

Review Article**Concept of Ageing and its Management with *Rasayan* Therapy****Sharma Pushpendra**

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Abstract: Ayurveda the 'science of human life' deals with physical, psychological as well as spiritual well being of an individual. The desire to live long be one of the basic instincts has been common to all living creatures and the human beings are a step ahead, in the sense, desires not only to live, but to live a long, happy and disease free life as far as possible. Ageing is a process of unfavourable progressive changes associated with decline in vigour and ending in death. Ageing is the part of life which is unavoidable but the untimely ageing can be stopped. The process of ageing involves the coexistence of two opposing factors namely evolution (growth) and involution (atrophy). These processes continue to operate throughout the life but their comparative importance tends to vary in different age groups. As the age advanced, human beings gradually lose some of their attributes, because of functional and structural alterations in almost all organ systems. Ageing in individuals is affected to a greater extent by genetic factors, diet, social conditions and the occurrence of age related disorders. The concept of *rasayan* not only helped attain longer, healthier life but also helped cure some of the dreadful diseases. *Rasayan* therapy should be preferably used during the early or middle age. *rasayan*, being practised effectively and extensively since ages, is a group of medicinal preparations which are immune-stimulants and capable of preventing the causation of many ailments such as untimely ageing etc to reduce the virulence of ageing and improve the quality of life thereupon. *Rasayan* is the science of nutrition and complete health care.

Keywords: *Rasayan, Jara, Ayu*

INTRODUCTION

A constant reactivity and change in the form and probably functioning is one of the important features of living beings in biosphere. Modern scientists say that biosphere is an open system which constantly reacts with the environment. However, the nature of reactivity varies from one organism to another, which is an inherent phenomenon. This is triggered at the time of conception, runs throughout the life span and when it totally ceases, the organism dies. Within the period of life span, the nature has bestowed two important mottoes. One is growth and other is reproduction or multiplication of the species. Growth ensures proper maturity for reproductive phase. After cessation of reproductive phase, the organism declines towards death. Thus ageing, both chronological and qualitative, will be counted, in strict sense, from the time of conception. In other words, ageing occurs as a result of constant biological activities throughout living period. This incessant activity is made possible by continuous process of both consumption and preservation of substances for energy. If soul is considered symbolically as a form of energy in a living entity, then *pravrtti* (constant activity) can be observed obviously either at cellular microcosmic level or at systemic macrocosmic level. This was well explained in the definition of *Ayu* [1] as an inseparable bond between

sarira, indriya, sattva and *atma*. Though ageing is restricted to *sarira* or physical body, other is essential factors and gives meaningful definition for *Ayu*. Various activities exhibited by the body indicate the presence of *atma*, which is the most important factor in sustaining life and without which the body will be declared dead as no activities could be seen [2]. The ageing is a natural ongoing process; the problem starts with the abnormal ageing which is the result of improper food and life habits. The remedy of this abnormal ageing is *rasayan*. The *rasayan* has multiple functions it is treatment in diseased conditions and rejuvenator in healthy condition. Different drugs had different action property in different age groups [3].

Aims & Objectives

- To study Ayurveda and Modern concept of ageing process.
- To study the concept of *Rasayan* in relation to ageing.

CONCEPTUAL STUDY

Ageing is the processes that occur during life which culminate in changes that decrease an individual's ability to cope with biological changes. It is a process of gradual and spontaneous change, resulting in

maturation through childhood, puberty and young adulthood and then declines through middle and late age. Senescence is the process by which the capacity for cell division, growth and function is lost over time, ultimately leading to an incompatibility with life i.e., the process of senescence terminates in death [4]. Although ageing has both the positive component of development and the negative component of decline, senescence refers only to the degenerative processes that ultimately make continued life impossible. Not all of the changes that occur with age, even those that occur in late life are deleterious (e.g. grey hair, baldness) and some may even be desirable (e.g. increased wisdom and experience).

The nature of reactivity within the organism is an inherent phenomenon. Starting at the time of conception, it runs throughout the life span and eventually terminates in death of an organism. The active life of an individual is nothing but the inseparable combination of *sarira*, *indriya*, *sattva* and *atma*. *Atma* is the most important factor in sustaining life and activities of whole body. From birth, till death, there occurs continuous life process viz. anabolism and catabolism, concordance of which maintains body functions. These two are active throughout the life but their rate gets altered in different stages of life these two processes were clearly stated in classical Ayurveda literature. The very definition of *sarira* i.e., *kaya* and *sarira*; the synonyms of *Ayu* viz. *dhari*, *jivita* and *nityaga*; the junction and disjunction of *paramanus* being carried out by *vayu*; and above all a quotation from *nirukta* directly signifies the activity of both of them at different stages of life (i.e. *jayate*, *asti*, *viparinamate*, *vardhate*, *apaksiyate* and *vinasyati*). Every *acarya* opined age as factor dependent on *kala*, which was even agreed by modern scientists who stated ageing as a process of unfavourable progressive changes, usually co-related with passage of time. Though there is difference of opinion between regarding different phases of life, they finally hold the same view. *Balyavastha* upto sixteen years of life as per *Susruta* was extended upto thirty years by *Caraka* [5], where complete growth has not yet occurred. *Susruta* agrees with the same but he included it under *Madhyamavastha*. Similarly, *Vrddhavastha* starts at sixty years according to *Caraka* whereas *Susruta* says it as seventy years. Here also, the last phase of *Madhyamavastha* [6] i.e., the *Hani* period which starts from sixty years is nothing but the onset of decrement in the functions and it becomes apparent from seventy years of life. *Vrddhavastha* which starts from sixty years (*Caraka*)/ seventy years (*Susruta*), is subdivided into two as *kalaja* and *akalaja* by *Susruta* and this is a unique contribution from *Susruta*.

Kalaja jara is nothing but chronological ageing which occurs naturally whereas *Akalaja Jara* is biological ageing which occurs either prematurely or later to normal age concealing the actual age of an

individual. While *Susruta* gives importance more to physiological entities, *Caraka* gives due importance to physiological as well as psychological entities. The total life span of human beings was cut short by hundred years with *yuga* changing because of indulgence in *adharma*, [7] etc. It is quite evident if one considers the present scenario, Because of blown up civilisation / modernisation, air pollution, water pollution, fast reducing natural resources, stressful life, the average human life span has been reduced to seventy years from about hundred years about a century ago. Above said points indicate nothing but *adharma* only. Though a person is said to be growing, actually he loses gradually, some of his attributes which were rightly observed by our ancient *Acaryas* who told that a particular faculty gets deteriorated with each decade. This is truth till today as is supported by observations made by modern scientists. A few causative factors for the ageing process are known but still it is a mystery.

Kala is the most important one factor on which other factors are dependent. *Swabhava* comes next followed by *Vayu* and *Virodhaka Bhava*. Other factors include *desa*, *ahara sausthavam* and *avighata* which were rightly justified by extensive research by scientists in the form of increased air pollution, smoking; increased caloric intake and stress, generating excessive free radicals, eventually hastening the process of ageing. Modern view of ageing reveals that till date no perfect definition is given. Though ageing and senescence are relative terms, they have different meanings. While ageing has both the positive component of development and the negative component of decline, senescence refers only to the degenerative processes. Many theories have been put forth related to ageing. Only a few could give probable mechanisms of ageing. But, the most popular theory is 'Theory of free radicals' of Dr. Denham Harman (1946) which is still considered worldwide [8].

These free radicals are highly reactive because of the instability arose due to unpaired electron. Unless and until they become stable, they start attacking cell membranes and contents; create havoc in them resulting ultimately in disease process. These free radicals get originated from either exogenous such as air pollution, cigarette smoke, radiation, drugs, pathogens, etc. or endogens produced within the body. Variety of free radicals have been noticed so far like superoxide, hydrogen peroxide, hydroxyl radical, nitric oxide radical, carbon tetrachloride, single oxygen, though exact number is still not known. These free radicals cause cellular damage through lipid per oxidation, DNA damages and oxidative damage of proteins. Each cell protects itself from the onslaught of free radicals by producing free radical scavengers such as enzymes that neutralise free radicals. Thus balance is maintained between generation of free radicals and scavenging enzymes. This is known as antioxidant mechanism or defence system.

These antioxidants by any of the three mechanisms i.e., by inhibiting the generation of ROS or by directly scavenging the free radicals or by raising endogenous antioxidant defences. This antioxidant defence is of two types viz. primary and secondary, out of which primary is subdivided into antioxidant nutrients and antioxidant scavenging enzymes. Antioxidant nutrients are β -carotene, α -tocopherol, Vitamin-C, selenium, Zn, Mn, Cu, etc. while antioxidant scavenging enzymes like superoxide dismutase (SOD), catalase and peroxidases. While SOD lowers the state level of O₂, catalase and peroxidases do the same for H₂O₂. Restricting the caloric intake has shown the delay in ageing through decreased production of mitochondrial O₂ and H₂O₂ and increased production of antioxidant defences [9]. Free radicals are generated at the cellular level as a result of improper transformation of atoms / ions / molecules which lose one electron. Unless they are checked, they produce deleterious effects in the body.

Agni which transforms the food stuffs into tissue elements when deranged leads to the formation of *ama*. Such *ama* can get produced either at *jatharagni*, *dhatvagni* or *bhutagni* level and leads to the onset of a disease which in turn, causes *dhatu ksaya*. Classics say that when there is diminution of *dhatvagni*, they start attacking *dhatu*s and eventually lead to *ksaya* of *dhatu*s. If this is not checked, they individual may end up in *mrtu* [10]. So, vitiation of *dhatvagni* should be normalized.

Majority of *Rasayan dravyas* acts at *dhatvagni* level and bring back the aggravated *dhatvagni* to normalcy. Similarly, when free radicals are excessively produced, they attack cell membrane and organelles and destroy them. If not checked this becomes a chain of reactions ultimately resulting in death of a cell. So, it has to be counteracted by substances called antioxidants. Being one of the eight branches of Ayurveda, *Rasayan* is practiced since ages [11]. *Rasayan* though concerned primarily with improving the health status, also used for curative purposes. References related to *Rasayan* are available such as turning old subjects to young, delaying the ageing process, prolonging the lifespan and increasing the strength of the individuals [12]. In all *Samhitas*, *Rasayan* is given due importance. *Caraka* has dedicated the first chapter of *Cikitsasthana* and then subdivided into four subchapters while *Susruta* dealt in four separate chapters in *chikitsasthana*. Later *Acaryas* dealt in a single chapter. Different definitions of *Rasayan* are given by different authors. But, their ultimate view is one and the same i.e., nutrients travels through different *Srotas* to tissue elements, replenish them, thus enhancing total body strength and maintain youthfulness to a longer duration. Various types of *Rasayans* are mentioned in classics. They keep the body healthy by preventing the onset of disease, promoting the healthy status and curing the already manifested disorders. By *Rasayan*, one can check *kala mrtu*,

arista laksana, *viruddhasanajanya rogas* and *janapadodddhwamsa vyadhis*. These, actually, are made possible not only due to *Rasayan* but also due to *tapa*, *japa*, etc. along with that.

Both types of *Jara* i.e., *kalaja* and *akalaja* can be managed by *Rasayan*. *Kalaja* is *yapya* whereas *akalaja* is *sadhya*. *kalaja jara* can be checked to some extent by *Rasayan Karma*. It is not possible to reverse this one because, it is a *Svabhavika Vyadhi* and it is told that '*Svabhavo Nispratyanikah*' i.e., *Svabhava* cannot be altered at any cost. Only thing one can do in *Kalaja Jara* is checking the process of ageing and preventing the disorders usually occurring in old age such as *daurbalya*, *vali*, *palitya*, *khalitya*, *swasa*, *kasa*, etc. So, the rate of ageing process can be slowed down to some extent but not forever by rejuvenation therapy in *Kalaja Jara*. That is why it is told that *Kalaja Jara* is *Yapya*. *Akalaja Jara*, on the other hand can be treated effectively with *Rasayan* therapy. *Akalaja Jara* may be resulted because of not following *Swasthavrtta* or *Sadvrtta* or *Acara Rasayan*. In such cases, *Nidana* (etiological causes) *Sevana* is present any should be left. Though *Parityaga* of *Nidana Sevana* is done, it may not be sufficient to check the flow of already going on ageing process. So, *Rasayan* should be administered in such cases, not only to check the ageing process but also to reverse it. Thus, *Akalaja Jara* can be managed. For this reason it is said that *Akalaja Jara* is *sadhya*. Maximum benefits of *Rasayan* can be got either in *purva vayas* or *madhya vayas*. Why *Caraka* did not mention the age limitations for *Rasayan* need to be discussed. The reason behind this may be, at that time the people were strictly following *Sadvrtta*, *Swasthavrtta* etc. because of which they were hardly facing any disorders. *Caraka* has told that "*Nityam Ksira Ghrtabhyaso Rasayannam*" i.e. daily consumption of milk and ghee is the best rejuvenator of body. So, they may be following this. Moreover they were performing *Dharma* which might have prevented them from coming in contact with ailments. Therefore *Caraka* did not think of about the administration of *Rasayan* only to certain age group. That is why even *Vrdhha Cyavana* became young after *Rasayan* [13].

Seers wanted to prolong the life span as far as possible and then noticed that *Rasayan* administered in young and middle age yield maximum benefits than in old age. Here, *Purva Vayas* is not *Balyavastha* as per the commentators, but is phase of life wherein the individual reaches or enters *Yauvana* and *Madhya Vayas* is remaining period of *Yauvana*. In the earlier phase of *Yauvana*, the formation of tissue elements is incomplete. So, *Rasayan* improves the nourishment to *Dhatu*s, thereby improvement in the defence system. Later phase of *Yauvana* is endowed with complete growth and development of body tissue. *Rasayan* administered boosts the immune system and delays the ageing process. Why *Rasayan* is preferred in early adulthood over other two phases of life is again a

subject for discussion. As quoted earlier, once born, every individual has to see all phases of life and face the death ultimately. Though a natural phenomenon that cannot be stopped, nobody likes to remain in the same *avastha* for longer duration, to be precise, *Balyavastha* and *Vrddhavastha*. Everyone wishes to stay long as well as healthy in *Madhyamavastha*, the golden period of life, which everyone enjoys much. Moreover, childhood and late adulthood are more prone to ailments because of low immune system of the body. This is due to incomplete developed fully not manifested functions of the body elements and derangement in body functions respectively. So, the therapy cannot give the desired effect of *Rasayan* in such individuals because they may find it as an overload to body functions. Meanwhile, in early adulthood, the immune system of the body is upto the optimum. There is complete formation of body tissues and body is in a position to accept the good things needed and reject those not needed. Any infection or diseases process can be well tolerated in early adulthood. Hence, *Rasayan* nourishes the tissue elements more, replenishes them, increases the anabolic activity and immune system and delays the ageing process in young adulthood. Further in early adulthood there will be *samyak agni* and this phase of life is dominated by *pitta*. *Samyak agni* is responsible for *Ayu*, *Bala* [14,15], *Varna*, *Ojas*, etc. of the individual. *Srotas* and *dhatu*s are properly formed. *Agni* that is *Samyak* is responsible for proper digestion and metabolism of food forms *sara* properly. This *sara* moves through the *srotas* and reach all *dhatu*s and help in the formation of *prasasta dhatu*s after getting transformation by respective *bhutognis* and *dhatvagnis*. So, the individual becomes endowed with *prasasta dhatu*s enhancing *bala*, *varna*, *ojas* and *ayu*. Hence, *Rasayan* is of much benefit in *Purva Vayas*. *Bala* and *Vrddha* are usually not recommended for *Rasayan* for various reasons. In *Bala*, *dhatu*s will be in developing stage and he will be *sukumara*. There will be dominance of *kapha* and *pitta* is not at its optimum, so is the *Agni*, there will be *diminished agni* because of which the *rasa* is not fully transformed into *sara* though it comes in contact with *dahtvagni* after getting acted upon by *jatharagni* and *bhutagnis*. *Sara* [16], very much essential for the formation of *prasasta dhatu*s, is not formed in a perfect manner. So, there will not be the formation of any *Prasasta Dhatu*. *Srotas* that carry the essence is also not distinct in early phase of life. So, the essence/*Sara* will not reach the expected *Dhatu*s. In *Vardhakya*, *Dhatu*s become *Sithila* due to dominance of *Vata* at that period. Further, this dominant *Vata* kindles *Jatharagni* which in turn influences *Bhutagnis* and *Dhatvagnis*. So, *Dhatvagnis* become diminished. This diminished *Dhatvagnis* further causes depletion of *Dhatu*s unless properly managed. This again increases *Vata* and it becomes a vicious cycle and body functions deteriorate continuously. The essence formed will be soon destroyed by *Diptagni*, hence no *Sara* is reached to *Dhatu*s ; no formation of *Prasasta* there by leading to

Dhatu Ksaya. Hence, in old age, no proper nourishment is achieved. Moreover in old age, there will be *Sithilata* of *Dhatu*s as well as *Srotas*. The elasticity of *Srotas* is reduced. So, the essence traversing within the *Srotas* will not be propelled properly towards the *Dhatu*s. Again the *Dhatu*s are deceived of the *Sara*. Further, *Sodhana* usually preferred prior to *Rasayan*, hampers the anabolism which is essential for growth in *Balyavastha* and increase the catabolism in *Vrddha* because *Sodhana* causes *Dhatu Ksaya*. Hence, *Bala* and *Vrddha* are not preferred for *Rasayan*. The properties / beneficial effects of *Rasayan* mentioned in the classics Simulate with new activity of such drugs. That properly is known as Adaptogenic property.

The adaptogens, coined by Lazarev in 1947 are defined as substances meant to put the organism into a state of non specific heightened resistance in order to resist stresses and adapt to extraordinary challenges. These adaptogens normalise body functions, strengthen systems and have a protective effect against a wide variety of stress. The adaptogens are different from other remedies having relative actions, such as immunostimulants (which heighten the resistance), nootropics (which improve higher integrative brain functions like memory, learning, thinking, understanding), anabolics (which activate the growth), tonics (which mitigate the weakness) and geriatric remedies (which prevent the old age diseases). Some of the adaptogens have antistress effect along with immunostimulating is *Jivaniya*, nootropic-*Medhya*, anabolic-*Brahmana*, tonic-*Balya* and geriatric remedies-*Vayasthapaka* properties. The drug *Aswagandha*, a well known *Rasayan* drug, because of its *Usna*, *Snigdha*, *Laghu Guna*, *Usna Virya* subsides *Vata* and *Kapha* and causes *Agnidipana*. As a result of this, the nutrients / essence reaches the *Dhatu*s traversing through the minutes *Srotas*. Thus, it helps in subsiding *Vata* dominant in old age causing *Vayasthapana* to some extent and *Kapha* dominant in early adulthood, enabling the essence reach all *Dhatu*s.

CONCLUSION

- Ageing in a natural time bound process which is unavoidable.
- The untimely ageing (*akalaj jara*) is avoidable by the use of *rasayan* dravayas according to age groups.
- There are factor which deteriorate gradually i.e *balya* , *vridhi*, *chavi*, *medha*, *twak* , *daristi*, *sukra*, *vikrama*, *buddhi*, *karmendariya* at every 10 years. So, *rasayan* drugs should be administered which will replace the loss.
- *Rasayan* Drugs have antistress, anabolic, antidepressant, antioxidant and immunomodulating properties which have been reported.
- In *cahark samhita* the *Jeevaniya*, *Vayasthapaniya*, *Satanyajananiya*, *Brahangananiya*, *Sukrajananiya mahakasaya*

(Ch.Su.-4) have 10 -10 drugs which have Geriatric properties.

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