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Effect of Anti-Oxidant in co-relation with *Rasayana* therapy of Ayurveda on Ageing

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ABSTRACT

Ageing is a process of unfavorable progressive changes associated with decline in vigour and ending in death. Ageing is the part of life which is unavoidable but the untimely aging can be stopped. The process of ageing involves the coexistence of two opposing factor namely evolution (growth) and involution (atrophy). These processes continue to operate throughout the life but their importance varies in different age groups. As the age advanced, human beings gradually lose some of their attributes, because of functional and structural alteration in almost all organ systems. Ageing in individuals is affected to a greater extent by genetic factors, diet, social conditions and the occurrence of age related disorders. Anti oxidants can speed up the cell division and cell replacement process, which can help to slow the overall effects of ageing and prevent specific age related diseases. It also deactivates the free radicals and prevents their formation and also stimulates the immune system to increase our protection against all diseases. Like anti-oxidant in Ayurveda the *Rasayana* therapy not only helped attain longer, healthier life but also help cure some of the dreadful diseases. *Rasayana* aid in increasing natural immunity, enhancing general wellbeing, improving the functioning of all fundamental organs of the body and keep the signs of early ageing. The main purpose of *Rasayana* therapy is to impede the ageing process and to delay the degenerative process in the body.

Key words: Anti-oxidant, *Rasayana*, *Jara*, *Ayu*, Ageing.

INTRODUCTION

Ageing is described as the process that reduces the number of healthy cells in the body, and for which the body loses its ability to respond to a challenge (external or internal stresses) to maintain homeostasis. The body loses its ability to reproduce some of its cells and as cells are destroyed they are not always replaced. *Ayurveda* has two aims i.e. prevention and promotion of health and secondly

cure from disease.^[1] Everyone wants to give the impression of being young forever and increase life span by staying healthy. But various cells and tissues of the body undergo changes as age advances. By age 50-60 related changes to begin to reflect like reduced power of muscle, reduced vision, memory, locomotion function, there is gradual decline in homeostasis and immune function predisposes them to infection, digestive problem and malignancy. So it is necessary to rejuvenate the body systems for a better harmony of the body, mind and soul. Anti-oxidant nutrients and *Rasayana* or vitalizes both are act as same.

Antioxidant are the substances that reduce oxidative damage such as that caused by free radicals. They also stimulate the immune system to increase the protection against all diseases. *Rasayana Chikitsa* is also known as rejuvenation therapy. It is one of eight branches of *Ayurveda*, described under *Jarachikitsa*, which aim at achieving a long and healthy life.^[2]

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Ayurveda has philosophy to establish good health rather than just curing diseases. *Rasayana* claims that it retards the process of ageing. It basically boost the *Oja* (vital force of life) and the immune system. It helps the person to maintain good health. Most of these *Rasayana* can be used regularly as a food for maintaining balanced mental and physical health. They may be used either alone or along with other modalities of treatment as an adjuvant.

OBJECTIVES OF THE STUDY

To establish the effect of anti-oxidant nutrients in co-relation with *Rasayana* therapy of *Ayurveda* on ageing.

CONCEPTUAL STUDY

Ageing of *Ayurveda* is about something getting old. The definition of '*Sharira*' itself is derived from '*Shiryatiitishariram*', the one which is decaying every moment. Hence, in *Ayurveda* ageing is supposed to be a continuous and natural process.

The decay or diminution starts in the body from its birth. *Vriddhavasta* is the last part of the life span and is mainly characterized by degenerative changes. In this stage decay in the body that is reduced power of muscle (*Mamsadhatu*), perception power of the *Indriya* (Sensory and motor organs), potency, memory, locomotion function, gradual decline in homeostasis and immune function. In *Vridhavasta* there is predominance of *Vatadosha*. The major physical changes during this period are graying hairs, skin wrinkling, blandness and a diminishing ability to do physical work.

According to *Sushruta*^[3]

- *Balyavasta* : upto 16 yrs.
- *Madhyavasta* : 16–70yrs.
- *Vridhavasta* : start at 70yrs.

According to *Charaka*^[4]

- *Balyavasta* : upto 30 yrs.
- *Madhyavasta* : up to 60 yrs.
- *Vridhavasta* : start at 60 yrs.

Age related changes

The body loses its ability to reproduce some of its cells, and as cells are destroyed they are not always replaced. In addition, there is stiffening of tissues. The loss of cells and stiffening of tissues age our body. The maximal physiological capacity of most organ system reduces progressively and irreversibly after 30 yrs of age. However the rate at which body functions declines is not the same in all parts of the body. There are many theories of ageing are postulated. Among all the 'Free Radical theory' is very effective. Free radical cause oxidative damage to various biological molecules. Example: Hydroxyl radicals can damage cell-membrane and lipoproteins by a process called lipid peroxidation which may contribute to ageing process.

Antioxidant Nutrients

Antioxidants are group of chemical compounds that can deactivate the free radicals and prevent their formation. They also stimulate the immune system to increase our protection against all diseases.

The major antioxidant nutrients include the following

1. Vit - E,
2. Vit - C,
3. Betacarotene and Vit - A,
4. Selenium and Zinc,
5. Bioflavnoids (Various membranes of the B - complex vitamins),
6. Liipoic acid and glutathione,
7. Minerals - They are not direct anti-oxidants but are needed to make the anti-oxidant enzymes,
8. Accessory anti-oxidant - Pyenogenol, co-enzyme, Q-10 and curcuminoids.

The vegetables that contain the most anti-oxidants are; Broccoli, Spinach, Beets, Red peppers, carrots, Tomatoes, Sweet potatoes.

The fruits that contain the most anti-oxidant are; Berries, Grapes, oranges, Apricots, Plums and

Peaches. Anti-oxidants are also found in wine, tea and coffee.

As a general rule the richer the colour of the fruit or vegetable, the more anti-oxidants it contains. Laboratory studies have shown that, lycopene is the most powerful carotenoid. Who eat a lycopene rich diet have a better long term health profile than those that don't. Anti-oxidants which are found in food sources i.e. vit - A, vit-C, beta carotene, selenium and Zinc are responsible for the orange pigment in carrots, cantaloupe and sweet potatoes are boost for immunity.^[5]

Effect of Anti- oxidant on Ageing

It has been proven that anti-oxidants found in wine, tea, coffee, blueberries, grapes and other fruits and vegetables can help prevent ageing and increase life span's you age your cell division and replacement of dead or damaged cells slows down. Anti – oxidants can speed up the cell division and cell replacement process, which can help to slow the overall effects of ageing and prevent specific age-related diseases. Anti-oxidants neutralize harmful free radicals in our body which can cause several serious or life threatening diseases and health problems including heart disease, cancer, immune dysfunction, diabetes and degenerative brain disorders including dementia and Alzheimer's disease.

Free radicals are very reactive molecules or fractions of molecules, formed mainly from oxidation products of foods under the influence of radiation or food additives or when the food are not sufficiently protected by certain vitamins. Free radicals chain reactions take place in our body countless times a day. cigarette smoking, pollutants, chemicals, pesticides, alcohol, drugs, unhealthy food, sunlight, radiations and even emotional stress can cause free radicals formation and free radicals chain reactions. Tens to thousands of free radicals are produced in the body every second. They damage DNA nucleic acid bases (adenine, thymine, guanine and cytosine) that hold the double strands of the helical shaped DNA molecules. Free radicals cause oxidation of fatty compounds (lipids) that are vital components of

hormones and cell membranes. On damaging of cellular membranes the cells are grow out of control forming cancer cells. Free radicals also fuse proteins together, cross-linking them so that they do not function normally.

Free radicals are the sole cause of only few diseases these are,

- Ageing disorders of premature ageing, immune deficiency of ageing.
- Cancer.
- Heart diseases.
- Auto immune diseases.
- Rheumatoid Arthritis.
- Radiation injury.
- Retinopathy.
- Parkinson's disease.

Anti-oxidants help to keep our cells healthy and youthful, which can prevent age-related illness, relative stress and increase our life-span. There are several specific ways anti-oxidants can prevent ageing and age related disease and increase our life span.

- By relaxing our blood vessels and decreasing the oxidation of unhealthy cholesterol.
- By keeping all our body's cells healthy.
- By targeting unhealthy cancerous cells and destroying them, anti-oxidants are also being studies as a treatment for cancer in combination with radiation.
- By eating dark coloured fruits and vegetables and drinking a few cups of black, green or oolong tea per day, you will be consuming healthy anti-oxidants every day. coffee drinkers who drink up to two cups of coffee per day also get a daily dose of anti-oxidants in their coffee, whether it is caffeinated or not. Drinking one glass of wine per day will also boost your anti-oxidant intake, which can keep you feeling young and youthful and increase your life span.

- Anti-oxidants are useful for protection of heart disease. This is because oxidation plays a big role in formation atherosclerotic plaque which is a main pathological event in coronary heart disease.
- Anti-oxidants are having role in preventing diabetes mellitus. Taking Anti-oxidants rich food especially Vit-E, may lower risk of Type-II Diabetes mellitus. A new study show that people whose diets had the highest levels Vit-E were 30% less likely to develop type II diabetic mellitus.
- By researches, it is also found that people who ate a lot of carotenoids, a type of anti-oxidant found in colourful fruits and vegetables also had a lower risk of developing type II diabetic mellitus. Oxidative damage to cells is also important phenomenon in ageing process. So anti-oxidants are also helpful for delaying ageing.^[6]

Rasayana therapy

Rasayana therapy may be employed for fulfill of both the aim of *Ayurveda*, i.e. protection or prevention and promotion of health and secondary cure from diseases. *Rasayana* therapy has been described in *Ayurveda* as a systematic and scientific medical discipline.

Rasayana drugs are those medicines which are capable of imparting superior *Rasas* and *Dhatu*s to the body and toning up the system of healthy persons. *Rasayana* aid in increasing natural immunity, enhancing general wellbeing, improving the functioning of all fundamental organs of the body and keep the signs of early ageing at bay. The main purpose of *Rasayana* therapy is to impede the ageing process and to delay the degenerative process in the body. *Rasayana* is the term given to special herbs, fruits or any other form of medication that are known to promote positive health and longevity. It basically boosts the *Oja* (Vital force of life) and the immune system.

The word "*Rasayana*" is composed of two words that are *Rasa* and *Ayana*. '*Rasa*' means fluid or juice and '*Ayana*' means pathway. Hence, the word *Rasayana* means 'path of the juice'. It also means by which one

gets the excellence of *Rasa* is known as *Rasayana*. Literally, the technical term *Rasayana* refers to the means of obtaining the optimum nourishment to the *Dhatu*s.

Rasayana may be defined as, According to *Acharya Charaka*, the substance which invigorate a healthy person by producing the best quality of *Rasa*, *Raktadhatu* and other *Dhatu*s are called as *Rasayana*. According to *Acharya Sushruta*, the substance which decreases the ageing process increases the longevity and increases the mental as well as physical strength and which destroys the disease process is called as *Rasayana*.

That means by taking *Rasayana* we always remain healthy and young. This did not mean that you will not die. It means that even when you are in 80yrs or 90yrs, you are able to perform your normal duties and you don't have to depend on others.

Classification of Rasayana

There are various classifications for *Rasayana* therapy. Some of them are as follows,

1. As per method of use

- a) ***Kuti-praveshika Rasayana***: Which can be administered by keeping the individual inside a cottage. It is also called as Indoor-Patient Department.
- b) ***Vatatapika Rasayana***: This can be administered even if the individual is exposed to the wind and the sun. It is also called as open air therapy or outdoors therapy or management in Out-Patient Department.^[7]

2. As per scope of use

- a) ***Kamyas Rasayana***: *Kamyas Rasayana* is used to fulfill a wish or desire or to serve a special purpose (*Kama*-desire). It is also used to promote general physical and mental health.

It is of three types,

1. ***Pranakamyas Rasayana***- It is used for achieving or maintaining the best quality of *prana*(life energy) in the body.

2. **Medhakamya Rasayana-** It is used for enhancing the memory and intellect.

3. **Srikamya Rasayana-** Promoter of complexion.

b) **Naimittika Rasayana:** *Naimittika Rasayana* is given to combat or balance a specific cause, which is causing a disease in the body. Some examples of this *Rasayana* are *Dhatri Rasayana*, *Mandookaparni Rasayana*, *Bramhi Rasayana* and *Triphala Rasayana*.

3. As per contents of Rasayana

a) **Aushadha Rasayana-** Based on drugs and herbs.

b) **Achar Rasayana-** Based on conduct and behavior.^[8]

c) **Ahara Rasayana-** Based on diet and nutrition.

Rasayana therapy should be done after *Samsodhana Karma - Snehan, Swedana* and *Panchakarma* i.e. *Vamana, Virechana, Basti, Nasya, Raktamokshana*. The *Samsodhana* process detoxifies both body and mind. This helps in the initial detoxification of the body and prepares it for the *Rasayana* therapy.

Benefits of Rasayana Therapy

According to *Acharya Charaka*, a person undergoing *Rasayana* therapy attains,

It enhances the intelligence, memory power, will power, body strength, skin luster, sweetness of voice and physical strength.

- It nourishes the blood, lymph, flesh, adipose tissue and semen and thus prevents chronic degenerative changes and illness. It gives freedom from chronic degenerative disorders like Arthritis and senile diseases.
- *Rasayana* is thought to improve metabolic process, which in the best possible biotransformation and produce the best quality bodily tissues and eradicates senility and other diseases of old age.
- Help to attain optimal physical strength and sharpness of sense organs.

- *Rasayana* nourishes the whole body and improves natural resistance against infection by increasing immunity power.

- *Rasayana* invigorates the body in general by sustaining the required balance between anabolism and catabolism.

- *Rasayana* therapy which regulates the circulation of vital fluid and eliminates the waste materials, rejuvenate the nervous system and keep vigour and stamina.

- Prevents wasting muscles, delays the ageing process, keeps strong bones, tendons etc. Prevents osteoporosis, improves whole body circulation, prevents graying hair and provides good sleep and appetite.

- *Rasayana* Therapy keeps the body and mind pleasant, younglooks, glowing skin, modulated voice, calmness, resistance to disease.

CONCLUSION

Antioxidants are group of chemical compounds that can deactivate the free radicals and prevent their formation. They also stimulate the immune system to increase our protection against all diseases.

Free radicals are very reactive molecules. Free radicals chain reactions take place in our body countless times a day. Cigarette smoking, pollutants, sunlight radiations and even emotional stress can cause free radicals formation and free radical chain reactions.

Rasayana drugs acts as antioxidants. These are used for preservation of positive health. *Sushruta* defines a healthy man as one who has equilibrium of *Doshas*, normal functioning of *Agni*, normal condition of seven *Dhatus*, besides his soul, the same organs and mind should be happy and cheerful. *Rasayana* stands as an answer to solve the problem of healthful longevity including mental development and resistance against disease. *Rasayana* is a specialized type of treatment influencing the fundamental aspect of body i.e. *Dhatu, Agni* and *Srotas*. *Rasayana Chikitsa* means rejuvenation therapy. Rejuvenation literally means to return to youthfull conditions or to the normal from

diseased state. Rejuvenation therapy helps to promote and preserve health and to cure disease in sick. So both anti-oxidants and *Rasayana* drugs have same effect on ageing.

Ageing is progressive change related to passage of time. Ageing occurs as a result of constant biological activities throughout living period. This incessant activity is made possible by continuous process of both consumption and preservation of substances for energy. Although ageing has both the positive component of development and the negative component of decline, senescence refers only to the degenerative processes that ultimately make continued life impossible. Mainly at late age i.e. 50-60 age, related changes are begin like reduced power of muscle, reduced vision, memory, locomotion function and graying of hair, baldness, digestive problem etc.

Free radicals cause oxidative damage to various biological molecules e.g hydroxyl radicals can damage cell membrane and lipoproteins by a process called lipid peroxidation which may contribute to ageing process. Certain *Rasayana* drugs likes *Ashwagandha* inhibits copper induced lipid peroxidation and also inhibits oxidative protein modification. Though *Rasayana* acts as anti-oxidants, so they help in delaying ageing.

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