



## Review Article

www.ijrap.net



### HEALTHY AGING THROUGH AYURVEDA: A REVIEW

Sadhana Misar (Wajpeyi) \*

Associate Professor, Kayachikitsa Department, Mahatma Gandhi Ayurved College, Hospital & Research Centre, Salod (Hirapur), Wardha, Maharashtra, India

Received on: 09/06/17 Accepted on: 22/07/17

**\*Corresponding author**

E-mail: sadhanamisar@gmail.com

DOI: 10.7897/2277-4343.083176

#### ABSTRACT

Old age is an undesirable and inevitable phase of human life. Acharya Sushrut considered Jara (Aging) as natural phenomena like hunger, thirst and sleep, while describing the Swabhavabalapravritta Vyadhi (naturally occurring diseases). The combination of dominant state of vata dosha and deterioration of Rasadidhatu, srotas and agni are responsible for the various degenerative changes and the process of decay in the body. Aging is all the changes that occur regularly in a living organism with the passage of time and lead to decreased ability to survive stress, increasing functional impairment and the growing probability of death. Advancements in medical science and technology have increased human life expectancy. Worldwide the population of older individuals is growing; hence it is necessary to develop a strategy of delaying the Aging and its management. Ayurveda is a science which helps in promotion of health, prevention of diseases and delaying the process of Aging. There are various measures mentioned in svastha chatushka and Rasayanadhyaya of Charaka Samhita like Dincharya, Ritucharya, timely Panchakarma and use of various Vayasthapana herbal drugs. Jarachikitsa or Rasayana is a one of the Ashtanga Ayurveda which helps to delay the process of Ageing and degeneration.

**Keywords:** Aging, Jara, Geriatric, Rasayana, Vayasthapana.

#### INTRODUCTION

According to Acharya Charak, age has been divided in three parts, i.e. balyavastha (young age), madhyamavastha (middle age) and jirnavastha (old age). In old age vatadosha is physiologically in a dominant state and Rasadidhatu (bodily tissues) are in a deficient state<sup>1</sup>. This is responsible for the various degenerative changes and the process of decay in the body. Due to today's changing and faulty dietary habits, defective lifestyle, excessive stress and lack of exercise, the process of Aging starts at early age. These factors cause various degenerative changes in the body. Aging is defined as a progressive breakdown of homeostatic adaptive responses of the body.

The consequences of Aging appear after reproductive age. With age various structural and functional changes occur in different organs and systems of the human body. Modern science deals exclusively with the problems of Aging and the diseases of the elderly. Ayurveda is a science of life and longevity. The main purpose of Ayurveda is Swasthasya swastharakshanam hence it incorporates various techniques for the promotion of the health and prevention of diseases in old age. It presents a good concept of Aging, process of delaying it and its management.

Geriatrics is emerging as a main challenging specialty, because of the ever growing population of old people all over the world including India. Population Aging is transforming the world in dramatic and fundamental ways<sup>2</sup>. Life expectancy is increased, resulting from a series of social, economic, public health and medical victories over disease. By 2050, one-fifth of the world will be older than 65 years<sup>3</sup>. The worldwide population of older individuals is growing at a rate of 2.6% per year, as against the population as a whole (1.1% annually). There is a need to generate awareness among the mass about the end result of population Aging (the increase in the number and proportion of

older people in society) and about the potentials of Ayurveda in Geriatric health care. The Government of India has launched a national campaign to popularize the strength of Ayurveda and Yoga in Geriatric Care.

#### Concept of Aging

There are many degenerative changes takes place in Vriddhavastha, which is the last part of the life span. Aging is the multidimensional process of physical, psychological, and social changes. Person is referred as old after the age of sixty years. There is progressive diminution of dhatu (body tissues), strength of sense organs, vigor, masculinity and bravery, understanding power, memory, speech and analyzing facts in old age<sup>4</sup>.

According to Acharya Sushruta after seventy years of age one is called as old in whom the dhatus (body tissues), sensory and motor organs, strength, vigor and enthusiasm decline gradually. In old age, a person develops wrinkles on the skin, graying of hair, baldness with other complaints and decrease in working capacity<sup>5</sup>. According to Acharya Vagbhata aged persons may suffer from Kasa (Cough), Shwas (Breathlessness), Khalitya (Baldness), Agnisada (Diminished digestive power), Shlatha Saramansasandhyasthita (looseness of muscles, joints and bone), Twakapaurushya (skin becomes rough), Avanama (body bends forward), Vepathu (tremors)etc.<sup>6</sup>.According to Acharya Sushruta 'Jara' (Aging) is 'Svabhavabalapravrittivyadhi' which is of two types. Viz Kalaja (Parirakshanakrita), which appear in proper time, even after proper protection and Akalaja (Aparirakshanakrita), which, appear before proper time due to improper care and prevention<sup>7</sup>.

Modern Gerontologists usually define Aging in terms of the gradual, insidious and progressive decline in the structure and function (involving molecules, cells, tissues, organs and

organisms) that begin to unfold after the achievement of sexual maturity. Biological Aging is a major risk factor for essentially all of the major Geriatric disorders, including dementias of the Alzheimer type, Parkinson's disease, age related Macular degeneration, Ocular cataracts, Presbycusis, all forms of Atherosclerosis, type 2 Diabetes Mellitus, Congestive heart failure, Sarcopenia, Osteoporosis, Degenerative inter Vertebral disc disease, Immune-senescence, Benign prostatic hyperplasia and most forms of cancer<sup>8</sup>. The biochemical composition of tissue changes with age, physiologic capacity decreases, the ability to maintain homeostasis in adapting to stress declines and vulnerability to various diseases increases with age.

Aging is known as "Jara" which is defined as to become old by the act of wearing out "jiryati iti jara". It is also called as "Vardhanya" meaning increasing age<sup>9</sup>. According to Chakrapani onset of natural Aging process differs from person to person<sup>10</sup>. The onset and progress of Aging depends on factors like Prakriti (individual's constitution) and Sarva dhatusarata (compactness of body tissue) which are genetically predetermined according to Ayurveda. The Sharangadhara Samhita<sup>11</sup> and Ashtanga Sangraha<sup>12</sup> describe the sequential bio-loss occurring during different decades of life due to process of Aging. According to Ayurveda, "Swabhava"<sup>13</sup> and "Parinama" "Kalasyaparinamena Jaramityunimittajaha"<sup>14</sup> are considered as the responsible factors in the causation of Jara (Aging).

The Tridoshas (vata, pitta and kapha) are the most important factors in the maintenance of good health and production of disease. During childhood kaphadosha, in the middle age pitta dosha and in the old age vatadosha is said to be predominant. The properties of vatadosha are described as ruksha, laghu, sheeta, khara and vishada. So Vatadosha by nature, decreases luster of skin and body strength, causes dryness as well as hastens Aging process. Apart from doshas, agni also plays an important part in Aging process. Agni is responsible for the conversion of dietary substances into tissue elements. In old age, dominance of vatadosha leads to vishamagni which affects the digestion and cause undernourishment of the tissues. This leads dhatwagnimandya in the elder people<sup>15</sup>.

Due to dhatwagnimandya poshak dhatu formation gets affected and causes a diminution of dhatu in old age. As a result of which, the essence of all dhatus, Oja is decreased, which is responsible for Sharira Sthairya i.e. compactness of body elements. Ojakshaya leads to the molecular & cellular injury which exceeds their repair capacity and further accelerating the Aging process ultimately ending in death<sup>16</sup>.

### Geriatric care in Ayurveda

Geriatric care is important for prevention and management of health problems in old age. It helps the elderly to improve quality of life and made them independent for performing their daily activities. Ayurveda has a broad spectrum of preventive measures for combating the Aging process. Ayurveda advocates wonderful approach to delay Kala-jara (natural Aging) and to avoid Akala-jara (Premature Aging). Ayurveda gives primary importance to preventive health care.

For healthy life Ayurveda advocated day regimen (Dinacharya), night regimen (Ratricharya), seasonal regimen (Ritucharya), wholesome diet (Hitakara and Matravata ahara), behavioral and ethical considerations (Sadvritha), rejuvenate healthy lifestyle (Achara Rasayana) etc. All these measures can delay the process of Aging.

Acharya Charak described vayasthapana gana which, is having power of rejuvenation. This gana contains drugs which have Rasayana properties that help to inhibit tissue degeneration and stop progress of disease<sup>17</sup>. The drug, which sustains the youth stage and prevents the Aging process, is called as vayasthapana. According to Susruta Rasayana is vayasthapana (maintaining youth), provide long life, intellect, strength and also eliminates the disease. According to Chakrapani, the drug that stabilizes the effective youth of the body is known as vayasthapana<sup>18</sup>.

### Rasayana Therapy

Rasayana word is made up of two words 'Rasa' means 'nutrition' and 'Ayana' means circulation or promotion. The word Rasa in this context means the first liquid tissue, which nourishes all the tissues in the body. This means that if Rasa dhatu is produced in optimum quality and quantity, then naturally all the tissues in the body will be nourished properly. Rasayana drugs act primarily at the level of Rasa dhatu (promoting nutrient value of plasma), Agni (improved digestion and metabolism) and Srotas (cleaning up the micro channels leading to better perfusion of tissue). Charak has briefly defined Rasayana as the measure by which one gets Rasa, Raktadhatus in its best condition. Sushruta has defined Rasayana as a therapy, which establishes the age (Vayasthapana), increases the life span (Ayuskar), intelligence (Medha) and strength (Bala) as well as it enables the person to rid of the diseases.

#### Classification of Rasayana

##### (1) On the basis of the utility:

- A. Kanya Rasayana: This is used in healthy persons for further promotion of health. It is again of three subtypes :(i) Pranakanya to promote longevity. (ii) Srikanya to promote body luster. (iii) Medhakanya to promote mental competence
- B. Naimittika Rasayana: This is used specifically in the treatment of specific diseases. Eg. Shilajit (Asphaltum) in Prameha, Tuvarak (*Hydnocarpus wightianus*) in Kushtha, Shalparni (*Desmodium gangeticum* DC.) and Arjuna (*Terminalia Arjuna*) in Hridrog, Medhya Rasayana in Manasroga etc.
- C. Ajasrika Rasayana: This is used as a part of diet as milk, ghris, madhu (honey) etc.

##### (2) Based on the method of use:

- A. Vatatapika Rasayana i.e. outdoor regimen.
- B. Kutipravesika Rasayana i.e. intensive indoor regimen.

##### (3) Special Rasayana drugs:

- A. Medhya Rasayana- These drugs have a quality of enhancing memory, intelligence and strength of body, mind and sense organs. They are used in Psychiatric disorders. Eg. Juice of Mandukaparni (*Centella asiatica*) and Guduchi (*Tinospora Cardifolia*), powder of Yastimadhu (*Glycyrrhiza glabra*) with milk and paste of Shankhapushpi (*Convolvulus pluricaulis*) are intellect promoters.
- B. Achara Rasayana -Rejuvenative conduct and lifestyle. Achara Rasayana acts as a psycho immune modulator reduces stress and thus prevents the release of free radicals<sup>19</sup>.

### Panchakarma therapy

Panchakarma therapy (Therapeutic detoxification) is effective in cleansing of body toxins, plays a pivotal role in Aging. The detoxification process is necessary for eliminating the toxic waste from the organic system and thereby assuring smooth and natural organic function. It purifies and balances the complete organic system that can ensure natural wellbeing as well as health<sup>20</sup>.

In Geriatric practice selective rehabilitative Panchkarma therapy is used and drastic evacuatory practices like Vamana (Therapeutic emesis) and strong Virechana (Therapeutic purgation) procedures are avoided. The schedule in the elderly should consist of Abhyanga (medicated massage), Kayaseka (fomentation), Pindasweda, Shirodhara (pouring medicated oil on forehead) and Brimhan Basti (medicated enema) can be planned according to condition. This selective Panchakarma can be referred as Geriatric Panchakarma.

Ajayita Chanana conducted clinical study and showed the effectiveness of Shirodhara and Nasyam Panchkarma therapies for the Aging. He showed that detoxification and rejuvenation allow achieving Anti-Aging in a very gentle and natural manner<sup>21</sup>.

### Exercise

Exercise helps to control weight, improves blood circulation and emotional well-being of an individual. It relieves stress and helps achieving flexibility. Regular yogic exercise from youth limits the effects of old age<sup>22</sup>.

### Rasayana drugs

Charaka identified ten drugs and listed them under Vayasthapana Gana<sup>23</sup>.

Vayasthapana is specialized Rasayana drugs that reverse degenerative changes, increase life span with quality health<sup>24</sup>.

Common medicinal plants used in Geriatric disorders include Arjun (*Terminalia Arjuna*), Guggulu (*Commiphora mukuli*) and Karveer (*Nerium indicum*) as cardioprotective in cases of Ischaemic heart disease, Arjun (*Terminalia Arjuna*), Sarpagandha (*Rauwolfia serpentina*), Shankpushpi (*Convolvulus pluricaulis*), Ashwagandha (*Withania somnifera*) and Punarnava (*Boerhaavia diffusa*) in hypertension, Gudmar (*Gymnema sylvestris*), Jambu (*Syzygium cumini*), Methika (*Trigonella foenum graecum* Linn.), Haridra (*Curcuma longa*), Karvellaka (*Momordia charantia*) and Mammajak (*Enicostemalitt orale*) in diabetes, Ashwagandha (*Withania somnifera*), Guduchi (*Tinospora Cardifolia*), Shunthi (*Zinziber officinale*), Shallaki (*Boswellia serrata* Roxb), Rasna (*Pluchea lanceolata*), Lahsun (*Allium sativum*), Erand (*Ricinus communis*), Nirgundi (*Vitex arifolia*) and Shuddha Kuchala (*Strychnos nux-vomia* Limv.) in arthritis. Similarly Brahmi (*Bacopa monniera*), Shankpushpi (*Convolvulus pluricaulis*), Mandukparni (*Centell aasiatica*), Guduchi (*Tinospora cordifolia*) and Yashtimadhu (*Glycyrrhiza glabra*) in treatment of senile dementias, Varuna (*Crataeva nurvula*), Gokshura (*Tribulus terrestris*) and Shigru (*Moringa oleifera*) in treatment of senile enlargement of Prostate, Triphala (combination of Amalaki, Bibhitaki, Haritaki), Jyotishmati (*Celastrus paniculatus* Willd.) in senile visual disorders, Kapikacchu (*Mucuna prurita* Hook.) in the treatment of Parkinson disease, Amrita (*Tinospora cordifolia*) and Amalaki (*Emblca officinalis*) is in immunodeficiency disorders.

Drugs like Ashvagandha (*Withania sominefera*) and Shiljatu (Asphaltum) nullify the effects of stress and drugs like Gambhari (*Gmelina arborea*) improve nitrogen balance and promote tissue building. Guggulu (*Commiphora mukul*) clears the channels and enhances the nutrition to all tissues and cells. Amalaki (*Emblca officinalis*) and Bala (*Sida cordifolia*) contain antioxidants which help in the scavenging of free radicals release.

### DISCUSSION

Some Research studies conducted on Rasayana drugs are summarized below -

It was remarkable to note that the drugs such as Shatavari (*Asperagus recemosus*), Punarnava (*Boerhavia diffusa*), Mandukaparni (*Centella asiatica*), Amalaki (*Emblca officinalis*), Hirda (*Terminalia chebula*), Guduchi (*Tinospora cordifolia*) possessed significant free radical quenching and other antioxidant attributes in consonance with the traditional view of Vayasthapana when they were subjected to measure of modern scientific scrutiny<sup>25</sup>.

Mukherjee et al. in their study "Evaluation of free-radical quenching properties of standard Ayurvedic formulation Vayasthapana Rasayana" reported that Cellular damage induced by free-radicals like Reactive Oxygen and Nitrogen Species (ROS and RNS) has been implicated in several disorders and diseases, including Aging. Hence naturally occurring antioxidant rich-herbs like Amalaki (*Emblca officinalis*), Punarnava (*Boerhaavia diffusa*), Mature stem of Gulvel (*Tinospora cordifolia*), unripe fruits of Hirda (*Terminalia chebula*), entire plant of Gokarna (*Clitoria ternatea*), leaves of Mandookparni (*Centella asiatica*) and mature roots of Shatavari (*Asparagus racemossus*) play a vital role in combating these conditions<sup>25</sup>.

A new class of metabolic regulators called Adoptogen increases the ability of an organism to become accustomed to environmental factors<sup>26</sup>. Certain experimental studies have reported adaptogenic activity of the few drugs like Shatavari (*Asperagus recemosus*), Brahmi (*Bacopa monniera*), Saffron (*Crocus sativus*), Amalaki (*Emblca officinalis*), Tulsi (*Ocimum sanctum*), Guduchi (*Tinospora Cardifolia*) and Ashwagandha (*Withania sominefera*)<sup>27</sup>.

Nishant Patnaik in his study stated that highly concentrated, full spectrum extracts of Brahmi (*Bacopa monnieri*) and Ashwagandha (*Withania somnifera*) roots can be safely used in anxiety and stress reduction. They stated that it also helps in enhancing the overall well-being of stressed adults by its adaptogenic abilities. Brahmi (*Bacopa monnieri*) extracts have the ability to boost cognitive abilities during Aging<sup>28</sup>.

Holcomb L. et. al. conducted study and found that the Brahmi (*Bacopa monnieri*) extract reduces Amyloid levels in PSAPP mice. Thus, it can be proved to be helpful in prevention of Alzheimer's disease<sup>29</sup>.

Immunomodulators are chemical agents that modifies the immune response or the functioning of the immune system (as by the stimulation of antibody formation or the inhibition of white blood cell activity)<sup>30</sup>. Withanolides, the constituent of *Withania somnifera* found to have immunomodulatory action. Some of the simple withanolides have immunosuppressive activity while some glycowithanolids (sitoindosides) display immunostimulation.

Drugs such as Vacha (*Acrous calamus* Linn.), Vidanga (*Emblca ribes*), Kutaja (*Holarrhena antidysentrica*) are also proved to have immunomodulatory activity<sup>31</sup>.

Rege N et.al. conducted a study on the immunomodulatory effect of Guduchi (*Tinospora cordifolia*) and in their clinical study, they have shown significant efficacy in the cases of obstructive jaundice<sup>32</sup>.

Kuppurajan K, et.al. in his study reported that when Root powder of Ashwagandha (*Withania somnifera*) was administered at the dosage of two tablets (500mg) three times

daily with milk for one year showed statistically significant increase in hemoglobin, RBC count with a decrease in serum cholesterol and ESR<sup>33</sup>.

Samarakoon S.M.S.et.al. in vitro assays indicated that Amalaki Rasayana (combination of plants) is a source of natural antioxidant, which might be helpful in preventing the progress of numerous oxidative stresses which trigger at various age related diseases and in retarding Aging as well as preventing pre-mature Aging<sup>34</sup>.

Clinical and Experimental trial of Guggulu (*Commiphora mukul*) in Medoroga (lipid Disorders) showed that, Cardinal clinical manifestations of disease like precordial pain and dyspnoea were relieved in most of the cases. The substantial fall in lipid values indicated the possibility of regression of atherosclerosis. The reversal of ECG changes substantiated the anti-ischemic effect of the drug in the treatment of ischemic heart diseases<sup>35</sup>.

The concept of Medhya Rasayana (drugs act on higher mental functions) can be considered as cognitive enhancers and Nootropics. Cognitive enhancers are that, which help to enhance attention, control and memory<sup>36,37</sup>. Nootropics are cognitive enhancers. These are supposed to work by changing the accessibility of neurochemicals (neurotransmitters, enzymes and hormones) to the brain, either by improving the brain's oxygen supply, or by stimulating nerve growth. Picrosides I and II constituents of *P. kurroa*, have shown to potentiate nerve growing factor in cultured PC12D cells<sup>38</sup>.

Kuppurajan K et.al. conducted study of Anti-anxiety effect of Mandukaparni (*Centell asiatica*), Yastimadhu (*Glycyrrhiza glabra*) and Jatamansi (*Nordostachys jatamansi*). This double blind sequential crossover clinical trial with an Ayurvedic compound containing Mandukaparni (*Centella asiatica*), Yastimadhu (*Glycyrrhiza glabra*) and Jatamansi (*Nordostachys jatamansi*) as trial drug, diazepam as control and placebo was carried out on 12 patients of anxiety neurosis. The study showed that the compound formulation is more effective in enhancing the perceptual discrimination and psychomotor performance over placebo and control drug<sup>39</sup>.

Sharma Y. K. et. al. in their study 'Anabolic Potential of Brahma Rasayana' found highly significant results in body weight, muscle strength, foot thrust, grip power, Visual analogue scale, mental and physical derive, and working capacity. Appetite, sleep, bowel habits and Hb gm% also showed significant improvement. So they concluded that Brahma Rasayana-1 is effective in most of the subjective and objective criteria and has anabolic potential so can be used in geriatric patients<sup>40</sup>.

Stem cell research has led to formulate a new branch of medicine named as regenerative medicine, which plays a similar role that of Rasayana therapy<sup>41</sup>.

Thus Rasayana therapy, practices of yoga, time to time Panchakarma and various herbal vayasthapana drugs are very effective methods for geriatric health care in present time.

## CONCLUSION

Aging is a continuous, progressive and inevitable phase of human life. According to Ayurveda swabhava and kala are responsible for the Aging. In old age vatadosha is physiologically in a dominant state and rasadidhatus are in a deficient state. Ayurveda advocates a wonderful approach to delay Kala-jara (natural Aging) and to avoid Akala-jara

(premature Aging). Rasayana specially deals with the science of nutrition, geriatric care and rejuvenation. Rasayana therapy includes wholesome diet, healthy lifestyle, practices of yoga, time to time Panchakarma and use of various herbal vayasthapana drugs. Rasayana is the measure by which one gets Rasa, Raktadi dhatus in its best condition, which establishes the age (Vayasthapana), increases the life span (Ayuskar), intelligence (Medha) and strength (Bala) as well as it enables the person to get rid of the diseases. Certain research studies on Amalaki (*Phyllanthus emblica*), Ashwagandha (*Withania somnifera*), Guduchi (*Tinospora cordifolia*), Brahmi (*Bacopa monnieri*), Guggul (*Commiphora mukul*), Mandukaparni (*Centella asiatica*) and classical compound Rasayana have shown evidence to suggest their efficacy as anti-aging remedies. Thus, it can be said that Ayurveda is helpful in delaying Aging process and minimizing the intensity of problems occurring in old age with its management.

It is recommended that, there is a wide scope of research on Ayurvedic Vayasthapana drugs to prove their efficacy in Geriatrics.

## REFERENCES

1. S. Suresha Babu. Geriatrics in Ayurveda, Chaukhambha Orientalia, Varanasi, Edition: First2001.(<http://ujconline.net/wpcontent/uploads/2014/04/paper%20for%20publication.docx>( accessed on 23.05.2017)
2. Lango, Fauci et al, Harrison's Principle of Internal Medicine, 18th ed, Volume1, New York, McGraw Hil;2012; chapter 70 pg no.556
3. Ingle GK, Nath A.,Geriatric health in India: concerns and solutions. Indian J Community (2008), Med 33: 214-218. [Braca A, Sortino C, Politi M, Morelli I, Mendez, J: Antioxidant activity of flavonoids from *Licania licaniaeflora*. J Ethnopharmacol 2002, 79:379-381.]
4. Sastri KN, Caturvedi GN, editors Charaka. CharakaSamhita (Vidyotini Hindi Commentary), Vol.1.1st ed. Varanasi: Caukhambha Bharati Academy; 2001. Vimanasthana, 8.p. 781-782.
5. Srikanthamurthy KR, Sushruta. Susruta samhita,Vol-I., editor. 1st ed. Varanasi: Chaukhamba orientalia; 2008. Sutrasthana, 35. p.249.
6. Srikanthamurthy KR, Vagbhata. Ashtanga samgraha, Vol. II. editor. 5th ed. Varanasi: Chaukhambha Orientalia; 2005. Sharirasthana, 8.p.104.
7. Srikanthamurthy KR, Susruta. Susruta samhita, Vol-I., editor. 1st ed. Varanasi: Chaukhamba orientalia; 2008. Sutrasthana, 24.p.177-178.
8. Lango, Fauci et al, Harrison's Principle of Internal Medicine, 18th ed, Volume 1, New York, McGraw Hil;2012; ch.71, pg no.562
9. Vaidya A. B., Vaidya R. A., "Ancient insights and modern discoveries in the process of aging—an overview," Indian journal of medical sciences, vol.1, 10, pp. 349–363, 1997.
10. Tripathi Brahmanand, Agnivesha, Charak Samhita, Elaborated by Charaka & drudhabala, Charaka Chandrika Hindi Tika, Chaukhamba Surbharti Prakashan- Varanasi 6th Edition 1999 First Part Vimana Sthana 8/122
11. Srivastava Shailja, Sharangadhara. Sharangadhara Samhita (Jiwanprada Hindi commentary). editor. 3rd ed. Varanasi: Chaukhambha Orientalia; 2003. p.54.
12. Srikanthamurthy KR, Vagbhata. Ashtanga samgraha, Vol. II., editor. 5th ed. Sharirasthana Varanasi: Chaukhambha Orientalia; 2005., 8.p.104-105.
13. Sastri KN, Caturvedi GN, Charaka. Charaka Samhita (Vidyotini Hindi Commentary), Vol.1. editors. 1st ed.

- Sutrasthana Varanasi: Caukhambha Bharati Academy; 2001., 16.p.323-324.
14. Sastri KN, Caturvedi GN, Charaka. Charaka Samhita (Vidyotini Hindi Commentary), Vol.1. Sastri editors. 1st ed. Shareerasthana, Varanasi: Caukhambha Bharati Academy; 2001. 1.p.826.
  15. Yadavaji Trikamaji Sushruta, Sushruta Samhita, Nibandhasamgraha Commentary by Dalhana and Nyayacandrikahyapanjika Commentary by Gayadasa on Nidanasthana, Acharya (Upto 9th Chapter) and Narayana Rama Acharya 'Kavyateertha' (Rest), Choukhamba Surbharati Prakashan, Varanasi, Reprint Edition-2011, Sutrasthana 15/19 (Dalhana Commentary),Page:71
  16. Agraval Vivek, An Ayurvedic insight towards Aging with its preventive measures, *Int.J.Res.Ayurveda Pharm.*, Jan.Feb.2013, 4(1), Pg.no.31-33.
  17. Sharma PV. Dalhana and his comment on drugs.Published by manoharlal publishers, New Delhi, India, First edition, 1982; P-112, 13
  18. Shanker Lal Burdak, Nisha Gupta, "A Review of Preventive Health Care in Geriatrics through Ayurveda" *International Journal of Ayurvedic Medicine*, 2015, 6 (2), 100-112
  19. Yadavji TrikarmaJi, Agnivesha, Charak Samhita With Ayurveda Dipika Commentary Of Chakrapani Datta, Chaukhambha Surbharti Prakashan, Varanasi. Edition7th, 2002, SutraSthana Chapter 16,verse 18-19, p.97.
  20. Ajayita Chanana.Cosmetology, Trichology & Aesthetic Practices. *J Clin Exp Dermatol Res.*, 2016, 7:3(Suppl),74
  21. Pradhan K (2014) Management of Stresses and Strains in Old Age. *Indian Journal of Research in Multidisciplinary Studies* 1: 139-145.
  22. Trikamaji VJ, Agnivesa, Charaka, Dhridhabala, Chakrapani. Charakasamhitha, Sutra Sthana, 4/18. Varanasi: Chaukhambha Orientalia; 2011. p.34.
  23. Tripathi B, Charak Samhita Part 2, Chikitsa Sthan 1/7, (2008) Chaukhambha Surbharti Prakashan, Varanasi, India. Pg no: 5.32.
  24. Dev S. A Selection of Prime Ayurvedic Plant Drugs Ancient-Modern Concordance, New Delhi: Anamaya Publishers; 2006. p. 20.
  25. Mukherjee et al; Evaluation of free-radical quenching properties of standard Ayurvedic formulation Vayasthapana Rasayana, *BMC Complementary and Alternative Medicine* The official journal of the International Society for Complementary Medicine Research, 10.1186/1472-6882-11-38.
  26. Brekhman II, Dardymov IV. New substances of plant origin which increase nonspecific resistance. *Annu Rev Pharmacol* 1969; 9: 419-30.
  27. Dev S. A Selection of Prime Ayurvedic Plant Drugs Ancient-Modern Concordance. New Delhi: Anamaya Publishers; 2006. p. 472.
  28. Patnaik, N. (2015) Role of Brahmi and Ashwagandha in Anti-Aging. *Journal of Biosciences and Medicines*,2015, 3, 102-104
  29. Holcomb L et al. Bacopa monnieri extract reduces Amyloid levels in PSAPP mice. *J Alzheimers Dis*, 2006, 9(3):251
  30. Understanding and comparing immunomodulators. Available from: <http://www.biobran.org/comparisons/immunomodulators.html>. [accessed on 23.05.2017].
  31. Dev S. A Selection of Prime Ayurvedic Plant Drugs Ancient-Modern Concordance. New Delhi: Anamaya Publishers; 2006. p. 445, 483-4.
  32. Rege N, Bapat RD, Koti R, Desai NK, Dahanukar S, Immunotherapy with *Tinospora cordifolia*: a new lead in the management of obstructive jaundice. *Indian J Gastroenterol*,1993, 12: 5-8.
  33. Kuppurajan K, Rajagopalan SS, Sitaraman R, Rajagopalan V, Janaki, et al. (1980) Effect of Ashwagandha (*Withania somnifera*) on the process of Aging in human volunteers. *Journal of Research in Ayurveda and Siddha* 1: 247-258.
  34. Samarakoon S.M.S.et.al. Pharmacognosy and phytochemical study of Amalakyas Rasayana; an anti Aging Ayurvedic formulation *Indian Journal of Ancient Medicine and Yoga*, Volume 3 Number 4, Oct-Dec 2010 ,181-190
  35. Central Council for Research in Ayurveda and Siddha (1989) Clinical and Experimental trial of Guggulu in Medoroga (lipid Disorders). Central Council for Research in Ayurveda and Siddha, Ministry of Health & Family Welfare, Government of India, Janakpuri, New Delhi. [https://www.researchgate.net/publication/215564627Ayurveda\\_and\\_Siddha\\_for\\_Geriatric\\_care-An\\_insight\\_on\\_strengths\\_of\\_Ayurveda\\_and\\_Siddha\\_for\\_Geriatric\\_Care](https://www.researchgate.net/publication/215564627Ayurveda_and_Siddha_for_Geriatric_care-An_insight_on_strengths_of_Ayurveda_and_Siddha_for_Geriatric_Care) (accessed on 23.05.2017)
  36. Froestl W, Muhs A, Pfeifer A. Cognitive enhancers (nootropics). Part 1: Drugs interacting with receptors. *J Alzheimers Dis* 2012;32:793-887.
  37. Lanni C, Lenzken SC, Pascale A, Del Vecchio I, Racchi M, Pistoia F, et al. Cognition enhancers between treating and doping the mind. *Pharmacol Res* 2008;57:196-213.
  38. Li P, Matsunaga K, Yamakuni T, Ohizumi Y. Potentiation of nerve growth factor-action by picosides I and II, natural iridoids, in PC12D cells. *Eur J Pharmacol* 2000;406:203-8.
  39. Kuppurajan K, Seshadri C, Rajagopalan V, Srinivasan K, Sitaraman R, et al. (1992) Anti-anxiety effect of an Ayurvedic compound drug - A cross over trial. *Journal of Research in Ayurveda and Siddha* 13: 107-116.
  40. Sharma Y. K. et.al. : Anabolic Potential of Brahma Rasayana, *Annals of Ayurvedic Medicine* Vol-1 Issue-3 Jul-Sep 2012,65- 70
  41. Riazi AM, Kwon SY, Stanford WL. Stem cell sources for regenerative medicine. *Methods Mol Biol* 2009;482:55-90. .

**Cite this article as:**

Sadhana Misar (Wajpeyi). Healthy aging through Ayurveda: A review. *Int. J. Res. Ayurveda Pharm.* 2017;8(Suppl 3):93-97 <http://dx.doi.org/10.7897/2277-4343.083176>

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAP is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAP cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of IJRAP editor or editorial board members.