

## Understanding the Concepts Rasayana in Ayurveda Biology

**Venugopalan SN \* and Venkatasubramanian P**

Institute of Trans disciplinary Health Sciences and Technology, Trans Disciplinary University (TDU), India

**\*Corresponding author:** Venugopalan SN, Associate professor, Institute of

Transdisciplinary health science and Technology, 74/2, JB Kaval, Attur P.O, Yelahanka, Bangalore 560064, India, Tel: 9448024022; E-mail: venu.gopal@tdu.edu.in

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### Abstract

This article explains the fundamentals of Rasayana in the light of basic theories of Ayurveda with detailed discussions on many knowledge points which are sourced from classical texts written in Sanskrit centuries ago. This also explains the relationship of Rasayana with body, and natural process of ageing, fivefold category (*Rasa panchaka*) and its relations. While explaining the Rasayana action of a drug, the role and importance of metabolic factors and its different stages of absorption, its pathways and metabolic transformations, disequilibrium and the process of waste eliminations are linked appropriately. Anti ageing as one of the focal areas of Rasayana, the discussion on controlling the biological clock of ageing through Rasayana opens up new areas for research. It is also very important to study the concept of longevity, Immunity and Rasayana. Classification of Rasayana, importance of Code of conduct, Contraindications of Rasayana therapy, Potential Rasayana functions are discussed in detail.

**Keywords:** Rasayana; Charaka Samhita; Ageing; Digestion; Health

### Introduction

*Rasayana-tantra* represents the basic approach of Ayurveda which comprises preventive promotive and curative aspects of health and carries the most practical methods for management of health and disease through its measures as the *Rasayana-chikitsa* [1]. The classification to consider treatment for ageing (*Jara chikitsa*) as synonymous with *Rasayana-chikitsa* (*Rasayana treatment*) as one of the eight branches of Ayurveda is not only to specialize certain methods in any particular knowledge domain of the Ayurvedic system but as a process by which the body tissues attain its best capacity to perform their systemic activities [2]. The concept of *Rasayana-chikitsa* as a branch has its own importance not only in the old age but need to be commenced in the early

stage [3]. As one the eight branches of Ayurveda, *Rasayana-chikitsa* is applicable in all branches of Ayurveda irrespective of any particular domain of knowledge and it has great relevance as a procedure to attain and maintain good health.

### The Definition of Rasayana

That process that which facilitate optimum acquisition, assimilation and circulation of the essence of food or medicine is Rasayana [4]. *Rasa* means the essence of the end product of digestion and "*Ayanam*" means the opening, door or the process by which *Rasa* reaches the targeted body tissues. There are different meanings to the word *rasa* in Ayurveda. The term *Rasa* is also represent The first *dhathu* [mostly correlated to plasma or

lymphatic fluids or circulating fluids] , the term *rasa* is also known as taste in the context of materia medica, *rasa* represents sensory perception of taste] *rasa* is also known as mercury in *Rasasastra* which is alchemy. In *Rasayana chikita* the term represents the first tissue (*dhathu*) and the end product of digestion, the converted form of *ahara* (food) [3]. The life and integrity of Body tissues depend up on the quality and quantity of nutrition it receives through the process of Rasayana.

One of the classifications of *Oushadha* (Medicine) according Ayurveda is that bestows strength and vitality of body tissues if taken by a healthy person and second classification is that which cure diseases [4]. The first category is grouped under Rasayana and many Rasayanas are also recommended for achieving curative effects. This method of Rasayana treatment not only prologs the human life but also refreshes and invigorates or revitalize the body as a whole to make the body invulnerable to disease and decay.

### Benefits of Rasayana

The benefits of following Ayurvedic way of life is the benefits of Rasayana. By controlling the natural cause of health and disease one can maintain health. It is possible to change the course of disease whether it is natural or the self imbibed. The process, measure and procedures to keep healthy life and drive away diseases to keep longevity is the purpose of Ayurveda [5]. It is required special attention in the course of life to give more focus on controlling degeneration.

In the normal process of degeneration to prolong the longevity without disease is the intention and special measures for such purposes are taken into consideration in Rasayana-chikitsa. The function of body tissues or specific activities of internal organs are in stake in the old age or in a clinical situation when normal procedures are failed.

The benefits of *Rasayana* are Long life, excellent memory, brilliance, health and young age, radiating lustre, pleasing colour, commanding voice, great strength of body and sense organs, Influencing speech, reverential attitude and loveliness [6]. That process which facilitates optimum movement acquisition, assimilation and circulation of the essence of food or medicine to gain the above benefits is attained through *Rasayana chikitsa*. The benefits are focused attaining strength (*balya*), life giving (*Jivaniya*), bulk promoting (*Brmhaniya*) and stabilising the ageing process which is anti-ageing (*Vayahsthapana*) [7].

It may appear that the purpose of following Rasayana treatment is to attain immortality which is poetically

exaggerated benefits of Rasayana in the Charaka samhita. This is to keeps away old age (*Jara*); which cam annihilate weakness (*Daurbalya*); which can cure incurable diseases and thus it can even overcome death (*Mrtyu*) and helps a person to live long for more than hundred years. Thus the individual gets long life to attain salvation [8]. Rasayana treatment is also an answer to epidemics and acute onset of some diseases according to charaka [9].

### Body and Natural Process of Ageing

The word '*jara*' in Sanskrit is derived from "*jeeryateenaiti*" represents decay and deterioration of health. Similarly the popularly used word for human body in Sanskrit is "*sareera*" (according to *sabdasthoma mahanidhi*) which implicitly says that there is continuous cell death happening every second. The word "*Jara*" is the synonym of "*vardhakya*" which is old age. The objective of Rasayana chikitsa is to prolong the calibre of youth to maximum for which the measures needs to be commenced at an early stage, before the symptoms of ageing is reflected in everyday life. The methods of reversing the ageing process are the brilliant intellectual property of Ayurveda. The result has been experienced by many of masters (*achryas*) of Ayurveda and there are documented medical histories to open the innovative mind.

Senescence is defined as the natural process of aging. This may take place at two levels namely cellular level and organismal level. *The word "Senescence" is derived from the Latin word "senex" or "senescere" meaning "old man" or "old age."* Accordingly they are called Cellular Senescence and Organismal senescence according to Dr. Seetaram PL. This is a universal biological phenomenon especially among eukaryotes [eu-car-yotes] i.e. organisms with definite nucleus.

The average life span of organisms varies within and between the species. This indicates that the genetic and environmental factors play an important role in the process. Therefore ageing is characterized by decreased ability to combat stress, increased homeostatic imbalance and susceptibility to the disease carrying pathogens. All the factors individually or collectively cause aging and ultimately death.

The definition of health according to Ayurveda is comprehensive enough by taking into consideration of physical, mental and spiritual contentment [10]. The cause of any imbalance of health is either through a natural process (*svabhavaja*) or it may be due to transformation (*parinamaja*). The concept of anti-ageing (*Jaravyadhi haram*) of Ayurveda which target the prevention of early ageing process is that Rasayana

intends to provide in line with the natural ageing process of an individual. The factors of ageing according to Ayurveda can be grouped under natural and modified categories. Modified category includes that which speeds up the ageing process under the influence of *dosha* imbalances due to multiple cause including mental faculties under stress.

The old age is the end point of the life cycle of birth, growth and death, this transformation process which is naturally sequenced is embedded in the *prakriti* of a person. The control of natural changes happening in the body is not always possible by superficial manipulation but requires control over causative factors that which are responsible for transformation or changes. So the old age is also considered as a “disease” in Ayurveda like the natural urges appetite or thirst. The question is how to control over the natural changes happening in the body with respect to Ageing process.

The ageing process has its natural phenomena as in the case of disease pathogenesis and progression. The intervention is possible at different stages of a disease, the earlier the better for complete cure. This emphasis that the Rasayana measure needs to be practiced not at the retirement age but needs to be initiated from the beginning of middle age (30-60). While medical treatment is aimed toward away the disease the Rasayana treatment is aimed to guard the body against disease and rapid changes or cell death happening inside the body due to various reasons. This has a great role in preventive medicine or promotive health and specific role in selected curative approaches.

### **Rasa-dhathu (Tissue Regeneration and Development) and Rasayana**

In *Rasayana-chikita* the term represent the first *dhathu* (*tissue*) and the end product of digestion [11]. The correlation of Rasa to plasma or lymph fluid is not exact but the most nearest to communicate using the terms in modern physiology. Body or the body tissue of various systems is the sum of all “*dhathus*” which is derived from the Sanskrit word “*dhaaranaath-dhatahva*” that which upholds the body as a substratum. The ability to perform systemic functions are the result of healthy *dhathus*. If the *dhathus* become weak and unable to perform its function due to vitiation of imbalanced “*doshas*” continuously, it lead to disease and death. In old age, the *dhathus* naturally get weakened and degenerated. Rasa is the first *dhathu* formed after the metabolism of food. If this function is affected naturally the formation of Rasa gets affected and leads to a chain reaction of mal function of systemic failure. The prime function of Rasayana is to rectify this process and revitalize the *dhathus* via different

approaches. The metabolism of *dhathus* is very crucial in determining the quality and quantity of *Rasa dhathu*.

### **Role of Food, Digestive Factors (Agni) and Pathways (Srotas) in Rasayana Function**

The essence of food or medicine ingested is also known as *rasa*. This end product is responsible for formation of *Rasa-dhathu* [12]. The transformation of well-formed essence after digestion (*Ahara Rasa*) determines the successive formation of all seven *dhathus* in which the first formed *dhathus* is *Rasa dhathu*. In old age or in ageing process the control of formation of *Rasa dhathu* is lost and end result start with lose of sensory functions and related symptoms of malfunction of internal organs.

The structural deformities of the pathways which carry the *Rasa* into the *dhathus* are one of the cause of decay and dysfunction of *dhathus*. The importance of “*Srotas*” or channels micro pathways or systems as a whole, play a major role in this process. The specific varieties of the channels in the human body are the same in number as the structural entities in it [13]. The channels of circulation carry the *dhatus* undergoing transformation to their destination.

The possible blockages and immobility of channels cause functional delay and excessive or less diverted movement of nutritional fluids described in detail under the “*Srothas*” concept and its “*dusti*” or vitiation [13]. *Rasayana chikitsa* is incomplete and cannot give in good result if the *Srotas* are vitiated. The *ayana* (movement) of *Rasa* is main process behind any Rasayana function.

### **Pharmacological Profiles (Rasa panchaka) and Rasayana Relations**

*Rasa* or taste is known by its contact with tongue (*Rasyate aasvaadyate iti rasah*). *Rasa* Definition *Rasa* is the object of *rasanaa* (gustatory sense organ). Its material substances are *ap* and *pruthvi*. In manifestation and differentiation of *rasa*, the other three (*aakaashaa*, *vaayu*, *tejas*) are causative factors. (“*Rasanaartha rasastasya dravyam aapahkshit istatha. Nivruttou cha visheshe cha pratyayaahkha dayastrayah*”) The pharmacological action of any material drug or medicine is determined by *Rasa-panchakas*” ie *Rasa* (taste), *guna* (bio physical properties), *virya* (metabolic potency), *vipaka* (metabolic transformation), *prabhava* (distinct effect) [14]. The details of its physiological activity is understood and explained in relation with systemic functions and the *pancha-mahabhuta* theory as the foundation.

The origin of the *Rasas* are explained based on the basis of combination of the minutest perceivable parts of five elements such as *Akasa, Vayu, Agni, Jala and Prthvi* [15]. Based on this, there are six types of *Rasa*, namely, *madhura* (Sweet, generally understood as sweet like sugar, rice etc.), *amla* (Sour, generally understood as sour like tamarind, lemon juice etc.), *lavana* (Salty, generally understood as salt), *katu* (Pungent, generally understood as those which are spicy like chilli), *tikta* (Bitter, generally understood as bitter black tea with no sugar), and *kashaaya* (Astringent, generally understood as Astringent like betel nut).

Generally, the same sets of characters repeat with similar *Rasa* having certain action/s. By observing this, one can categorize these sets of characters experienced.

For example, burning sensation and secretion of saliva in mouth; irritation/pricking sensation on tongue; secretions from nose and eyes are the set of characters which are seen in foodstuffs like green chilli, red chilli, pepper etc. These enhance appetite, help in digestion of food, bring taste in mouth etc. So, such set of characters was categorized under one kind of *Rasa* namely "*katu*" (i.e. generally known as spicy).

The relationship of six tastes and systemic functions of *Vata Pitta* and *Kapha* are based on an arithmetic formula in combinations of one to many. The first three *rasas* such as *madhura, amala, lavana* decreases *vata*, tastes like *tikta, katu* and *kashya* decreases *kapha*, and the *kashaya, tikta* and *madhura* decreases *pitta*. The roles of tastes in systemic functions are explained in table 1 [16].

Dosha predominance	Priority of usage of Rasa In treatment	Priority of usage of Rasa in food Ma, La, Am, Kt, Ti, Ka [17]
Decreases Vata	Lavana(La) Amla(Am) Madhura(Ma)	Madhura(Ma), Lavana (La), Katu (Kt)
Decreases Pitta	Tikta(Ti) Madhura Kasaya(Ka)	Madhura
Decreases Kapha	Katu Tikta Kasaya	Lavana Katu Madhura

Table 1: Role of taste in systemic functions

As a general explanation in the context of food and medicine, it is ascertained that food is more for its *rasa* predominant activity and medicine is of more for its *Veerya*. Eventhough the fundamental substratum of action of a drug or medicine is its *pancha-mahabuta* composition which is inturn responsible for manifestation of *rasa-panchaka* in a material. There are 63 combinations of *rasa* in various combinations (*Rasa bheda-Amsaamsa-kalpana*) in *Susruta Samhita* uttarasthana.

### What Determines the Rasayana Effect of a Drug

Rasayana effects of various drugs and procedures followed are inturn related to the systemic functions of *tridoshas (Vata, Pitta Kapha)*. As a common rule all anabolic functions like tissue building up its normal functions that retained in the body for a long time with the functions of *Kapha*. All metabolic changes are due to effect of *pitta* and neurological functions and controlled by *Vata*. It can be observed that, majority of Rasayana drugs are neither increase or decrease the *dosha* but maintain a balanced state. Please refer Table 2 for Rasayana and its relationships with functional properties covered in Ayurveda.

Pancha Mahabhuta	Property level	Natural predominance	Taste / rasa	Dosha action of rasa	Dhathu action of rasa	Rasayana functions
PJ	<i>Sn, Si Gu</i>	<i>Hemanta</i> (Early Winter)	Madhura / sweet	-V, -VP	+ all dhathus	Increase all dhathus, Bulk promoting, Vitaliser, Tonic, Pleasing, brain tonic, anti-abortifcient, Good for heart, throat, skin, Hairs, Galactogogue, anti Poison.
PT	<i>Sn, Us,</i>	<i>Varsha</i> (Rainy)	Amla / sour	-V + KP	- sukra	<i>Pleasing, digestive, cordial,</i>

	<i>La</i>					
JT	<i>Sn</i> <i>Us</i> <i>Gu</i>	<i>Sharad</i> (Autumn)	Lavana / salty	-V + KP	- dhathus	<i>Appetiser, digestive, liquefies solid mass</i>
VA	<i>Ru</i> <i>Si</i> <i>La</i>	<i>Shishira</i> (Late Winter)	Tikta/ bitter	+ V -KP	-medas -Majja - sukra	<i>Purifies blood, , anti-inflammatory agent,</i>
VT	<i>Ru</i> <i>Us</i> <i>La</i>	<i>Greeshma</i> (Summer)	Katu/ pungent	+ VP - K	-dhathu	<i>Nervous stimulant, Appetiser and digestive</i>
VP	<i>Ru</i> <i>Si</i> <i>Gu</i>	<i>Vasanta</i> (Spring)	Kasaya/ astringent	+V -KP	-sukra	<i>Healing, waste absorbent, , beneficial for skin,</i>

Table 2: Rasayana and its relationships with functional properties covered in Ayurveda.

The manifestation of these characters in any plant/plant parts etc., depends on the nature of seed, soil type, atmospheric conditions. The properties of seeds in a plant can be influenced by various factors like adaptation, changes in atmospheric conditions etc. The changes in atmospheric conditions are seen regular intervals during six types of seasons in India. These changes in turn influence the soil, plants, animals in different intensity. Therefore one could also perceive mainly six sets of characters based on taste.

How the *dosha* vitiations happens through food or medicine is described based on the homologous theory which explains that the increase of the quantity and quality of a some matter is possible by addition of a similar kind of matter for example, increase of the properties of *vata* in the body is due the same properties of *vata* present in food or medicine consumed [16].

In the procedure of treatment which is aimed to increase or decrease *dosha* this adjustment or balancing measures are adopted. The balancing theory of *tridosha* concept admit increase of the decreased *dosha*, decrease of the increased *dosha* and maintenance of the balanced doshas ("*ksinavardhayitavya, vrdhaksapayitavya, samapalayitavya*") is the central point of maintaining health and management of ailments. The influence of *Rasa panchakas* of drug or food directly or indirectly influences the above mentioned balancing theory.

The activity of these five pharmacological profile of a substance is also referenced in the context of Rasayana. Interestingly the reference from Susruta as *dalhana* its commentator explains that not only Rasa is responsible for its Rasayana action but selective movement of other properties like *guna, verya, vipaka* and *prabava* are also determine the efficacy of Rasayana [18].

Based on this, it can be inferred that the determining factor to call a drug as Rasayana is not only based on any specific activity like to promote intelligence or body mass or beauty but what make it qualifies is its efficacy to result *Dhathuposhana* (nutrition) in suggested conditions. After creating a favorable conditions in the internal cellular or systemic environment, administer a drug or medicine in controlled manner to revitalize the functionality of the body as a whole. When the *srotas* are clear and ready to absorb the potency of a drug its performance will be more visible and long lasting. The influencing factors are many, it is not only the *Rogaharatva* or *karma* of a particular drug but the way how a drug is used is also determines the Rasayana effect.

A close analysis of plants used as Rasayana can reveal many commonalities in the properties of plants. The direct recommendations (Rasayana itself) from classical text or *nighantus* (lexicons) and potential indications (*balya* etc) needs to be studied in the light of the property matrix which qualifies a drug as Rasayana. In majority of the cases, formulations containing few drugs are recommended with method of preparations, how to use it and what are the adjuncts required. The time period and time of intake are also very much important. Traditional quality standards are more relevant and needs to be taken care of starting from the collection of raw drugs used for formulations.

### Agni as a Mediator for Rasayana Effect

The word "Agni" literally (*nyaya bodhini vyakhya of tarkka sangraha*) represents the fire. The mechanism of transformation or change of a substance is due to the influence of Agni. The ageing process itself is because of Agni. The influence of sunlight, wind, any kind of external stress can lead to transformation which results from gross level to subtle. The Agni is equal to pitta because of its similarity in action [19].

**The digestive fire or Jataragni:** The term “*jatara-agni*” represents the digestive fire. It is also known as “*kaya-agni*”, *kaya* means body and the bodily fire that which keeps body temperature intact. In the digestive process the quality and quantity of “*Ahara rasa*” (which is the first transform product in the digestive process) generated and circulated to internal organs determines the efficacy of Rasayana.

When digestive power is in its optimum, whatever ingested will get converted into byproducts and energy, if the digestive power is less it will result in indigestion and disease. Ayurveda says the root causes of all metabolic diseases are due to improper Agni. Based on the intensity of *Agni*, it is divided into four, *Manda*, *Visama*, *Teksna* and *Sama* [20]. *Manda-agni* is a state when *agni* is very slow and *teksna-agni* when it is in high. *Vishama-agni* is because it is fluctuating nature, sometime it is less or sometime it is high. These characters of *agni* directly affect the quality and quantity of *Ahara rasa* in the digestive process. In the definition of health according to Ayurveda, “*Samaagni*” is given as a state when the function of Agni is in equilibrium. Less or excessive agni is prone to attract disequilibrium and ill health.

The potential karmas, actions related to “*Agni dipana*” instigating the digestive fire and “*Pachana*” process of digestion are two sides of Agni. So Agni plays a major role in success of any Rasayana effect. The various stage of digestion like “*Avasthapaka*” the primary phase of digestion and *nistapaka* or *vipaka* which is post digestive effect finally denotes the end result of digestive process at the level of *Jataragni*.

Different stages of digestion are described in table 3. In the early stage of digestion all the six tastes present in the food gets converted into to *Madhura* and gives rise to the frothy stage of *Kapha* or *kapha* with frothy nature. Similarly in the second stage *pitta*, *Vata* in the third stage [21]. The nature of *ahara rasa* or nature of *Rasa dhathu* produced after the digestion undergoes various transformations.

First stage	Second stage	Third stage
Consumed material get converted into a stage of madhura predominance	Gets converted into amla stage	Dries and moves further become katu predominant
Formation of frothy stage of kapha	Induces production and release of pitta	Formation of gross form of vata

Table 3: Different stages of digestion

**Tissue & Cellular metabolism or Dhatvagni:** The process of digestion, a secondary stage is referred towards focusing of cellular development specific to various systemic functions. The Agni responsible for formation of seven *dhathu* are termed as “*dhatvagni*”. The increased or decreased state of Agni present in each *Dhatu* takes part in the cellular metabolism. This is interlinked with the *Jatara-agni*, if the *jatara-agni* is low the formation or functions of *dhatvagni* will also get affected.

**Elemental transformation as Bhutagni:** The most subtle form of energized particles inside a cell may be correlated to *bhutagni*. The transformation of five elemental level state of *Ahara rasa* is probably commence just after intake and continue upto to the end result of the metabolic process. The sensory receptors or modified state of sensory perceptions are achieved due to controlled functions of *Bhutagni* [22]. The state of potential energy embedded in any material can also be termed as *Bhutagni* of that substance. The Agni present in 5 basic elements digests the corresponding fundamental composition of the food ingested. Immediately after intake of food, *bhutagni* act as a potent catalyse for the whole digestive process [21].

### Tissue & Cellular Metabolism (*Dhathu-paaka*) and Rasayana

Tissue metabolism or *Dhathupaka* and Rasayana are directly linked. Rasayana effect is achieved only through *Dhathupaka*. The essence of digestion, the *ahara rasa* transformed into *Rasa dhathu*. The transportation of *Ahara rasa* into *hrdaya*/ heart and circulation of the same into various tissues continuously is the key to further transformation of *dhathu* [23]. The explanation of this process is given in detail based on 3 three logical reasonings.

**Ksiradhadhi-nyaya:** The logic of milk-ghee transformation.

Similar to the process of continuous transformation of milk to curd, curd to butter and butter to ghee, the *Rasa dhathu* (lymph) gets converted into blood (*Raktha*), Blood (*Rakta*) to muscular tissues (*mamsa*) and so on until seventh *dhathu* and *ojas* is formed.

**Khalekapota-nyaya:** The logic of corn and pigeon.

The essence of *Aharasa*, when it travels through different channels of *dhathu* (*dhathumarga*), it nourishes the corresponding *rasa* [24]. The portion of *rasa dhathu* responsible for nourishment of *Rasa*, develops the *Rasa dhathu* (lymph); The component of *rasa dhathu* responsible for development of *Rakta* (blood) develop *Rakta-dhathu* when it travels through *Raktavaha srotas*.

This happens like pigeons (kapota) picks its required food from the heap of corn (khala) and goes back to its nest. Anna rasa is the heap of corn from which Dhathus pick up its required nutrients.

**Kedaarakula-nyaya:** The logic of paddy irrigation.

Similar to the irrigation of paddy fields, a common path ways get divided into many small channels to different parallel fields, thus water is served to all from a common place. Ahara rasa being the common source of Rasa dhathu which gets supplied to all dhathus, through Rasayana is get transformed into its own components.

In the process of transformation of dhathus the stage of formation of essence (*prasada* and *kitta*) macro essence/*sthula saara* and micro essence (*sookma saara*) (essence in minute particles) and waste which is *kitta/mala* is formed [25]. The essential waste produced at different stages of *dhathu paaka* is mentioned and plays a major role in maintaining the equilibrium [25]. Please refer table 4 on *dathus* and corresponding waste products.

Body tissues (Dhatu)	Mala (essential by-products)
Rasa	Kapha
Rakta	Pitta
Mamsa	Waste deposite in external opening like ear wax (Kha mala)
Meda	Sweat (Sweda)
Asti	Nails (Nakha), Hair (roma)
Majja	Lacrimal secretions (Aksisneha), sebaceous glad secretions (tvaksneha), purisasneha
Sukra	Oja

Table 4: Dathus and corresponding waste products

Even though the concept of *Oja* is not fully understood, Its classifications, properties are discussed in Ayurveda, it is the end product of all tissue & cellular metabolism and is responsible for sustaining life. Diminishing rate of *Ojas* is symptom of impending death.

### The Process of Waste Eliminations for better Rasayana Effect

The word "*Mala*" is derived from "*malineekarannath mala*" which means, it constitutes waste materials which needs to be eliminated through various channels of the body at the last stage of metabolism. If the accumulation of waste products happens diseases are developed. The gross forms of waste products are urine, faeces and sweat. The subtle waste constituents are exudates or secretion from epithelial lining of eyes, nose and mouth. At various

stages of digestion like in that of *Avasthapaka*, waste products are formed and get divided.

"*Aama*" plays a major role in understanding Rasayana concepts. *Aama* is the toxins resulting from improper digestion of food or waste accumulation in the body [26]. *Aama* needs to be eliminated from the body or it should get disintegrated by means of drugs or through purificatory measures (*sodhana*) or palliative (*samana*) *chikitsa*. The Rasayana therapy is advised only after removing the accumulation of *Malas* from the body. The example given by Charaka at this context is like a guide line exposing the importance of waste elimination to achieve rasayana effect [27]. A dirty cloth cannot absorb any new colours unless the dirt is removed. Maximum benefit of Rasayana is achieved when the toxins are removed from the body.

The concept of "*Sama mala*" balanced state of waste elimination gives another dimension for healthy living. The process of waste elimination includes generation of waste, accumulation and elimination. If the amount of waste produced is high and the process of elimination is slow, it will result in imbalance. Similarly the waste elimination is rapid and formation of waste constituents is slow which can also result in more stress and over activity of related organs. The balance is very much essential in keeping the body fit. The process of waste elimination plays a major role in making the body more sensitive and receptive to assimilate the Rasayana effect of a given medicine.

### Anti-ageing: (Vayasthapana): Controlling the biological clock of ageing through Rasayana

The calendar of events in nature an year is represented in different seasons. The effect of time and influence of Sun in greatly influenced in all living organism. The effect of seasonal changes in human body is well understood in Ayurveda. One cannot escape from the influence of time and seasons [28].

**Influence of seasons:** Seasonal influences of dosha are explained on the basis of accumulation, vitiation and subsiding of vitiation. Vitiation of kapha is more experienced in *Vasanta* (spring) (March 15 to April, upto May 15<sup>th</sup> approx) because the environment is saturated with cold and dampness is high. Vitiation of pitta is highest in the *Sarat* (Autumn) because the accumulated pitta in the rainy season. Vata is highest in the *Varsa* (Monsoon) (july 15<sup>th</sup> to August upto September 15, approx), because the environment is cold and body is weak [29].

It is recommended to purify the body by purificatory measures like *pancha karma* at the end of seasons esp when they are Vitiated [30]. This will help to prevent

seasonal disorders and increase strength and immunity of a person.

**Influence of day:** Kapha is predominant in the morning, Pitta is more active at noon and Vata predominates at the evening.

**Influence of night:** Kapha is predominant in the first part of night, Pitta is more active at midnight and Vata predominates in last part of night before sunrise.

**Influence of digestion:** Kapha is predominant just immediately after food intake, Pitta is more after 1-3 hrs of eating and Vata predominates at the end of digestion.

**Influence of Age:** Predominance of *Kapha* is evident in the child hood (1-16 age early child hood) and 16-30 youth stage. Pitta predominant in middle age (31-60) and predominance of Vata is experienced (60-100) in Old age. General guidelines given for commencing Rasayana Rasayana usage is recommended as “*poorve vasyayi madhe va*” denotes it should be started during the youth or in the middle age. This recommendation is aimed to give sufficient control over Pitta which is the substratum for transformation and changes happening in the body.

The two types of Rasayana category according to place is 1) *vata-atapika* and 2) *Kutipravesika*. In the *vata-atapika* type the person is free to perform his daily activities without much restriction. Exposure to Vata (wind, open air) and atapa (heat, Sunlight) is allowed. This is aimed for a general purpose and can be followed daily. In case of *Kuti-prakesika* (stay in three walled hut) the person undergoing Rasayana treatment is not allowed to come in contact with sunlight, heat wind of any kind. Any external factors influencing the transformation of change of biological clock is controlled by these strict measures. In this controlled environment, Rasayana effect can bring out tremendous result by regenerating body tissues and slow down the rapid process of decay.

### Longevity or Extended Life Span (*Ayusya*)

The Physical characters of body organs like that of skin, eyes, nose, lips mouth, nails, fingers etc have a specific visible appearance in a healthy body. The appearance of forehead, back, movement of bone, muscular structure and compactness of body organs which possess good strength also represent longevity of a person [31]. Capacity to with stand hunger and climatic changes and good digestive power shows that longevity of a person is very high and one can defend them from diseases. These symptoms of longevity are more or less similar to that of a *Kapha prakriti* person. It is also mentioned that life span of *kapha prakriti* people are more when compared to that of *pittha* and *Vata prakriti*. The word “*Ayusya*” can be correlated to Longevity in general. Examination of sense organs and faculty of mind and features of presenting

complaints of a disease etc can help determining the life span or longevity of an Individual. There are such 47 factors described by Charaka [32].

### Immunity (*Vyadhiksmatva*) and Rasayana

The word “*vyadhi-ksamatva*” is often correlated to immunity. Vyadhi means disease and ksamatva means capacity to defend. The quality of the dhathu’s determine the intensity of vyadhi-ksamatva. If the dhathus are weak the ability to withstand or defend against diseases will be low and the person will be easily prone to diseases. Once the disease has developed and the immunity is low the intensity of the disease will be high and it becomes difficult to cure within an expected time. It is mentioned that the *vata prakriti* people are easily prone to diseases.

### The Concept of Strength (*Bala*)

The word “*bala*” is equal to strength. This can be of two types the physical strength and the strength of the body to defend against diseases. The optimum strength of dhathus determine the Bala of a person. There are three types of *Bala* [33]. The natural strength by birth is known as *sahaja-bala*, and the strength of a person according to the influence of season, age time etc are referred as *Kalaja-bala*. The third classification of bala is known as “*Yuktikrta-bala*” the strength that is achieved through logical selection of appropriate food, sleep and control of sexual urges and use of Rasayana.

### The Concept of OJAS

The OJAS is responsible for the vital energy or the radiant energy formed out of the successive formation of all the dhathus. The quality and quantity of eight drops (*asta-bindu*) and types of ojas is mentioned as *para ojas* and *apara ojas*. The physical strength, mental vibrations and immunity is depending upon the OJAS [34]. However, a satisfactory explanation to understand OJAS as the vital energy responsible for immunity is to be studied in detail.

### Classification of Rasayana

The objective of classification of Rasayana is to achieve preventive, promotive and curative aspects of health [18]. The classification is based on method, purpose and place which the Rasayana therapy is carried out.

#### Place

***Vata-atapika*;** use of Rasayana procedures with less control i.e., the person need not restrain from the daily activities. Exposure to outside environment is allowed and followed by any person. For example “*Chyavanapraasa*” is used as a Rasayana for children or



adult daily once or twice to enhance general immunity and strength.

**Kutipravesika:** Three segmented room (*trigarbah-kuti*) is the place where three walled hut is made specifically for this purpose without influence of heat and light and in a closed and conditioned dark room. Comparatively highly effective rasayana method and difficult perform without supervision of experienced physicians.

### Purpose

**Kamya:** To achieve desired specific purpose, more towards to improving longevity (*ayusya*) or to slow down the ageing process (*vayasthapana*), increase brain function (*medhya*), to improve the function of body tissues (*dhathus* and its channels), improving sensory functions. This is more towards promotive aspect of health.

**Ajasrika:** Daily use of milk, ghee or any potential medicines to keep the person health to defend against various ailments and also to improve his general strength.

**Naimittika:** Treatment of ailments using specific formulation for specific diseases. This is the curative aspect of Rasayanachikitsa. For example use of

*Agastyarasayana* in chronic respiratory disorders is a *Naimittika* type of Rasayana.

### Method

Various procedures are followed for Rasayana therapy. The drug selection, preparation of the formulation, dosage and vehicle or adjuvants used for every treatment is different.

Vardhamanaprayoga or the incremental increase of dosage of rasayana drug or formulation until it reaches to a saturation point and withdrawing the dosage in the reverse sequence is one of the main procedure [35]. The dosage per day gets increased differently according to the *prakriti* of a person.

**Code of conduct as Rasayana (Achararasayana):** This is another important type of Rasayana category in relation with Good conduct. The ethics mentioned in this can be classified into three major categories. A). Which is of more on physical discipline B) Social and mental discipline and C). Spiritual discipline. This is also known as Daily rasayana (*nitya rasayana*) which needs to be followed regularly. Please refer Table 5 for do's and don'ts when Rasayana procedures are followed [36].

Physical conduct	Social and mental conduct	Spiritual conduct
<ul style="list-style-type: none"> <li>• Avoid alcohol</li> <li>• Avoid sexual indulgence</li> <li>• Avoid violence</li> <li>• Avoid over exercise</li> <li>• Go to sleep and awake at regular time.</li> <li>• Keep healthy sense organs.</li> <li>• Daily intake of ghee and milk</li> </ul>	<ul style="list-style-type: none"> <li>• Be truthful</li> <li>• Avoid anger</li> <li>• Keep peaceful mind</li> <li>• Talk with pleasing words / speech</li> <li>• Keep stable and steady mind.</li> <li>• Be compassionate</li> <li>• Be merciful</li> <li>• Think positively with logical reasoning</li> <li>• Avoid ego</li> <li>• Behave yourself</li> <li>• Destroy narrow mindedness</li> <li>• Give respect to others especially elders.</li> </ul>	<ul style="list-style-type: none"> <li>• practice Japa/ chanting</li> <li>• practice Tapa/ meditation</li> <li>• follow cleanliness</li> <li>• do charity</li> <li>• do prayers</li> <li>• Respect and worship fellow beings, animals</li> <li>Follow spiritual life</li> </ul>

Table 5: Do's and don'ts when Rasayana procedures are followed.

A person who follows the above code of conduct daily gets benefitted with Rasayana. This aspect need more study which is something similar to that of control of stress level in an organism in ageing process. Role of a balanced social life has lot to do with keeping the person healthy.

**Contraindications of Rasayana therapy:** Eligibility for undergoing Rasayana-chikitsa is important with respect to ones physical mental and spiritual condition. There are

seven major unfit persons for Rasayana treatment as an example to show the intricacy of the subject. 1). Who cannot control their mental faculties 2). Who are lazy 3). Who are poor 4). Who are unwise 5). Who are under the grip of Lust, anger, desire, pessimistic and halucinative moods 6) who indulge in sinful act 7).Who does not believe in the treatment [37].

Other than these social and personal factors of a person mentioned by Susruta the various measures of do's and

dents given by Charaka are needs to be understood before commencing the Rasayana treatment. These restrictions are more important when the restricted method in a closed three segmented room (*kutipravesika rasayana*) method is followed.

**Potential Rasayana karmas/action:** As discussed earlier regarding various type and classification of Rasayana, the benefits achieved through the Rasayana procedure are because of sum total many actions at different dhathu levels inside the body. This can be called as potential Rasayana karmas.

Please refer table 6 on Potential Rasayana actions. The potential functions can be classified under Nitya (daily) Kamyā (desired effect, local), Naimittika (curative effect) and can be grouped under Organ specific, tissue specific and influencing body as a whole.

Potential Rasayana Action	Brief Meaning
<i>Aamahara</i>	Anti oxidants
<i>Agni krt</i>	Provides metabolic functions
<i>Balya</i>	Increase body strength/tonic.
<i>Brimhan`a</i>	Increases body weight/bulk promoting.
<i>Chakshushya</i>	Beneficial for eyes/ promoting vision.
<i>DantyaDaard`hyakara</i>	Beneficial for hardening of teeth.
<i>Deepana</i>	Inducing the appetite
<i>GarbhaVridhdikara</i>	Supporting foetal growth
<i>Garbhakara</i>	Resulting fertility
<i>Garbha-sthaapaka</i>	Resulting stabilisation of foetus against abortion
<i>Hridya</i>	Beneficial for heart, cordial
<i>Jeevana</i>	Life giving,
<i>Kan`t`hya</i>	Beneficial for throat, sound
<i>Kes`haranjana</i>	Beneficial for maintaining hair color
<i>Kes`hya</i>	Beneficial for hair growth
<i>Medhya</i>	Promotes retentive intelligence
<i>Paachana</i>	Promotes digestion
<i>Pusht`ikrit</i>	Nourishing
<i>S`hon`itaasthaapana</i>	Resulting stabilisation of blood formation and retention against bleeding. Haemostatic
<i>S`hrama-hara</i>	Stress relieving
<i>S`hukraJanana</i>	Promotes semen, reproductive tissues

<i>SabnijaPrabodhana</i>	Induce recovery from sensory malfunction?, recovery of consciousness
<i>SabnijaSthaapana</i>	Retention of consciousness
<i>Santarpan`a</i>	Bulk promoting similar to brmhana
<i>StanyaJanana</i>	Promotes formation of breast milk, galactogogue
<i>Tarpan`a</i>	Refreshing,
<i>Tvachya</i>	Beneficial for skin
<i>Varn`ya</i>	Beneficial for skin colour
<i>Vayasthaapana</i>	Regulating ageing process, anti ageing
<i>Vyadhiksamatva</i>	Build immunity
<i>Vishaghna</i>	Antipoisonous

Table 6: Potential Rasayana actions

## Conclusion

The cause of an effect ("*Karaya-karana vivecana*") of Rasayana is inferred through its effect. While the benefits of Rasayana are Long life, excellent memory, brilliance, health and young age, radiating lustre, pleasing colour, commanding voice, great strength of body and sense organs, Influencing speech, reverential attitude and loveliness [38]. How this is achieved and how this can be explained under the *tridosha* theory is a challenge. There are many explanations to support various expert views.

The concept of *srotas* and *dhathus* play the major role in Rasayana effect. Similarly the *Agni* and the metabolic state of body tissues. The role of Mala formation and elimination of waste components from the body is of high importance in making the body eligible for receiving Rasayana effect. The central focus of Rasayana function is based on three major points discussed in this study 1) Cleaning the innumerable pathways in the body (*sroto sodhana*), 2). Enhancing the metabolic factors (*Agni dipana*) and tissue nourishment (*dhathu posana*) [39].

The reason for different methods followed and need for strong dosage controle, incremental increase and decrease of dosage forms, role of *prakriti* of a person and age when Rasayana therapy should be started etc needs more understanding [40,41]. A replicable model needs to be designed and tested under various conditioned circumstances.

The least explored categories like that of restricted stay in three layers room (*kutipravesika*) and role of code of conduct (*Achara rasayna*) etc needs more attention.

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