

SCIENTIFIC BASIS OF RASAYAN THERAPY IN AYURVEDA.

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ABSTRACT

Although Aging in mammalian species appears to be the result of normal developmental and metabolic processes but every human would like to dodge this inexorable process and its undesirable effects. Lifestyle and environmental factors can greatly influence the aging process and may affect the vulnerability of an individual to age-related diseases. While an individual's genes associated with aging cannot be controlled, many studies suggest that modifications of exercise and nutrition, especially the use of antioxidants, can slow down the aging

process. Our *Ayurveda* texts have seriously considered the problems of aging and its delaying. The knowledge appears to have been given so much importance and so much developed that it was designated as one of the eight major branches of *Ayurveda*. Jara is a natural process which may be timely or untimely according to Acharya Sushruta.^[1] Charaka in its section on *Chikitsa* starts with an exhaustive chapter on *Rasayana* therapy dealing with the physiological, pharmacological, therapeutic and clinical aspects of the *Rasayana*. Currently *Rasayana* stands as an answer to solve the problem of healthful longevity including mental development and resistance against diseases. This paper aims to explore the scientific basis of *Rasayana* therapy so as to create a better understanding of this topic.

KEYWORDS: *Rasayana, Jara, Chikitsa, Longevity, Scientific.*

INTRODUCTION

Ayurvedic approach of disease prevention involves therapeutic measures to arrest/delay ageing and rejuvenating whole functional dynamics of the body system. The revitalization and rejuvenation approach in *Ayurveda* is the '*Rasayan chikitsa*'. According to *Acharya Charaka*, equilibrium of *Agni, Dhatu, Vayu* and *Srotas* are essential factors for maintaining

normal strength, color and longevity of the body and *Rasayana* influences this fundamental aspect viz. *Dhatu*, *Agni* and *Srotansi* and *ojas*. *Rasayana* is simply, the means by which one gets the excellence of *Rasa* (The nourishing fluid which is produced immediately after digestion) and this *rasa* nourishes blood, lymph, flesh, adipose tissue and semen.^[2] As all body tissues are nourished, consequently it leads to their regeneration, revival and rejuvenation and this prevents the individual from chronic degenerative diseases. Moreover, By virtue of this rejuvenation therapy an individual is endowed with longevity, physical strength and Psychic excellence like sharp memory. *Rasayana* has been considered as a form of rejuvenative recipes of drugs, dietary regimen and a special health promoting conduct and behavior.^[3]

Aging can be defined as functional deterioration over time, accompanied by an increased vulnerability to disease. Ageing is an inevitable phenomenon of life associated with a range of structural and functional changes in the body. Aging is controlled by several factors which occur at the cellular level, ultimately leading to organ deterioration and the onset of diseases such as cancer, arthritis, chronic inflammation, asthma and heart disease. Even though the exact cause of aging is not fully understood, it becomes clearer and clearer that ageing is result of significant number of causes while Free radical theory is one of the acceptable theory regarding causes for ageing, Reactive oxygen species, Oxidative stress also play a significant role in ageing.^[4] The free radical theory of ageing hypothesizes a single common process, modifiable by genetic and environmental factors in which oxygen derived free radicals are responsible for the ageing process. *Rasayana* or rejuvenation is the ideal therapy which can counteract the above facts. It may ultimately be leading to the achievement of the comprehensive effect as stated by *Charaka*⁵ “*labhopyo Hi Shastanam – Rasadinam Rasayanum*”.

Scientific basis

The *Rasayana* have multidimensional mode of action through nutrition dynamics. It is possible that different *Rasayana* drugs may act with predominance effect at different levels. These comprehensive effects are brought about with the help of the varied pharmacodynamic properties of these drugs. *Rasayana* effect is not a specific pharmacological action but is a complex phenomenon operating through a comprehensive mechanism involving the fundamental factors like *Rasa-Samvahan*, *Dhatu*, *Agni* and *Srotsa*.

The possible mechanisms by which action of Rasayana can be interpreted with modern aspects is as follow:

1. As Antioxidant

Antioxidants are substances that inhibit or delay oxidative damage such as that caused by free radicals while present in minute amounts. The most important source of antioxidants is provided by nutrition. Well known Antioxidants include a number of enzymes and other substances such as vitamin C, Vitamin E and beta carotene (which is converted to vitamin A). They are mainly free radical scavengers as they directly neutralise free radicals and reduce the peroxide concentrations and repair the oxidised membranes. The Rasayana drugs like *Amla*, *Ashwagandha* fall in this category. Main constituents of *Amla* are vitamin C, carotene, and riboflavin, other antioxidants include ellagic and gallic acid, emblicanin A and B, punigluconin, pedunculagin chebulinic and chebulagic acid, corilagin and many more.^[6] Detailed scientific analysis of free radical scavenging properties of *Amla* showed it to provide powerful antioxidant protection against damaging compounds like superoxide, singlet oxygen, hydrogen peroxide.^[7] Researchers from B.H.U and from D.R.D.C discovered Withanolide in *Ashwagandha* acts as antioxidant by increasing levels of three natural Antioxidants like super oxide- dismutase, Catalase, Glutathione peroxidase. The exploratory studies on these drugs have revealed that they also influence the secretion of a hormone DHEA whose deficiency is associated with ageing.

2. As an Immunomodulator

An immunomodulator can be defined as a substance, which can influence any constituent or function of the immune system in a specific or nonspecific manner including either innate or adaptive arms of the immune response.^[8] They are a diverse array of recombinant, synthetic and natural preparations. This concept of immunomodulation in *Ayurveda* details by the term 'vyadhikshamatva'. The use of herbs for improving the overall resistance of body against common infections and pathogens has been a guiding principle of *Ayurveda*.^[9] All *Rasayan* therapies are targeted on improving *Ojas* which is central to the discussion of rejuvenation as our immunity, strength and depend on the quality and quantity of *ojas*. Several pharmacological studies have been so far conducted on different herbs mentioned in the chapter of *Rasayana*: *Emblica officinalis*^[10-11] was reported to have antioxidising, antibacterial and anti inflammatory action, *Tinospora cordifolia*^[12]; It was reported to develop surgical outcome by strengthening host defenses. Similarly studies on other plants like *Ocimum santum*^[13], *Bacopa monnieri*^[14] also revealed immunomodulatory effects. These

rasayana herbs seem to operate through immunostimulant, immunoadjuvant and immunosuppressant activities or by affecting the effector arm of the immune response.^[15] Mechanism of immunomodulation activity occur mainly via phagocytosis stimulation, macrophages activation, immunostimulatory effect on peritoneal macrophages, lymphoid cells stimulation, cellular immune function enhancement, increasing NK cells number and by increasing circulating total WBC counts and interleukin -2 levels. The phytochemical analysis of these *Rasayana* plants has revealed a large number of compounds like tannic acid, flavonoids, tocopherol, curcumin, ascorbate, carotenoids and polyphenols etc possessing immunomodulatory properties responsible for such action.

3. As an Anabolic and Adaptogenic

The term anabolic refers to increase in skeletal tissue or simply muscle building. The *Rasayana* drugs falling in this category like *Ashwagandha*, *gambhari* have been in use for millennia. In a study conducted on *Ashwagandha* supplementation results showed increased muscle mass and strength an increase in body weight, effective in increasing the physical endurance.^[16] *Ashwagandha* contains several active components such as steroidal lactones, saponins and alkaloids like isopelletierine and anaferin. Investigations on *Gambhari* have also shown a positive role on metabolism as they improving nitrogen balance and help in tissue building.^[17] Drugs like *Guggulu* clears the channels and enhances the nutrition to all tissues and cells. The term “adaptogen” is applied to a herb with phytonutrients that regulate metabolism when a body is perturbed by physical or mental stress and help the body adapt by normalizing system functions, developing resistance to future such stress and elevating the body’s functioning to a higher level of performance. The adaptogen family of herbs has many members, noteworthy among them being *Ashwagandha*, *Rhodiola*, *Maca*, *Haridra*, *Pippali*, *Guduchi* and *Shatavari*^[18] Adaptogens are used commonly for stress relief, brain health and adrenal health and for ameliorating HPA-axis dysfunction. Saponins and acylsteroylglucosides in *Ashwagandha* are antistress agents. *Shatavari* possesses a strong, rejuvenating and fostering action on excessive air, gas dryness and agitation in the body and mind.^[19] These drugs thereby increase our threshold for tolerance and help to cope up with stress much better. More recently, adaptogens have also been started to be used in sports supplements that aim to enhance physical fitness.^[20]

4. As Neuroprotective or Nootropic

The *Rasayana* drugs of this category have been given a specified term called *Medhya Rasayana* as they promote intelligence and functions of brain. *Mandokparni*, *Yashtimadhu*, *Guduchi*, *Shankhpushpi* fall in this category. These drugs help individual to attain sedation, calmness, tranquility or stimulation of activities of brain.^[21] Based on the experimental and clinical research, it is known that these drugs have varying degree of psychotropic action. These produce neuronutrient effect by improving cerebral metabolism.^[22] *Mandokparni* act on behaviour besides being neuroprotective brain growth promoter, inhibits the memory impairment induced by scopolamine through the inhibition of AChE.^[23] *Yashtimadhu* increases the circulation into the CNS system, improves learning and memory non scopolamine induced dementia.^[23] *Guduchi* possesses learning and memory enhancing, antioxidant and antistress action; also enhances the cognition deficits animals in behavioural test. It is also useful for the treatment of behaviour disorders, mental deficit and improving IQ levels.^[23] *Shankhpushpi* effective in anxiety disorders, reverses the social isolation stress induced prolongation of onset and decrease in phenobarbitone induced sleep, increased motor activity and stress induced antinocception in experimental models.^[23]

Summary

Ageing is a terminology representing multifactorial, inevitable biological phenomenon characterized with many changes in the body. Because of ageing the human system becomes prone to a variety of age related disease which needs special care. As the number of the elderly people in the population is increasing significantly because of increased life expectancy, the problems of the aged are becoming more and more overt in present times warranting development of suitable strategies to combat the situation. *Rasayana* therapy delays the process of decaying biological factors by improving the health of individuals. 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.^[24]

CONCLUSION

Rasayana therapy is as old as the *Vedas*. It has been the cherished wish of human race to achieve long life and to live at least 100 years in perfect health. “*Jivema Sharadah Shatam*”.^[25] *Rasayana* therapy is not a simple drug therapy but is a specialized therapeutic procedure leading to Comprehensive clinical effects designated as *Vaya Sthapana*, *Ayushkara*, *Medhakara*, *Balakara* and *Jara Vyadhi Nashana* effects. The whole concept of

Rasayana therapy is oriented to enhance quality of health in an individual. Such a state of improved nutrition is claimed to lead to a series of secondary attributes like longevity, immunity against diseases, mental competence and delaying of aging. Remarkably modern pharmacology and clinical medicine are actively conducting series of studies on anti ageing drugs, disorder of senile stage of human body and aging process, the vast knowledge of Indian medicine, the science of life itself, is competent in regard to the concepts, principles, drugs and medicine including the management of ageing disorders, preservation of health, comprehensive fitness of body and mind and rejuvenation of life with longevity. Scientific investigations have been diverted towards herbal drugs which are found to be potent source of anti oxidant agents remarkably validating great significance of *Rasayana* therapy as a thrust area of anti ageing herbal agents crediting *Ayurveda* for the medicine of the millennium.

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