

Review

Antioxidant approach to disease management and the role of ‘Rasayana’ herbs of Ayurveda

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Abstract

The disease preventive and health promotive approach of ‘Ayurveda’, which takes into consideration the whole body, mind and spirit while dealing with the maintenance of health, promotion of health and treating ailments is holistic and finds increasing acceptability in many regions of the world. Ancient Ayurvedic physicians had developed certain dietary and therapeutic measures to arrest/delay ageing and rejuvenating whole functional dynamics of the body system. This revitalization and rejuvenation is known as the ‘Rasayan chikitsa’ (rejuvenation therapy). Traditionally, Rasayana drugs are used against a plethora of seemingly diverse disorders with no pathophysiological connections according to modern medicine. Though, this group of plants generally possesses strong antioxidant activity, only a few have been investigated in detail. Over about 100 disorders like rheumatoid arthritis, hemorrhagic shock, CVS disorders, cystic fibrosis, metabolic disorders, neurodegenerative diseases, gastrointestinal ulcerogenesis and AIDS have been reported as reactive oxygen species mediated. In this review, the role of free radicals in these diseases has been briefly reviewed. ‘Rasayana’ plants with potent antioxidant activity have been reviewed for their traditional uses, and mechanism of antioxidant action. Fifteen such plants have been dealt with in detail and some more plants with less work have also been reviewed briefly.

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Keywords: Rasayana; Antioxidant; Ayurveda; Panchkarma

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Abbreviations: CAT, catalase; DPPH, 1,1-diphenyl-2-picrylhydrazyl; GSH, glutathione; GSH-px, glutathione peroxidase; GSH-R, glutathione reductase; GST, glutathione S-transferase; LDL, low density lipoproteins; LPO, lipid peroxidation; MDA, malondialdehyde; RNS, reactive nitrogen species; ROI, reactive oxygen intermediates; ROS, reactive oxygen species; SOD, superoxide dismutase; TBARS, thiobarbituric acid reactive substances

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1. Introduction

The health promotive, disease preventive and rejuvenation approach available in the Indian systems of medicine like 'Ayurveda' is gaining greater attention and popularity in many regions of the world. A majority of the present day diseases are reported to be due to the shift in the balance of the pro-oxidant and the antioxidant homeostatic phenomenon in the body. Pro-oxidant conditions dominate either due to the increased generation of the free radicals caused by excessive oxidative stress of the present day life, or due to the poor scavenging/quenching in the body caused by depletion of the dietary antioxidants (Schulz et al., 2000; Dringen, 2000). The disease preventive and health promotive approach of Ayurveda, which takes into consideration the whole body, mind and spirit while dealing with the maintenance of health, promotion of health and treating ailments, is an holistic approach and finds increasing acceptability in many regions of the world. The ancient Ayurvedic physicians understood the delicate cellular mechanisms of the body and the deterioration of the functional efficiency of the body tissues. These ancient Ayurvedic masters had thus developed certain dietary and therapeutic measures to arrest/delay ageing and rejuvenating whole functional dynamics of the body organs. This revitalisation and rejuvenation is known as the 'Rasayan chikitsa' (rejuvenation therapy).

2. 'Rasayana' concept of 'Ayurveda'

Ayurvedic pharmacology classifies medicinal plants into different groups according to their actions. One of these is the 'Rasayana' group. The word 'Rasayana' literally means the path that 'Rasa' takes ('Rasa': plasma; Ayana: path). It is believed, in Ayurveda that the qualities of the 'Rasadhatu' influence the health of other dhatus (tissues) of the

body. Hence any medicine that improves the quality of 'Rasa' ('Rasayana') should strengthen or promote the health of all tissues of the body. 'Rasayana' drugs act inside the human body by modulating the neuro-endocrino-immune systems and have been found to be a rich source of antioxidants (Brahma and Debnath, 2003). These Rasayana plants are said to possess the following properties: they prevent ageing, re-establish youth, strengthen life, brain power and prevent diseases (Sharma, 1983; Ghanekar, 1981), all of which imply that they increase the resistance of the body against any onslaught.

'Rasayana chikitsa' is a specialized section of Ayurveda, which mainly deals with the preservation and promotion of health by revitalizing the metabolism and enhancing immunity. 'Rasayana' therapy is done for a particular period of time with strict regimen on diet and conduct. 'Rasayana' drugs are very rich in powerful antioxidants and are good hepatoprotective and immunomodulating agents. 'Rasayana' is not a drug therapy, but is a specialized procedure practiced in the form of rejuvenation recipes, dietary regimen and special health promoting right conduct and behavior, i.e. 'Achara Rasayana'. Shushruta (an ancient Ayurvedic surgeon) while defining 'Rasayana' therapy says that it arrests ageing ('Vayasthapam'), increase life span ('Ayushkaram'), intelligence ('Medha') and strength ('Bala') and thereby enable one to prevent disease (Sharma, 1983). 'Rasayana' enhances the functions of the whole body system. 'Rasayana' treatment for rejuvenation is done after the system is thoroughly cleansed by 'Panchakarma' therapy (Joshi, 1998). 'Panchakarma' is essentially a pretreatment equipping the body tissues for 'Rasayana' therapy. Shushruta observed that a person, whose system is not been previously cleansed by proper purification remedies, cannot expect good results with 'Rasayana' treatment. 'Panchakarma' is a method of purifying the body system by five methods called 'Vamana' (emesis), 'Virechana' (purgation), 'Vasti'

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