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A Review on Rasayana

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ABSTRACT

Rasayana is one of the eight clinical specialities of classical Ayurveda. Rasayana replenish the vital fluids of our body, thus keeping us away from diseases. The rasayana therapy enhance the qualities of rasa, enriches it with nutrients so one can attains longevity, memory, intelligence, freedom from disorder, youthfulness, excellence of luster, complexion and voice, optimum development of physique and sense organs, mastery over phonetics and brilliance. Taking rasayana is helpful to increase the immunity of the person to keep him away from disease and also reverses the disease process and prevents the re-occurrence. The Rasayanas are rejuvenators, nutritional supplements and possess strong antioxidant activity. They also have antagonistic actions on the oxidative stressors, which give rise to the formation of different free radicals. *Ocimum sanctum*, *Tinospora cordifolia*, *Embllica officinalis*, *Convolvulus pluricaulis*, *Centella asiatica*, *Bacopa monniera*, *Withania somnifera*, Triphala rasayana, Chyawanprash, Brahma rasayana are very important rasayanas which are described in ayurveda and proved by new researches.

KEY WORDS: Rasayana, Antioxidant activity, *Bacopa monniera*, *Withania somnifera*

ABBREVIATION: Mg: Miligrams, WS: *Withania somnifera*, CP: *Convolvulus pluricaulis*, CA: *Centella asiatica*, BM: *Bacopa monniera*.

INTRODUCTION

Ayurveda remains one of the most ancient and yet living traditions practiced widely in India, Sri Lanka and other countries and has a sound philosophical and experiential basis. Atharvaveda (around 1200 BC), Charak Samhita and Sushrut Samhita (1000–500 BC) are the main classics that give detailed descriptions of over 700 herbs. A scholarly description of the legacy of Charaka in contemporary idiom, best attempted with a commentary from modern medicine and science view point, gives some glimpses of ancient wisdom. India has about 45,000 plant species; medicinal properties have been assigned to several thousands. About 2000 are found in the literature; indigenous systems commonly employ about 500–700 (1). Indian healthcare consists of medical pluralism and Ayurveda still remains dominant compared to modern medicine, particularly for treatment of a variety of chronic disease conditions (2).

Every man wants to live long and healthy. This is possible by promoting rejuvenation, healing, and regeneration of living tissue in the body and for this Rasayana therapy in Ayurveda. The classical Ayurvedic text says that medicine therapy is divided into Preventive and Curative therapy. Rasayana therapy is included into preventive therapy which is divided into Kuti Praveshika or Indoor-Patient Department and Vatatapika or Outdoor-Patient Department. Promotion of the health is main objective of Ayurveda which is achieved by the unique modality mentioned in Ayurveda called Rasayana or rejuvenation. This unique class of therapy enhances the life span, delays aging, improves the intelligence and memory power, promotes health, provides youthful states of the body, betters the body luster and voice improves the efficiency of the different cognitive abilities and enhances the innate health. It also reverses the disease process and prevents the re-occurrence. Rasayana replenish the vital fluids of our body,

thus keeping us away from diseases (3).

CONCEPT OF RASAYANA

The word Rasayana (rasa+ayana) refers to nutrition and its transportation in the body. The rasayana therapy enhance the qualities of rasa, enriches it with nutrients so one can attains longevity, memory, intelligence, freedom from disorder, youthfulness, excellence of luster, complexion and voice, optimum development of physique and sense organs, mastery over phonetics and brilliance. Taking Rasayana is helpful to increase the immunity of the person to keep him away from disease. The concept of Rasayana interested us as the claims for this form of therapy are far reaching. In the words of Charaka, “one obtains longevity, regains youth, gets a sharp memory and intellect and freedom from diseases, gets a lustrous complexion and strength of a horse” (4).

CLASSIFICATION OF RASAYANA

Rasayana is divided in two types on the basis of needs. First is Kamyas Rasayana which is promoters of normal health. These are boost body energy levels, immunity and general health. Pranakamyas, Medhakamyas, and Srikamyas are the examples of Kamyas Rasayana, which are promoters of vitality and longevity, intelligence and complexion respectively. Second type of Rasayana is Naimittika Rasayana, which help to fight against a specific disease. Kuti Praveshika Rasayana and Vatatapika Rasayana are the two types of Rasayana on the basis of place of therapy. Indoor Rasayana therapy is including in Kuti Praveshika Rasayana where Vatatapika Rasayana is outdoor Rasayana therapy. Rasayana can also classified three types on the basis of diet and life styles. These are Asushdha Rasayana which includes drug based Rasayana, Achara Rasayana are based on lifestyle and dietary based Rasayana are included in Ahara Rasayana (5).

RASAYANA THERAPY

Rasayana therapy of Ayurveda is a dedicated stream of

medication for immune promotive, antidegenerative and rejuvenative health care and is known for preventing the effects of ageing and improving the quality of life of healthy as well as diseased individuals. Rasayana is normally advised during the degenerative phase, which starts from around 45 yrs in both male and female (3). Ayurveda considers the physical structure to be composed of 7 dhatus starting from Rasa, Rakta, Mamsa, Medha, Asthi, Majja and Sukra and their modern meanings are nutrition part of blood, Blood cells, Muscles and Soft tissue, Lipids, Bones and Cartilages, Marrow, and Vital fluid respectively. Rasayana is the tool to create premium dhatus so when the quality of dhatus enhances results are longevity, strong immune system to fight against diseases, development of body and youthfulness (6).

PREPARATION OF RASAYANA THERAPY

It is very essential for a person who wishes to undergo Rasayana therapy to undergo Samshodhana or detoxification process by Panchkarma as a preparatory procedure. The Samshodhana process detoxifies both body and mind. A detoxified body and mind is like a clean cloth which readily absorbs the colour in which it has been dipped unlike a soiled cloth even after colouring with best colours (7).

PANCHAKARMA

Rasayana becomes more fruitful and effective if it is preceded with suitable Panchakarma. Panchakarma is a bio-cleansing regimen comprising of five main procedures that facilitates better bioavailability of the pharmacological therapies, helps to bring about homeostasis of body-humors, eliminates disease-causing complexes from the body and checks the recurrence and progression of disease. The five fold measures comprehended in this therapy are-Vamana (Therapeutic Emesis), Virechana (therapeutic Purgation), Asthapana Vasti (Therapeutic Decoction Enema), Anuvasana Vasti (Therapeutic oil Enema), Nasya Karma (Nasal administration of medicaments). Panchakarma procedures are preceded by Snehana (therapeutic Oleation) and Swedana (Sudation) applications to make the body system conducive for elimination of bio-toxins and cleansing of channels. This is effective in managing autoimmune, neurological, psychiatric and musculo-skeletal diseases of chronic and metabolic origin (8).

TWO TYPES OF REJUVENATION THERAPY

The holistic system like Ayurveda approaches Rejuvenation therapy through two-fold methods. One is a radical approach in which it recharges the whole metabolic process of the body by eliminating the toxins from the system by a three to four months rigorous and organized process known as Kuti Praveeshika Rasayana. The second approach of Ayurveda, which is quite popular today, is called Vataatapika Rasayana, which can go along with the normal day to day life. This type of Rasayana is particularly important in the current scenario, as it has a relatively easy mode of administration without any restrictive pre-conditions. The main utility of Rasayana therapy is in functional and degenerative disorders that have a chronic or long-standing nature (4).

MECHANISM OF ACTION OF RASAYANAS

Rasayana promotes nutrition by direct enrichment of the

nutritional quality of rasa means nutritional blood, by promoting nutrition through improving Agni means digestion, metabolism and by promoting the competence of Srotas means microcirculatory channels in body (4). It has been reported that the 'Rasayanas' are rejuvenators, nutritional supplements and possess strong antioxidant activity. They also have antagonistic actions on the oxidative stressors, which give rise to the formation of different free radicals. They are used mainly in ageing, atherosclerosis, cancer, diabetes, rheumatoid arthritis, autoimmune and Parkinson's disease. Their antistress actions have made them therapeutically more important (9). In order to investigate mechanism of action of the Rasayana i.e. *Tinospora cordifolia* studies are carried out on the proliferative fraction of the bone marrow of mice by flow cytometry and found that compared with normal mice, there was a significant increase in the proliferative fraction in the bone marrow in mice treated with the *Tinospora Cordifolia*. Some Rasayana activate mononuclear cells to produce cytokines like GM-CSF and IL-1 in a dose dependent manner. These results indicate it is possible that the Rasayana (particularly those with madhur vipaka that are advocated as adaptogens in Ayurveda) primarily activate immune cells, leading to secretion of cytokines, which in turn act on multiple target organs to produce the myriad effects ascribed to these treatments (10). Administration of herbal preparation, Rasayana has been found to enhance the natural killer cell activity in normal as well as in tumor bearing animals. Brahma Rasayana is found highly active. Brahma Rasayana and Aswagandha Rasayana were found to activate antibody dependent cytotoxicity significantly. Aswagandha Rasayana also found to activate macrophages. Rasayana are also found to stimulate antibody dependent complement mediated tumour cell lysis (11). The Rasayana herbs seem to exert their effect through immunosuppressant, immunostimulant and immunoadjuvant activities or by affecting the effector arm of the immune response. It has been found that the nervous, endocrine and immune systems are all interrelated. Immune products like various cytokines have been found to stimulate the hypothalamus-pituitary-adrenal axis and corticotrophin release factor (CRF), which ultimately enhances the production of adrenal corticotrophic hormone (ACTH) resulting into increased secretion of glucocorticoids which have an overall suppressive effect on the immune system. Stress also acts on the same axis and brings about changes in the immune status of the body. These Rasayana drugs probably reduce stress levels by affecting antioxidant levels. So these Rasayana drugs act as potent antioxidants and neuroendocrine immunomodulators (12).

RASAYANA RECIPES AND DRUGS

Various types of Rasayana recipes and plants are described in Ayurveda beside all of these some are following.

BRAHMA RASAYANA

Terminalia Chebula fruit, *Embllica Officinalis* fruit, and Panchmul are part of Brahma Rasayana. Five types of Panchmulas are described in classical text of Ayurveda and all of them should be useful in the preparation of Brahma Rasayana. It is useful to improve digestion and memory. Brahma Rasayana also

retards aging process and retard tumor growth. Brahma Rasayana was found to activate antibody dependent cytotoxicity significantly (11).

CHYAWANPRASH

It is named for the Rishi Chyawan who had become very old, but then once more became youthful through taking this preparation. Chyawan had become engaged, through chance meeting and customs of the time, to a young wife, the princess Sukanya. According to the Charaka Samhita, Chyawanprash is "the foremost of all Rasayanas, especially good for alleviating cough and asthma, it nourishes the weak, the wounded, the old, and those that are of tender years as well." Through the use of this rasayana "a person acquires intelligence, memory, comeliness of body, freedom from disease, longevity, strength of the senses, great pleasure in the companionship with women, great increase in the strength of the digestive fire, improvement of the complexion, and the restoration of wind to its normal course." In the original instructions for making Chyawanprash, the text first lists numerous herbs, such as bel (*Aegle marmelos*), bala (*Sida cordifolia*), and pippali (*Piper longum*), as well as substitute herbs that might be used when certain ones are not available. Over time, various formulas for Chyawanprash, comprised of herbs highly respected and available in modern India, have been developed from the ancient instructions. In all cases amla (*Emblica myrobalans*) is the principal constituent. Most of the herbs in the formula are boiled in water, and then the dried extract is combined with honey, a few aromatic herb powders are then added to the extract cardamom, cinnamon, and clove. The finished product is syrup that is not unlike molasses, but with a bright sour and spicy taste. Some versions have a "crunchy" quality from unprocessed herb ingredients (13). The instructions for making the Chyawanprash presented in this modern text are taken from the Charaka Samhita. While the Chyawanprash formula is large, containing 37 herbs, its main functions can be understood by grouping several of the herbs by similar therapeutic actions. The main functions of the formula are to improve digestion and respiration, the sources of metabolic energy. Digestive system effects are due to ginger, zedoaria, basil, clove, and cardamom are stomachic and promoting digestion and relieving nausea. Long pepper, dachini, and emblica help correct hyperacidity, dyspepsia, and flatulence. Tejan helps reduce intestinal cramping and flatulence. Aegle, cyperus, and pistacia alleviate intestinal inflammation and diarrhoea. Chebula and clove have anti-ulcer effects, chebula is also an astringent and mild laxative. Respiratory system effects due to Pisticia, adhatoda, liquorice, inula, sida, tejan, basil, and mesua are commonly used to alleviate cough, asthmatic breathing, and bronchospasm. Long pepper, cardamom, and zedoaria are used for respiratory infections and asthmatic breathing. In addition, the formula has a calming effect on nervous energy and on stress, while improving concentration and memory, with its inclusion of ashwaganda, nardostachys, bacopa, and asparagus (14).

TRIPHALA RASAYANA

Indian people are saying that "Don't have a mother to take care of you? As long as you take Triphala everyday, don't

worry, everything will be fine." The word Triphala means "three fruits." Triphala is a very famous and traditional herbal combination used extensively by Ayurvedic healers. Triphala is made up of equal parts of Amalaki (Indian Gooseberry or *Emblica officinalis*), Haritaki (Indian Gallnut or *Terminalia chebula*), and Bibhitaki (Beleric Myrobalan or *Terminalia bellerica*). Although Triphala is most commonly used to cleanse and tone the digestive tract, it is in reality an Ayurvedic Rasayana—a rejuvenative herbal blend that delivers benefits to the physiology as a whole. Ancient Ayurvedic texts state that Rasayanas promote overall health and longevity with their simultaneous cleansing and nourishing properties and ojas-enhancing qualities. Triphala promotes the health of the digestive tract. It helps cleanse tone and nourish the digestive system, resulting in more complete and efficient digestion and assimilation of food. As digestion improves, less ama (digestive toxic matter) is created, and this leads to better health and an improved immune system. In normal doses, Triphala is mildly laxative in nature, and can be used as an internal cleanser for extended periods of time without fear of the harsh purging wrought by strong eliminative formulas. It is not habit forming. Despite its gentle action, Triphala cleanses deeply when used regularly it helps purify the blood, muscle and fat tissue. Triphala is beneficial for the eyes and the skin. It helps keep the eyes healthy and bright and the skin clear. Triphala gives the skin a natural glow. Triphala purifies the urine and helps maintain the health and function of the urinary tract. Triphala helps cleanse and strengthen the liver. Because it helps cleanse the fat tissue, Triphala helps balance cholesterol levels and helps weight management. Triphala has antioxidant properties. Indian Gooseberry, one of its three components, is the most potent natural source of Vitamin C known to humanity (15).

SHILAJIT RASAYANA

Shilajit is a blackish-brown exudation, from steep rocks of different formations, commonly found in the Himalayas, at altitudes between 1000-5000 metres, from Arunachal Pradesh in the East to Kashmir in the West. It is also found in other countries, Afganistan (Hindukush), Bhutan, China, Nepal, Pakistan, Tibet (Himalayan belt). Shilajit is believed to arrest aging and produce rejuvenation (16).

Many studies show that humification of latex and resin-bearing plants are responsible for the major organic mass (80-85%) of shilajit. The low molecular weight chemical markers aucuparins, oxygenated dibenzo-K-pyrone and triterpenic acids of the tirucallane type (free and conjugated), occurring in the core structure of shilajit humus, are the major active constituents of Himalayan shilajit. The therapeutic effects of shilajit are the consequences of hormonal control and regulation of immunity. Several phenylpropanoid acetate derived aucuparins, oxygenated biphenylcarboxylates, isolated and characterized as their permethylated derivatives and oxygenated dibenzo-or' -pyrones were found to occur ubiquitously, albeit in different amounts, in shilajit with some of the living plant ancestors of these compounds. Over eighty different plant species were reported in and around the shilajit rocks in Kumaon itself. One species which was consistently

found to be present in shilajit-bearing rocks, throughout the Eastern and the Western Himalayas, was a rich latex producing plant, *Euphorbia royleana* Boiss. Some other latex and resin producing common species, in these regions, are the legumes, *Trifolium*, *Ficus* and *Juniperus* were collected from different places in the Himalayan belt, and yielded several phenylpropanoid-acetate-derived metabolites. *Royleana* (latex and debris), purified by shilajit rhizospheric microorganisms, yield the three other important shilajit marker compounds along with several other equivalent metabolites. In case of shilajit, from different regions, both E- and Z-isomers of the triterpenoid saponin and the phenolic constituents were isolated and characterized. The structures of these compounds were established by comprehensive spectroscopic analysis, crucial chemical transformations and synthesis, where possible. Pharmacological and immunological screening of these compounds, individually and in combination, established their significant contribution to the therapeutic efficacy of shilajit. Among the other organic compounds contributing to the bioactivity of shilajit, humic and fulvic acids, from shilajit humus, are noteworthy. However, the main task that confronts researchers in this field (study of humus) today is to decipher the complexity of the building units of humus and their alignments, after polycondensation, in the core structures of humic substances. The effects of shilajit, as reported in the Ayurvedic literature, seem to suggest its influence on endocrine, autonomic, and brain functional changes. The discovery that these changes can be mediated by cytokines, released by activated immunologic cells has opened up possibilities for similar mechanism of action of shilajit. Certain combinations of the phenolic and triterpenoid constituents of shilajit produced significant effects against restraint stress-induced ulcers. The mechanism of anti-ulcerogenic actions of shilajit and its constituents was also evaluated. This was based on their effects on mucin contents, and on the concentrations of DNA and protein in the gastric juice. The combinations provided significant resistance to mucosa against the effects of ulcerogens and also prevented the shedding of mucosal cells. The anti-allergic action of these compounds was successfully tested against antigen- and compound 48/80 (histamine releaser) induced degranulation of mast cells. The anti-stress activity of these compounds was suggested by their augmentation of marine swimming endurance exercises. Shilajit and its combined constituents also elicited and activated, in different degrees, marine peritoneal macrophages and activated splenocytes of tumour-bearing animals at early and later stages (unresponsive) of tumour growth. Shilajit from USSR, and its corresponding combined fractions, acted essentially as cell-growth factors in both normal and tumour cells by maintaining membrane integrity. The results obtained till now are sufficiently impressive to warrant expectation that more extensive and comprehensive studies on shilajit and its constituents would validate the Ayurvedic rasayan, shilajit, as more effective than several currently available clinically efficacious immunomodulators (17).

WITHANIA SOMNIFERA

Withania somnifera is also called Ashwagandha in Sanskrit, belongs to the family Solanaceae, is cultivated in the soils that are unsuited for other crops and requires little care. The plant is known for its varied therapeutic uses in Ayurvedic and Unani practices in India (18). *Withania somnifera* (WS) has been held in high esteem in Ayurveda because of its rejuvenative and tonic effects that are reminiscent of Asian ginseng. Because of these similarities, Ashwagandha has been referred as Indian Ginseng. It has been traditionally used for lack of libido, fatigue, recovery from prolonged illness, mental problems and as a rasayana (rejuvenator) in Ayurveda. It is classified in modern terminology as an adaptogens (19). A recent report has confirmed the rejuvenating effect of WS. In a double blind study, the growth-promoting effect of WS was studied for 60 days in 60 healthy children, age 8-12 years. The results indicate that WS may be used as growth promoter and hematinic in growing children (20). Clinical investigations with the WS root extracts indicate that it exerts significant anti-aging effect in normal healthy but aged subjects (21). The standardized root extract find useful applications against the intracellular pathogens and in the management of immune suppressed diseases. Immunomodulatory activity of WS was studied and found that it prevented myelosuppression and significantly increased the hemoglobin concentration, RBC, WBC count, platelet count and body weight in mice (22). The glycowithanolides from WS have also shown antioxidant activity (23). A herbal formulation containing WS has also shown an anti-oxidant activity which is having natural antioxidant, self replicating and sustained action (24).

BACOPA MONNIERA

Bacopa monniera (BM) in India is locally known as Brahmi or Jananimba (25). The name Brahmi is derived from the word "Brahma", the mythical "creator" in the Hindu pantheon. Because the brain is the centre for creative activity, any compound that improves the brain health is called Brahmi. 'Brahmi' which also means 'bringing knowledge of the Supreme Reality' and it has long been used medicinally and as an aid to meditation. In India, BM is largely treasured as a revitalizing herb that strengthens nervous function and memory. BM has been used by Ayurvedic medical practitioners in India for almost 3000 years and is classified as a Madhya Rasayana, a drug used to improve memory and intellect (medhya). The BM extracts and isolated bacosides have been extensively investigated for their neuropharmacological effects and confirmed their nootropic action or anti-amnesic effect (26). Keeping positive results of such clinical trials, BM has been introduced in the Indian market and in other countries, alone or in combination with other phytocomplexes, and utilized in the treatment of memory and attention disorders (27).

CENTELLA ASIATICA

Centella asiatica (CA), of the Apiaceae family, is also known as Gotu kola, Indian Pennywort, Jal Brahmi and Mandookaparni. CA has been used since ancient times as a medicinal herb. CA has also been studied for immunomodulation but in its preliminary stage. A recent study indicates that CA extract may be useful for accelerating repair of damaged neurons (28). This

study demonstrated more rapid functional recovery and increased axonal regeneration indicating that the axons grew at a faster rate. CA leaf extract have a neuronal dendritic growth stimulating property, therefore, the extract can be used for enhancing neuronal dendrites in stress and neurodegenerative and memory disorders (29). A recent study showed that CA by acting as a potent antioxidant exerted significant neuroprotective effect and proved efficacious in protecting rat brain against age related oxidative damage (30). Many other studies also indicated the CA's role in antioxidant mechanism. Few studies indicate that CA has cognitive-enhancing and antioxidant properties in normal rats with an added advantage of preventing cognitive impairment. Presently clinical studies aimed at investigating the sedative, analgesic, antidepressive, antiviral and immunomodulatory effects that have been demonstrated experimentally are still lacking. However, the therapeutic potential of this plant in terms of its efficacy and versatility is such that further detailed research would appear momentous (31).

CONVOLVULUS PLURICAULIS

Convolvulus pluricaulis (CP) is also known, as Shankpushpi, also spelled shankpushpi, is an herb that has been used in India for hundreds of years for nervous disorders such as stress, anxiety and insomnia. Herbalists believe that Shankpushpi calms the nerves by regulating the body's production of the stress hormones, adrenaline and cortisol (32). In Ayurvedic medicine, it is also believed that Shankpushpi is an anti-aging remedy called Rasayana. CP shows promise as a safe, effective remedy for anxiety, but controlled human studies are needed to establish scientifically its efficacy in various CNS disorders with special emphasis on memory enhancing properties. Some investigators found that shankpushpi has potent depressive action in mice (33).

EMBLICA OFFICINALIS

Embllica officinalis, commonly known as Amla, is extensively found all over India, in Sri Lanka, Malaysia, China, Pakistan and Bangladesh. The fruits of the plant are used in Ayurveda as a potent Rasayana. The Rasayana are used to promote health and life-span by increasing defense against disease, assisting the aging process and revitalizing the body in debilitated conditions. The clinical efficacy of the fruits of *E. officinalis* is held in high esteem in Ayurveda and Amla is referred to as a maharasayana (34). The fruits from the major constituent of chayavanprash awaleha, a polyherbal Ayurvedic rasayana preparation described in Charaka samhita (35). *Embllica officinalis* have been reported to have immunomodulatory properties and a marketed herbal product Immuplus (containing *Embllica officinalis* as one of its ingredients) has been reported to have immunomodulatory activity through humoral and cell mediated immunity (36). The tannoid principles of *Embllica officinalis* have recently shown an antioxidant activity in chronic stress induced changes in rat brain. Triphala, a popular Ayurvedic formulation containing *Terminalia chebula*, *Terminalia bellerica* and *Embllica officinalis* prevent the noise-stress induced changes in the antioxidant as well as cell-mediated immune response in rats. *Embllica* fruit contains ascorbic acid (0.40%, w/w), and

the Ayurvedic method of processing increases the healthy characteristics of the fruit to a higher antioxidant activity and a higher content of ascorbic acid (1.28%, w/w). It has also been found that vitamin C accounts for approximately 45–70% of the antioxidant activity (37). A recent study states that Amla churna produced a dose-dependent improvement in memory scores of young and aged mice. Furthermore, it reversed the amnesia induced by scopolamine (0.4 mg/kg) and diazepam. Interestingly, brain cholinesterase activity and total cholesterol levels were reduced by Amla churna administered orally for 15 days (38).

OCIMUM SANCTUM

Holi basil (*Ocimum sanctum*) popularly known in India as 'Tulsi' is worshipped every morning by most Hindus. It is perhaps the most sacred plant in India and is referred to in Ayurveda for its healing and life giving properties. There are different varieties of Tulsi that are often called Holy, but *Ocimum sanctum* is the true variety (39). Tulsi had been reported to possess immunostimulant activity. The aqueous suspension and methanolic extract of the leaves were reported to have immunoregulatory activity and it increases cell mediated immune response. The alleged antiasthmatic potential of *Ocimum sanctum* leaves was also evaluated in experimental models. The results suggested the possibility of usefulness of both the drugs in non-toxic doses, in the treatment of human bronchial asthma (40).

GUDUCHI

Tinospora cordifolia is known to be a rich source of trace elements (zinc and copper) which act as antioxidants and protects cells from the damaging effects of oxygen radicals generated during immune activation. Phenyl propane disaccharides (Cordifolioside A and B) have been identified as active principles for immunostimulant action of the herb. In another study a combination of Rasayana herbs including Guduchi and Ashwagandha have been shown to increase cellular and humoral components of immunity. Guduchi has been shown to enhance cellular and humoral immunity. Pippali has also been hypothesized to improve the immune status of patients. Pippali as a part of a polyherbal formulation has also been shown to have antistress and adaptogenic effects (12).

The classical Ayurveda describe many other Rasayana recipes and plant drugs which are not described here but rasayana is very useful in our daily routine life and there are lot of opportunities to work on it.

CLINICAL STUDIES

In a clinical study of three months duration guduchi (*Tinospora cordifolia*) and ashwagandha (*Withania somnifera*) were found as antioxidants. Guduchi was found to be a more effective natural antioxidant over others. Clinical studies using a formulation of the aqueous extract of one of the Rasayana, namely *Tinospora cordifolia*, in immunosuppressed patients is done. A 500 mg tablet was made and administered three times a day. And found benefits in obstructive jaundice, amelioration of side effects of chemotherapy and hastened recovery from tuberculosis (10).

CONCLUSION

Rasayana is not just a drug therapy but it is a specialized procedure practised in the form of rejuvenative recipes, dietary regimen, and special health promoting conduct and behavior. Scientific studies have proven the efficacious role of Rasayana remedies in the management of chronic life style related diseases and degenerative changes. It has been reported that the 'Rasayanas' are rejuvenators, nutritional supplements, possess strong antioxidant activity and antagonistic actions on the oxidative stressors. Rasayana is the preventive therapy described in Ayurveda which is helpful to maintain health, retard aging process and promote immune system to fight against infection. Rasayana is very helpful to maintain healthy body and mind in today's environmental condition and life style. It is required to give information to people and aware them for rasayana and its use and also there are lot of opportunities to work on it.

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