

Role of *Rasayana* Therapy in Geriatric Health Care: A Rational Approach

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Abstract

The increase in life expectancy has resulted in a major shift in the population of senior citizens hence the 21st century is widely being considered 'The century of elderly persons'. Population ageing is one of the most important global trends of this century. India has 9.3% of the population older than 60 years of the age. The likely number of elderly people in India by 2050 will be about 1/5th of the total population. These trends call for tremendous efforts to cope with new challenges because population-aging has many health related consequences and a great need is now felt to strengthen the geriatric health care system. Commonest geriatric health problems are – Hypertension, Arthritis, Cataract, Diabetes and Asthma. Commonest ailments for which the oldest-olds are undergoing treatment are body pain, eye-related problems and hypertension. *Ayurveda* presents a sound concept of aging, its prevention and management. It incorporates a special branch - *Rasayana Tantra*, which is exclusively devoted to geriatric health care measures. Use of *Rasayana* seems sufficient to arrest or delay the aging process and to rejuvenate the whole functional dynamics of the body systems. The present review intends to explore the ancient concepts of aging and *Rasayana*. Numerous research works also has been reviewed which are conducted to evaluate the role of *Rasayana* in geriatric health care.

Keywords

Ageing, Rasayana, Population-aging, Geriatric health



Greentree Group

Received 04/04/16 Accepted 26/04/16 Published 10/05/16

INTRODUCTION

During last few decades there has been a noticeable rise in the average life expectancy of the population which is resulting in population-aging. Population-aging is progressing rapidly and this trend is expected to continue over the next few decades. Population-aging has many socioeconomic and health related consequences. Accordingly, Geriatrics is emerging as a major medical specialty. A great need is now felt to strengthen the geriatric health care system. Conventional medicine system has nothing much to offer in the core-area of geriatric health care except the medical management of the diseases of old age. On the contrary, *Ayurveda* presents a sound concept of aging along with prevention and management of geriatric health problems. *Ayurveda* incorporates a special branch called *Rasayana Tantra*, which is exclusively devoted to geriatrics. The rejuvenative approach of *Ayurveda* is gaining greater attention and popularity in many regions of the world. Our *Acharya* understood the delicate cellular mechanisms of the body and the deterioration of the functional efficiency of the body systems or tissues. They had thus developed certain measures to

arrest or delay the aging process and rejuvenating whole functional dynamics of the body systems. This revitalization and rejuvenation process is known as the *Rasayana Chikitsa*. The present review intends to explore the ancient concept of *Rasayana* and to evaluate the recent developments in the field of geriatric health care by using *Rasayana*.

MATERIALS

The article is based on the reviews of various text books of *Ayurveda* and some modern medical science books; various relevant research papers, reports, books and websites etc.

AGING – AN AYURVEDIC PERSPECTIVE

Sharir Dhatu get destroyed even if they are in a healthy balanced state. This happens by nature and doesn't need any causative factor too for this¹. Milestones of aging or sequential loss of the specific biological factors during the process of aging are also described in *Ayurveda*². (Table 1)

This description is relevant even today if the chronology is corrected with present human life-cycle. This is especially significant because it can provide a guideline to select an age-specific organo-protective *Rasayana*

to restore the age-related specific bio-loss during different decades of the life span as a measure to retard aging.

Table 1

Decade	Bio-loss
0-10	Loss of <i>Baalya</i> (Corpulence)
11-20	Loss of <i>Vridhhi</i> (Growth)
21-30	Loss of <i>Chhavi</i> (Lustre)
31-40	Loss of <i>Medha</i> (Intellect)
41-50	Loss of <i>Tvak</i> (Skin)
51-60	Loss of <i>Drishti</i> (Vision)
61-70	Loss of <i>Shukra</i> (Virility)
71-80	Loss of <i>Vikram</i> (Strength)
81-90	Loss of <i>Buddhi</i> (Cognitive power)
91-100	Loss of <i>Karmendriya</i> (Locomotive ability)

Dhatu, Indriya, Bala, Virya etc start to deteriorate after the age of forty. After seventy they get deteriorate day by day and the person gets old. *Vata Dosha* get increased especially during this phase and various disorders of multiple body systems produce³. This stage of life accompanying various multi-system disorders of the old age is known as '*Jara*' which lies under *Svabhavabala-pravritta Vyadhi*. If the person is aware of this aging, these changes are seen at appropriate time and the process is called *Kalaja Jara*. If we are not aware about our health and don't alert ourselves from these changes then they precipitate early than expected and the process is called *Akalaja Jara*⁴.

Aging is essentially a physiological phenomenon resulting due to the changes occurring in the mind-body system. Such

changes get more and more overt with advancing age. The progressing involution ultimately precipitates into extreme senescence and finally death. The issues in geriatric care are concerned to the inevitable physiological phenomenon of aging and health problems affecting old peoples. It warrants us towards management of the condition in order to sustain a comfortable and healthy aging. Thus geriatric care has to address to two-fold problems, firstly the basic anti-aging care to retard the rate of physiological aging and secondly the medical management of specific diseases occurring in old age.

Ayurveda considers aging as the *Swabhava* of life. In other words senescence is the *Swabhava* or inherent nature of the living being, because the life is time-bound and it is inherently mortal. Hence what all is needed is to retard the rate of aging to a limited extent and to promote healthy aging. Western biosciences have been trying hard to identify the cause of aging. A number of theories and observations have been projected such as genetic theory, immunological theory, stress theory, free radical injury, hormonal involution theory etc but none of these have been described the all aspects of ageing yet. However, these

researches obviously indicate that aging is a multifaceted and multifactorial phenomenon. The genomic and immune mechanisms seem to be the sheet anchors.

Ayurveda links the phenomenon of biological aging with the doctrine of *Tridosha*. Old age is embedded with *Vata Dosha*. *Vata Dosha*, by nature, dries and decays the body (degeneration) and produces senile changes. Thus aging can be managed in tune with the *Tridosha* theory by applying the *Yukti* of *Samanya* and *Vishesha*.

Other important features of aging process are weakening of *Agni*, loss of integrity of *Srotas* and loss of *Oja*. Hence geriatric care warrants management of *Agni*, *Aam* and *Oja* at biological level. *Oja* forms an important consideration in the process of aging and all *Rasayana* are beloved to promote *Oja*.

DIMENSIONS OF GERIATRIC CARE

Geriatric Care has two distinct dimensions – Promotion of health and longevity and management of diseases of old age. The conventional modern medicine is apparently strong in terms of the second dimension, although the final outcome may not be significant because most of the diseases of old age are incurable. *Ayurveda* is notably strong in terms of the first dimension of the

problem as it has rich potential to promote health of the elderly, besides the scope of rejuvenation and promotion of longevity.

SPECTRUM OF GERIATRIC HEALTH PROBLEMS⁵

The 21st century is widely being considered the century of elderly persons. Population ageing is one of the most important global trends of the 21st century and the issue has started receiving much attention. The increase in life expectancy has resulted in a major shift in the population of senior citizens. (Table 2 & Table 3)

Table 2

Age group	Population in 2011	Population in 2016
60-69 Years	56.8 million	68.9 million
70-79 Years	32.0 million	35.8 million
80+ Years	9.6 million	13.2 million
All ages	1192.5 million	1268.9 million

Table 3

Year	Total population	Above 60 years	Above 80 years
2000	1008 million	76 million	6 million
2050	1572 million	324 million	48 million

In India, 9.3% of the population is older than 60 years of age. According to an estimate, the likely number of elderly people in India by 2050 will be around 324 million and will comprise about 1/5th of the total Indian population. These emerging trends call for tremendous efforts to cope with new

demands and challenges related to various geriatric health problems represented by old population. The probably recorded geriatric health problems of various body systems can be categorized as following –

- a) Neurological or neurodegenerative disorders e.g. paraplegia, hemiplegia and parkinson's disease.
- b) Neuropsychiatric disorders e.g. anxiety neurosis, depression, insomnia and dementia.
- c) Cardiovascular disorders e.g. hypertension.
- d) Endocrine disorders e.g. diabetes mellitus.
- e) Respiratory disorders e.g. chronic bronchitis and bronchial asthma.
- f) Gastrointestinal disorders e.g. constipation and indigestion.
- g) Musculoskeletal disorders e.g. osteoporosis and osteoarthritis.
- h) Genitourinary disorders e.g. BPH (Benign prostatic hyperplasia).
- i) Surgical problems e.g. fistula-in-ano and hemorrhoids.
- j) Gynecological disorders e.g. menopausal syndrome.
- k) Miscellaneous issues e.g. Cancer, uterine prolapse and urine incontinence etc.

Health becomes a critical factor during the old age. Most commonly complaining geriatric health problems are hypertension, arthritis, cataract, diabetes and asthma. Some less common includes tuberculosis and paralysis. If we talk about the commonest ailments for which the oldest-olds (above 80 years of age) are undergoing treatment, they are - body pain, eye-related problems and hypertension. Some less common ailments includes asthma and arthritis. All olds want to live healthy lives but they don't get proper attention and are unable to live a healthy life.

CONCEPT OF RASAYANA

Rasayana means the *Ayana* (path) that *Rasadi Dhatu* follow to nourish the body. The quality of *Rasa* influences the quality and status of other *Dhatu*⁶. *Rasayana* is the source of best quality *Rasadi Dhatu*⁷ and one can get rid from unwanted conditions caused by ageing by using *Rasayana*⁸. On the basis of therapeutic use, *Rasayana* can be classified as following⁶ –

- a) *Kamya Rasayana* – When a healthy person uses *Rasayana* for further promotion of health.
- b) *Naimittika Rasayana* – When *Rasayana* is used for a special purpose e.g. *Medhya Rasayana*, *Hridya Rasayana*,

Vrishya Rasayana and *Chakshushya Rasayana* etc or to treat a specific disease e.g. *Shilajatu Rasayana* in *Prameha*, *Tuvaraka Rasayana* in *Kushtha* etc.

c) *Aajasrika Rasayana* – Regular use of *Rasayana* property possessing routine food-items e.g. Ghee, milk, certain fruits and vegetables etc.

Numerous benefits which can be earned by using *Rasayana* are *Deergha-ayu* (longevity), *Smriti & Medha* (better brain & mind functions), *Arogya* (healthy life), *Taruna-vaya* (youthful life), *Prabha-varnavara Audarya* (better luster, complexion and voice), *Deha-bala* (physical strength) and *Indriya-bala* (strengthening of sensory system) etc⁹. *Rasayana Tantra* is the special section of *Ayurveda* which mainly deals with *Vayah-sthapana* (delayed aging) and *Rogapaharana* (treating various geriatric health problems)¹⁰. *Rasayana* preserves and promotes the overall health of an individual by revitalizing various body systems. *Rasayana* not only signifies a single drug or medication rather it refers to a regimen which uses rejuvenative drugs or remedies, dietetics and overall healthy life-style and positive psychosocial conduct. The use of *Rasayana* measures produces best qualities of *Dhatu* by acting through the following

principal levels of biological system with net result of improved nutritional status and improved mental faculties¹¹.

1. *Rasayana* acts at the level of *Rasa* and promotes the nutrient value of plasma directly.
2. *Rasayana* acts at the level of *Agni* and promotes the bio-fire system responsible for digestion and metabolism.
3. *Rasayana* acts at the level of *Srotas* and promotes the microcirculation and tissue perfusion.

Plenty of study has been undertaken to provide scientific basis and evidences to the *Rasayana* drugs to prove them as immunomodulators and adaptogens¹². Studies suggest that the *Rasayana* acts inside the human body by modulating the neuro-endocrine-immune systems and have been found to be a rich source of antioxidants¹³. Thus the *Rasayana* which act as herbal immunostimulators and adaptogens, regulate the immunological and endocrine systems with relatively low dosage, without damaging the autoregulative functions of the organism. *Rasayana* have been reported to treat generalized weakness¹⁴ and afford protection from cyclophosphamide-induced leucopenia¹⁵. It has been reported that the *Rasayana* are

rejuvenators, nutritional supplements and possess strong antioxidant activity. They also have antagonistic actions on the oxidative stressors which giving rise to the formation of different free radicals. Therefore, the therapeutic use of these drugs can be made in disorders related to all the above systems. Their antistress or adaptogenic action has been made them therapeutically far more important¹⁶. The antioxidant activity of *Rasayana* was found to be 1000 times more potent than ascorbic acid, alpha-tocopherol and probucol¹⁷. *Rasayana* preparations increases stem cell proliferation and prevents free radical-induced injury produced by radiation¹⁸. Since free radicals are implicated in a number of physiological disorders and with the use of *Rasayana* in their treatment, there is a strong case to believe that *Rasayana* exert their therapeutic action by their ability to scavenge free radicals or by their antioxidant potential.

RATIONALITY OF RASAYANA IN GERIATRIC HEALTH CARE

Different *Acharya* has mentioned numerous *Rasayana Yoga*. Some of the chiefly recommended *Rasayana* preparations are as following –

1. Multidrug formulations – *Brahma Rasayana* and *Chyavanprashavaleha* etc.
2. Various different preparations of *Haritaki* (*Terminalia chebula*), *Amalaki* (*Emblica officinalis*), *Nagabala* (*Grewia hirsuta*), *Vidanga* (*Embelia ribes*), *Punarnava* (*Boerhavia diffusa*), *Guduchi* (*Tinospora cordifolia*), *Shatavari* (*Asparagus recemosus*), *Shilajit* (mineral pitch), *Bhallataka* (*Semecarpus anacardium*), *Bala* (*Sida cordifolia*), *Atibala* (*Abutilon indicum*), *Pippali* (*Piper longum*), *Triphala* (mixture of *Haritaki*, *Bibhitak* & *Amalaki*), *Varahikanda* (*Dioscorea bulbifera*) and *Vacha* (*Acorus calamus*) etc.
3. Some processed *Rasa Dravya* e.g. *Mukta* (pearl), *Parada* (mercury), *Svarna* (gold), *Rajata* (silver), *Lauh* (iron) and *Gandhaka* (sulphur) etc also posses the *Rasayana* property.
4. *Medhya Rasayana* – *Brahmi* (*Bacopa monnieri*), *Mandookparni* (*Centella asiatica*), *Madhuyashti* (*Glycyrrhiza glabra*), *Guduchi* (*Tinospora cordifolia*) and *Shankhapushpi* (*Convolvulus pluricaulis*) etc.

There has been a plenty of research on the plants used as *Rasayana* in order to reason them in the modern context¹⁹⁻²³. As we have seen that traditionally the *Rasayana* are used

against a plethora of seemingly diverse medical conditions with no proper pathophysiological understanding. Various researched has scientifically validated the free radical scavenging and antioxidant activities of numerous *Rasayana* drugs e.g. – *Vacha* (*Acorus calamus*)²⁴⁻²⁵, *Kumari* (*Aloe vera*)²⁶⁻²⁹, *Kalmegh* (*Andrographis paniculata*)³⁰⁻³¹, *Shatavari* (*Asparagus racemosus*)³²⁻³⁴, *Nimba* (*Azadirachta indica*)³⁵⁻³⁷, *Brahmi* (*Bacopa monnieri*)³⁸⁻⁴¹, *Shaalparni* (*Desmodium gangeticum*)⁴², *Amalaki* (*Phyllanthus emblica*)⁴³⁻⁵³, *Yashtimadhu* (*Glycyrrhiza glabra*)⁵⁴⁻⁵⁷, *Kutki* (*Picrorhiza kurroa*)⁵⁸⁻⁵⁹, *Bakuchi* (*Psoralea corylifolia*)⁶⁰⁻⁶², *Bhallatak* (*Semecarpus anacardium*)⁶³⁻⁶⁵, *Haritaki* (*Terminalia chebula*)⁶⁶⁻⁶⁸, *Guduchi* (*Tinospora cordifolia*)⁶⁹⁻⁷³ and *Ashwagandha* (*Withania somnifera*)⁷⁴⁻⁷⁹. Some miscellaneous plants also have been found suitable for *Rasayana* therapy e.g. – *Kaali musali* (*Curculigo orchoides*)⁸⁰, *Kokilaksh* (*Hygrophila auriculata*)⁸¹, *Kaunch* (*Mucuna pruriens*)⁸², Piper species⁸³ viz. *Kankola* (*P. cubeba*), *Chavya* (*P. brachystachyum*), *Pippali* (*P. longum*) and *Marich* (*P. nigrum*), *Chitraka* (*Plumbago zeylanica*)⁸⁴, *Bala* (*Sida cordifolia*)⁸⁵, a variety of *Shankpushpi* (*Evolvulus alsinoides*)⁸⁵ and *Doorva*

(*Cynodon dactylon*)⁸⁵. Some important plants like *Rasona* (*Allium sativum*), *Mandookparni* (*Centella asiatica*), *Tulasi* (*Ocimum sanctum*), *Draksha* (*Vitis vinifera*) and *Shunthi* (*Zingiber officinale*) also have been extensively reviewed in the recent past for their *Rasayana* property. Some *Rasayana* drugs have been identified as the adaptogenic agents e.g. *Guduchi* (*Tinospora cordifolia*), *Shatavari* (*Asparagus racemosus*), *Amalaki* (*Emblica officinalis*), *Ashwagandha* (*Withania somnifera*), *Pippali* (*Piper longum*) and *Haritaki* (*Terminalia chebula*)⁸⁶. Some *Medhya Rasayana* have been studied and it was found that they were having potent effect on psychosomatic stress⁸⁷. *Medhya Rasayana* drugs have been proven to treat epilepsy, convulsive disorders and to reduce anxiety, apprehension and keep the mind calm and cool^{88,89}. *Brahma Rasayana* increases the liver antioxidant enzymes along with tissue and serum levels of GSH. Thus it could ameliorate the oxidative damage produced in the body by radiation⁹⁰.

DISCUSSION

Concept of *Rasayana* seems encompassing the entire human system with its diverse and complicated immuno-endocrine pathway. It was well known to *Acharya* that the delicate cellular machinery of the body suffers from trauma, resulting in wear and tear on different body structures and the deterioration of the functional capacity. So the procedures of revitalization and rejuvenation were adopted to increase the power of resistance to disease. These procedures retarded advancement of aging also. The data in the review of the plants for their antioxidant activity so far prove that *Rasayana Dravya* could exert a more global and nonspecific antioxidant effect. These *Dravya* also exert some protective effects on specific organs. Tremendous reports show that many plants works as an antioxidant in various diseases. From the review, it is evident that most of the *Rasayana* plants possess potent antioxidant activity but still there is lacuna in the existing knowledge. Firstly, many drugs described and extensively used as *Rasayana* have not been tested for their antioxidant potential e.g. *Malayavacha* (*Alpinia galanga*), *Vridhadaruka* (*Argyreia speciosa*), *Punarnava* (*Boerhaavia diffusa*), *Shankhapushpi* (*Convolvulus pluricaulis*),

Jatiphala (*Myristica fragrans*), *Gokshura* (*Tribulus terrestris*) and *Hingu* (*Ferula foetida*) etc. Most of the reports claim to validate the traditional claim of these *Dravya* as a *Rasayana*, but the proper mechanism of the action of these plants is not clear. Secondly, there are a number of preparations or formulations, which are sold on the name of *Rasayana*, whose activity or the use has not been established. The ethnopharmacological claims of these preparations need to be validated to make them more acceptable. Also the method and mode of the treatment mentioned in the *Ayurvedic* texts needs to be understood before undertaking any biological screening. Thirdly, clinical efficacy of these preparations though reported by the continuous use in traditional practices has not been scientifically validated. The personalized medicine is still followed by *Ayurveda*, making it difficult for the global acceptance, as the exact mechanism or indications for their uses are not clear. Thus, a more focused research and understanding is required to validate the *Rasayana* drugs as antioxidants. There are challenges ahead for researchers for validating the claims of the *Ayurvedic* treatment in the light of the modern scientific knowledge and

understanding, thereby make the system globally acceptable. This requires a highly integrated approach that combines the best of the traditional wisdom and modern scientific knowledge and expertise. Several studies are going on throughout the world to identify antioxidant compounds that are pharmacologically potent with low profile of side effects. *Ayurveda* provides lots of lead to find active and therapeutically useful compounds from plants. *Rasayana* formulations in may have antioxidant activity arising from individual plants and may act synergistically to prevent aging and related degenerative diseases. Further studies to isolate active principles from these plants and their pharmacological validation in terms of modern medicine will be of great medicinal importance in future.

CONCLUSION

Concept of *Rasayana* encompasses the entire human system with its diverse and complicated immuno-endocrine pathway. Most of the *Rasayana* drugs exert a more global and nonspecific antioxidant effect along with some specific organo-protective effects. *Rasayana* are effective enough to prevent aging and related degenerative diseases so can be adopted to increase the

power of resistance towards diseases and to retard the advancement of aging. More focused research activities and understanding along with an integrated approach are required to remove some lacunas e.g. non-established clinical efficacy, non-validated mechanism of the action and untested antioxidant potential of many *Rasayana* drugs and formulations.

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