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ADOPTION OF RASAYANA THERAPY FOR HEALTHY AGING: NEED OF THE HOUR

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ABSTRACT

From the very beginning of civilization, human has an urnest desire for achieving longevity or a halt in ageing in order to enjoy the ecstacy of life. Scientists have become successful in bringing about extension of lifespan and improvement in health of laboratory animals through various interventions. But till date, there is no known/proved medicament capable of extending the lifespan of humans. In Ayurveda, the ancient medical science, art and way of life, the classics are full of verses delineating the concept of Rasayana therapy for achieving longevity, vitality, and overall wellness. Rasayana therapy incorporates the use of rejuvenating substances known as Rasayana Dravyas. The role of experiences of grownups or aging population in ensuring global prosperity cannot be overemphasized. But it is achievable only when these people are staying with us in their healthy state. Rasayana therapy holds immense promise in promoting healthy aging and strengthening immunity, as reflected in various literature search, database referral etc. Its multi-targeted actions make it a potential adjunct or preventive strategy in geriatric healthcare. In this way, adoption of Rasayana Therapy is need of the hour for healthy aging, although further clinical and pharmacological studies are warranted to validate its efficacy and facilitate its integration into mainstream medicine.

KEYWORDS: Rasayana, Ayurveda, Healthy Aging, Immunity, Rejuvenation Therapy.

1. INTRODUCTION

Although aging is inevitable, human being has been in continuous search for a method for acquiring longevity from the very beginning of civilization. Association of various diastheses with aging population may be the major reason behind this desire. Today scientists have become successful in bringing about extension of lifespan and improvement in health of laboratory animals through various interventions.Numerous pathways to be targeted for interventions for slowing aging processes in human as well as multiple aging biomarkers like glycanation, DNA methylation, proteomics and metabolomics etc. have been unveiled with research over the past three decades. But till date, there is no known/proved medicament capable of extending the lifespan of humans.

Dr. David Sinclair, a pioneer in the field of aging research, predicts the availability of pills for age-reversal by 2035. He is also of the opinion that doubling of the human lifespan may be a reality in near future. The basis for his prediction is substantiated by his published papers in 2020 and 2023 on reversal of glaucoma-related blindness in mice with partial cellular reprogramming and vision restoration in aged monkeys respectively.[1]

According to the World Health Organization (W.H.O.), the global population is aging at an unprecedented pace. The proportion of individuals aged 60 years and above is projected to nearly double from 12% in 2015 to 22% by 2050.[2] This demographic shift poses a significant public health challenge across both developed and developing nations. Aging is inherently associated with progressive physiological and psychological changes, which increase vulnerability to chronic disease conditions such as hypertension and coronary artery disease. Autopsy studies have shown that the prevalence of coronary artery disease can reach up to 75% in men after the age of 60, while in women, this level is typically observed about 20 years later.[3] Recognizing the growing importance of addressing age-related health concerns, the United Nations has declared the period 2021–2030 as the Decade of Healthy Ageing, with the WHO leading global efforts to ensure longer and healthier lives for older adults.[4] WHO defines healthy aging as “the process of developing and maintaining the functional ability that enables well-being in older age,” highlighting that many age-associated diseases are influenced by modifiable lifestyle factors.[5]

In this context, Ayurveda, the ancient Indian system of medicine and holistic living offers time-tested strategies for promoting health and longevity. Among its various branches,

Rasayana therapy holds a paramount position as a comprehensive approach to healthy aging. Rasayana, derived from the terms '*Rasa*' (nutrient plasma) and '*Ayana*' (pathway), denotes a method aimed at enhancing the nourishment and functional integrity of body tissues. As per, Acharya Charaka, Rasayana therapy rejuvenates the body by improving the quality of Rasa and other Dhatus, leading to longevity, improved memory and intellect, resistance to diseases, youthful vigor, and excellence in complexion and voice.[6] The classification of *Jara Chikitsa* (geriatric care) as synonymous with *Rasayana Chikitsa* (rejuvenation therapy) in Ayurveda's eight-fold classification underlines its centrality in addressing age-related decline. This branch specifically aims to enhance the systemic functioning of body tissues and preserve physiological strength in old age.[7] *Brahma Rasayana, Chyavanprasha, Medhya Rasayana, Pippali Rasayana, Triphala Rasayana, Amalaki Rasayana, Haritaki Rasayana, Aindri Rasayana, Bhallataka Rasayana* are some famous Rasayana formulations capable of restoring positive health.

The *Rasayana* is classified into several categories based on its scope of use, method of use, and contents. Under the scope of use, *Rasayana* is divided into *Kamya Rasayana* and *Naimittika Rasayana. Pranakamya* (promoter of life-vitality and longevity), *Medhakamya* (promoter of intellect), and *Srikamya* (promoter of complexion and lustre) are subtypes of *Kamya Rasayana*.On the other hand, *Naimittika Rasayana* focuses on enhancing specific vitality in particular diseases. *Vatatapika Rasayana* (outdoor regimen) and *Kutipravesika Rasayana* (indoor regimen) are the types of *Rasayana* as per the method of use. Additionally, based on its contents, *Rasayana* is categorized into *Ausadha Rasayana* (drugs with rejuvinating property), *Ajastrika Rasayana* (dietary suppliments with rejuvinating property), and *Achara Rasayana* (sublime behaviour). This comprehensive classification underscores the diverse applications of Rasayana in promoting health and treating diseases.[7] Amongst these *Kuti Praveshika Rasayana* and *Achara-Rasayana* deserve special portrayal.

Kuti Praveshika Rasayana, involves the individual staying in a specially designed *Trigarbha Kuteera*(three-celled chamber) for a specific period, with *Rasayana* drug administration coupled strict diet and specific codes of conduct following *Panchakarma* (pentavalent biopurification). It enhances detoxification and rejuvenation processes as well as supports intensive healing and restoration of bodily functions. On the another hand, Achara-Rasayana is a non-pharmacological approach for achieving the rejuvenating effects of Rasayana through good personal, moral, and social behaviour. It emphasizes virtues like truthfulness,

self-control, devotion, humility etc. By adhering to these principles and engaging in practices such as meditation, charity, and respecting elders, individuals can achieve psychological and social satisfaction, leading to perpetual rejuvenation and spiritual growth. This holistic way of living, which includes following a Satvika diet and observing certain dos and don'ts, is bound to give persistant healthy living.[8]

The utility/efficacy of Rasayana therapy has been substantiated by various significant pre-clinical/ clinical /case studies carried out at different Institutes/centres of Ayurveda. Some of these are as follows.

i. Amalaki Rasayana has elicited beneficial effect on myocardial energetics, muscle contractile function and exercise tolerance capacity in aging wistar albino rats/rats with pressure overload left ventricular hypertrophy induced by aortic constriction.[9]

ii. The animal study carried out at the Centre for Cellular and Molecular Biology (CCMB), Hyderabad has depicted Amalaki Rasayana to be as good as donepezil, a standard drug approved for Alzheimer's by the US FDA. The intervention with Amalaki Rasayana led to the enhancement in learning and memory without any detectable side-effects in humanised transgenic mouse models of Alzheimer's disease using the standard 'Morris Water Maze' test.[10]

iii. Significant improvement in learning and memory in young mice and reversal in amnesia induced by natural aging as well as that induced by scopolamine, was witnessed with the administration of Brahmi rasayana (BR) for eight successive days.[11]

iv. The prominent cardioprotectie effect of mumie (Shilajatu) against destructive effects of isoproterenol was observed in Wistar rats subjected to myocardial injury.[12]

v. Brahma Rasayana and Chyavanaprash showed their capacity to prevent doxorubicin-induced acute cardiotoxicity in the form of maintained antioxidant status in the heart and subsequent prevention of tissue damage as well as the release of marker enzymes in Swiss albino mice.[13]

vi. The cardioprotective effects of Withania somnifera, owing to its antioxidant and anti-apoptotic properties was seen in Wistar rats. It led to favorably restoration of the myocardial oxidant-antioxidant balance, upregulated Bcl-2 ($p<0.001$) protein, decreased Bax ($p<0.01$) protein, and attenuated TUNEL positivity ($p<0.01$)}, and reduced myocardial damage.[14]

vii. Improvement in spatial memory, anxiety and depressive-like behavior was observed in the 5xFAD Mouse model of Alzheimer's disease while given an aqueous extract of *Withania somnifera* (Ashwagandha) root.[15]

viii. Three months long treatment with Centella asiatica resulted into improved spatial and contextual memory coupled with enhanced executive function in 5xFAD mice. There was also an increase in antioxidant gene expression and a decrease in Aβ plaque burden.[16]

ix. The prophylactic and therapeutic potential of Terminalia arjuna bark extract in isoproterenol (ISO)-induced chronic heart failure (CHF) in rats was demonstrated and inferred that it was possibly through maintenance of endogenous antioxidant enzyme activities, inhibition of lipid peroxidation and cytokine levels.[17]

x. Hridayarnava Rasa has been found to protect the aorta by maintaining the lipids, lipoproteins, and marker enzymes in a dose-dependent manner similar to atorvastatin. It was evidenced by testing Hridayarnava Rasa in experimentally induced atherosclerotic cardiovascular disease (ASCVD) New Zealand rabbits.[18]

xi. In a double-blind, parallel, randomized, placebo-controlled add-on clinical trial, it was noticed an improvement in functional capacity, antioxidant reserves and symptom-related QoL domains in some patients with the use of water extract of stem bark of Terminalia arjuna (Roxb. ex DC.) Wight & Arn.[19]

xii. A prospective, double-blind, randomized, and placebo-controlled study confirmed that Ashwagandha roots extract is capable of enhancing cardiorespiratory endurance and improving the quality of life (QOL) in healthy athletic adults.[20]

2. DISCUSSION

The contribution of geriatric population in bringing about wisdom, family stability, and resources for strengthening and enriching society via its mentorship, volunteering and knowledge, economic contributions, civic engagement, involvement as keepers of local history and traditions etc. cannot be overemphasized. But, enhanced vulnerability of grownups in these days to chronic disease conditions like hypertension and coronary artery disease, is a matter of concern. This issue requires the adoption of Alternative medicines like Ayurveda for its proper addressal in addition to conventional one.

The acquisition of healthy aging is very much possible with the Rasayana therapy described in Ayurveda. Its specialized procedures and treatments aim not only to alleviate disorders but also to promote overall well-being and vitality. The benefits of Rasayana therapy are multifaceted, encompassing the rejuvenation of body tissues, enhancement of strength, and mitigation of age-related ailments. It is the need of the hour to popularize the benefits of the adoption of Rasayana amongst general people through wide circulation.

Mode of Action

Rasayana often works on multiple levels and brings about its inimitable effects. Its main action revolves around nutrition dynamics. Rasayana promotes nutrition by directly enriching the quality of the blood (*Rasadi Dhatu Prashastikarana*), improving digestion and metabolism (*Deepana-Paachana*), and enhancing the function of microcirculatory channels in the body (*Srotoshuddhi)* and subsequently improvement in tissue perfusion of nutrients at molecular level. Additionally, *Rasayana* is enriched with improved cell-mediated immune response[21] and improved Th1/Th2 balance[22] showing its immunomodulatory activity. Increased total motor activity and stress-induced antinociception[23] elicits its nootropic activities. Activation of p53 and pRB (tumor suppressor protein)[24] is responsible for its anti-cancer property. Free radical scavenging/ antioxidant activities[25,26.27] of *Rasayana* may be attributed to rest of the significant effects of it viz. anabolic, anti-stress and adaptogenic effect etc.

3. CONCLUSION

The invaluable contribution of geriatric population in global prosperity cannot be fully achieved without securing its wellness. But ascertaining of this wellness is not possible with conventional therapy only. Adoption of Alternative medicines like Ayurveda in the form of *Rasayana* should be carried out for proper addressal of geriatric disorders. While *Rasayana* and modern geriatric care differ in their principles and execution, they are complementary rather than contradictory. Rasayana emphasizes preventive, holistic and long-term rejuvenation strategies, while modern geriatrics provides targeted, evidence-based interventions for age-related conditions.Inconsistencies in research methods and small sample sizes limit the reliability and generalizability of the results of *Rasayana*. Conduction of well-designed, high-quality randomized clinical trials for assessing *Rasayana* interventions using modern biomedical criteria should be carried out on priority basis.

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