changes should be independent of the locations of damage. However, the fact is that the distribution of age spots on the skin is closely related to the locations of damage.

(D) If aging is controlled completely by a gene, when this gene fails in an individual by DNA mutations, this individual could be immortal. However, no immortal case has been observed so far in the world. Therefore, such a gene and such a programming mechanism for aging may not possibly exist![54]

Programmed Theories of Aging: According to programmed views, the human body is built to age and follows a specific biological timeline. All of these

ideas agree that aging is natural and "programmed" by the body.

There Are A Few Different Programmed Theories of Aging

Programmed Longevity Theory: According to this view, aging is caused by the gradual activation and deactivation of certain genes.

Endocrine Theory: This is the belief that regular variations in hormones control aging; the biological clock functions through hormones to control the pace of ageing.[58]

Immunological Theory: Claims that the immune system is designed to weaken over time, making humans more vulnerable to infections, aging, and death.

Error Theories of Aging: Error theories claim that aging is caused by environmental damage to the body's systems that accumulates over time.

Free Radical Theory: This idea proposes when free radicals produced by reactive oxygen species accumulate in the body and antioxidants are unable to fight them, these free radicals become the source of age-related damage.[59] Enhancement of the antioxidative defense system to attenuate free-radical-induced damage will counteract the aging process.[49] This theory suggests that free radicals are a major cause of aging by causing cellular injuries.[60] Free radical molecules found in living organisms include superoxide and reactive oxygen species. Cells produce these tiny molecules as substrates or by-products of certain metabolic activities. Although some research has indicated that anti-free radicals can increase the More precise scientific terminology

of animals like Drosophila and roundworms.[61] The significance of free radicals in aging is debatable.[62]

When oxidative free radicals are liberated, they have the ability to cause cell injury. However, as part of cell metabolism, these molecules, like other molecules in cells, must be accurately controlled in their distributions and activities. Intracellular antioxidants often eliminate or deactivate free radicals immediately after they work to ensure intracellular stability. Even if they produce injuries, the harmed cells or molecules can be completely healed or removed without compromising tissue structure or function. Even if some injuries caused by free radicals cannot be entirely repaired, these injuries are related to some aging processes processes.[63]

There Are Several Error Theories of Aging

These error theories focus upon the damage to cells of the body, organs, and systems caused by the environment and are responsible for their improper functioning.

Wear and Tear Theory: Says that cells and tissues will simply wear away. The rate of living theory states that the faster an organism uses oxygen, the shorter its life.

Cross-Linking Theory: asserts that cross-linked proteins accumulate and slow down bodily activities. Old immune systems are unable to eliminate excess glucose in the blood. Glucose produces crosslinks and free radicals.

Rate of Living Theory: This theory proposes that organisms are born with a limited amount of energy. If we consume this energy gently, our aging rate will slow. According to this notion, organisms with a faster basal metabolic rate have a shorter life span, whereas those with a slower basal metabolic rate have a longer life span.

Somatic DNA Damage Theory: This is the belief that genetic mutations cause cells to malfunction. Genetic Theory of Aging: Studies have shown that genetics can play a significant role in aging. In one study, researchers found that removing cells containing specific genes from mouse organs increased the animals' lifespans by up to 35%. The implications of these tests for humans are unknown, although experts believe that genetics account for much of the diversity in aging between people.[64]

Some Key Concepts in Genetics and Aging Include

Longevity Genes: Are specific genes that help a person live longer.

Cell Senescence: Is the process by which cells deteriorate over time.

Telomeres: Are structures at the ends of DNA that gradually decrease, causing cells to stop replicating. Stem cells are cells that can differentiate into any type of cell in the body and hold the potential of repairing aging-related damage.

Stem Cells: The body is always conducting intricate metabolic reactions, regardless of the genes you inherited. Some of these reactions injure the body and, as a result, accelerate aging. The study of these complicated processes helps researchers understand how the body evolves as it ages.[64]

Some Other Common Theories of Ageing

Waste Accumulation Theory: The excess waste can interfere with normal cell function, ultimately killing the cell.

Limited Number of Cell Divisions Theory: The number of cell divisions is directly affected by the accumulations of cellular waste products.

Hayflick Limit Theory: Suggests that human cells have a limited life span.

Death Hormone Theory: We aged because the pituitary begins to liberate DECO, which increases the metabolic rate by accelerating the aging process.

Thymic-Stimulating Theory: The disappearance of the thymus contributes to the aging process by weakening the body's immune system.

Mitochondrial Theory: Mitochondria are one of the easiest targets of free-radical damage.

Errors and Repairs Theory: The system is incapable of making all repairs. The accumulation of the defective molecules causes diseases and other age-related changes.

Redundant DNA Theory: It blames errors accumulating in genes for age changes.

Autoimmune Theory: With age, the system's ability to produce antibodies declines, as does its ability to distinguish between self-proteins and foreign substances.

Caloric Restriction Theory: A theory that suggests that a diet low in calories but high in nutrients, minerals, and vitamins can delay the aging process.

Mutation-Accumulation Theory: The primary idea behind mutation-accumulation theory is that inadequate fitness selection on an elderly organism allows for a wide spectrum of gene mutations in somatic cells, many of which have negative effects on the organism. DNA mutations that occur after the reproductive age cannot affect future generations. As a result, such mutations cannot be eliminated through evolution and might accumulate in the somatic body. However, the same age-related changes, such as age spots, frequently develop in parallel and independently in various areas of an organ. DNA mutations alone may not explain these aging effects the cause of these aging effects. DNA mutations alone may not explain these aging effects in parallel and independently in different somatic cells in various areas of an organ? Another difficulty with this idea is why cells with altered morphologies due to DNA mutations are not eliminated by the immune system if they do not develop into tumours.[64,65]

Antagonistic Pleiotropic Theory: Natural selection has selected genes that provide short-term benefits to the organism at the expense of degeneration later in life. In 1957, Williams proposed another hypothesis about aging symptoms in his antagonistic pleiotropic theory. He hypothesized that some genes with antagonistic pleiotropic effects would exist, with beneficial effects in early life but negative consequences later in life. Williams also stated that ageing is a side consequence of vital functions and that altering the ageing process is "impossible." This proposal, which assumes a type of pleiotropic genes, seems plausible. However, such genes are impossible to have since their harmful effects on all somatic cells should cause organs to age quickly rather than gradually. Actually, even though our organs are aging, they can continue to work adequately for more than 60 years.[66]

Disposable Soma Theory: Cellular maintenance is energetically costly. Allocating more energy to reproduction may enhance reproductive success. Disposable soma theory: Disposable soma theory assumes that an organism must budget its finite energy supply, which must be evenly distributed for metabolism, reproduction, and repair/maintenance. An organism would rather preserve energy for reproduction than maintain its mature body. Insufficient repair is hence the cause of negative bodily changes with age. However, insufficient repair can be lethal to an organism. If a cut on the skin is left untreated owing to a lack of repair, the body will die from bleeding or infection rather than aging.[67]

Order to Disorder Theory: After sexual maturation, the system that maintains the order starts to diminish efficiency. Disorders are the cause of Disorder is a cause of aging.

The Telomerase Theory: Every time our cells divide, telomeres shorten, causing cellular damage and death linked with aging. Reduction in cell number is often assumed to be a cause of aging. The discovery of telomeres strengthened this hypothesis this hypothesis. Telomeres are the ends of chromosomes and play key roles in protecting and regulating chromosomal activity and regulating chromosomal activity. During DNA duplication, the 3′ end of a DNA template in the telomere is employed as a priming sequence to synthesize new DNA. As a result, the 3′ end of a DNA

template the template DNA, as is its telomere. As a result, each time DNA duplication and cell division occur, the length of a telomere shortens. Cannot anymore proceed. On this basis, a cell senescence /telomere theory was proposed. This theory suggests that telomere-determined cell senescence is the origin of aging.[44,68] The discovery of telomerase, an enzyme that can lengthen telomeres, provided major support for this notion, because telomerase was shown to be produced mostly in germ cells and tumour cells.[69] However, an increasing number of studies have shown that there is no consistent relationship between telomere lengths and animal life spans.[70]

In Addition, This Theory is Incompatible with Some Known Facts

(A) The potential of cell division is also controlled by other factors, and a stem cell does not essentially have longer telomeres than its neighbor non-stem cells.

(B) Reduction of cell number is not the unique change in an aged tissue, and in contrast some aging changes including hyperplasia appear as increase of number of cells.

(C) Most of our organs can still reproduce new cells for repair when we are 70 years old. [71]

Important Concepts in the Biochemistry of Aging Include

Free radicals are unstable oxygen molecules capable of causing cell harm. Protein cross-linking occurs when excess carbohydrates in the circulation induce protein molecules to actually bind together. The premise of DNA repair is that, for unexplained reasons, the body's capabilities for repairing DNA appear to grow less effective as people age. Heat shock proteins are proteins that help cells survive stress and are less common in older people. Hormones fluctuate as we age, triggering numerous changes in organ systems and other processes.

Here are some tips to maintain your body feeling as young as possible: To reduce free radical damage, eat antioxidant-rich foods. Exercise regularly to prevent bone and muscle loss. Keep your cholesterol low to slow arterial hardening and preserve your heart. Keep your brain sharp by engaging in mental fitness activities. In the end, aging is unavoidable. Take care of your body and mind, and embrace change as it occurs.[49,63,65]

Two Social Theories of Aging: Activity and Disengagement

There have been Two Main Theories of Aging

Activity Theory: This hypothesis is related to people's activities, performance, roles, and behaviour. This hypothesis has been recognized in gerontology research; the premise of activity theory is that when senior people engage in certain types of activities or behavioural qualities, such as extending a helping hand to a needy individual, they feel satisfied and at peace. Dissatisfaction and emotions of unhappiness arise when an individual is unable to participate in an activity owing to an illness or handicap. Activity theory becomes important, and aging is perceived as a good aspect by those who are active and oppose all types of barriers that might occur within the path of their activities, roles, or performance.[72]

Disengagement Theory: This hypothesis describes the desertion that occurs between elderly people and other members of the social setting. This idea characterizes the elderly's departure from society as choosing to isolate and disengage from the community. The reasons for this withdrawal are not clearly defined withdrawal are not precise; they form their mind-sets in such a way that they do not plan to socialize with others or acquire efficient communication skills. Older people just prepare for less contracted roles and begin to see changes in their relationships.

Evolutionary Theories: The evolutionary idea, first offered by Weismann and then refined by Mitteldorf, is one of the early theories on aging. According to this view, the aim of a limited lifetime is to store live resources for future generations for "group benefit." Some hypotheses proposed some plausible methods on how an organism "sacrifices" itself for "group benefit." These hypotheses include mutation accumulation theory, antagonistic pleiotropic theory, and disposable soma theory. It is true that group benefits provide an evolutionary advantage. However, to conserve resources for reproduction, a more successful technique would be to remove the elderly through "a planned rapid death" rather than a gradual process of aging. In actuality, the maximum lifespans of most animal species exceed the time required for development. For example, women may live more than 30 years (age 70-90) after reproductive age (age 15-45).[73]

Lifestyle Modification for Healthy Ageing

There is a need for modification in Asbab-e-sitta-zarooriya (six essential factors): they are air; food and drink, body movement and repose; mental movement and repose; sleep and wakefulness; retention and evacuation to maintain the temperament and the health status of Mashaikh (elderly people) and soundness moderation in Asbab-e-Ghair Zarooriya (non-essential factors), exercise, massage, bath, bedding, environment around Mashaikh (elderly), and psychological factors associated with their health.[10] Arastu (Aristotle) (384-322 BC) theorizes that Hararat-e-Ghariziyah (Calidum innatum/vital heat) cannot be restored to its initial level as present at birth but can be protected only.[10]

The aims of these Tadabeer for Mashaikh (elderly) are to preserve and protect Ratubat-e-Ghariziya (innate fluid) and Hararat-e-Ghariziya (Calidum innatum) as long as possible and to avoid production of Ratubat-e-Gharibah Ballah and to eliminate morbid matter from the body through natural ways and to keep away from conversion of Mizaj to Barid Yabis and to protect the body from unwanted environmental factors and undesired emotional factors like anger, fear, depression, and anxiety.[9]

It was assured in a proceeding of the World Health Organization on ageing and health that, through healthy behaviors like proper diet, sleeping, and exercise, successful ageing is greatly facilitated.[10] Ageing is affected mostly by lifestyle, environmental changes, dietary habits, occupation, chronic illness, psychosocial conditions adopting eating practices such as dividing the daily diet into three or four meals, moderate exercise and acquiring healthy habits, which are a good, healthy startup to a better quality of life for elderly.[3]

Discussion and Conclusion

Ageing is a ubiquitous and necessary phenomenon caused by progressive changes in the organs that create a decline in functionality. The concept of ageing is very old in the Unani system of medicine. Since the Hippocratic era (460-370 BC), physicians have been interested in the preservation of elderly health, the extension of lifespan, and preventive measures for age-related disorders. Lifestyle modification among Mashaikh (elderly) not only reduces mortality and morbidity but also improves the quality of life of elderly people.

Arastu (Aristotle) (384-322) proposed that a fixed amount of innate heat or vital spirit (calidum innatum) is present at birth and gradually depletes with time, leaving only a smallamount in old age. He also proposed that Hararat-e-ghariziyah (innate heat) cannot be returned to its original level at birth but can only be strengthened. Jalinoos (Galen) (131-201 AD) hypothesized ageing as a natural physiological and unavoidable process rather than a pathological one. According to Galen's hypothesis, due to the loss of innate heat, humoral imbalance occurs, and ageing causes a Barid-Yabis constitution of the body, as well as a reduction in function and muscular strength.[8]

While describing the body's status, Jalinoos (Galen) mentioned three phases: Sehat, Marz, and La Sehat wa La Marz. The third state of the body is referred to as Halat-e-Salasa or La Sehat wa La Marz. Galen classified older adults within Halat-e-Salasa.[9,10] In Sinn-e-Shaikhukhat, the amount of Ratubat-e-ghariziyah (intracellular fluid) is less than what is required for the preservation of the hararat-e-ghariziyah as well as the body's proper metabolism.

Additionally, Ratubat-e-Gharibah Ballah is Predominates in sinn-e-shikhukat. This era of life also causes a significant decline in the body's power and faculties. Hararat-e-ghariziyah decreased as a result of a decrease in Ratubat-e-ghariziyah, resulting in a Mizaj characterized as Barid Yabis (cold and dry).[2,7]

Conflict of Interest

The authors declare no conflicts of interest.

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