



Review Article

CLINICAL SIGNIFICANCE OF RASAYANA THERAPY IN MANAGEMENT OF CANCER

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ABSTRACT

Cancer has faced medical experts with challenges due to its dreadfulness and the harmful consequences of existing therapies. It is the second most common non-communicable illness after ischemic heart disease. Extensive research has resulted in several innovative healing modalities and hundreds of cancer treatments. Surgical excision is the most established and well-tested therapy option. Radiation treatment is successful in managing a wide range of malignant tumours and is used to treat around half of all cancer patients. Cancer is the most prevalent cause of mortality globally. It has resulted in around 10 million fatalities by 2020, accounting for nearly one in every six deaths. Breast, lung, colon, and rectum prostate cancers are the most prevalent. Various studies have demonstrated that, despite advancements in cancer therapies, there remain various unmet requirements of cancer patients that vary depending on the stage and kind of disease. Unmet requirements in cancer patients have been linked to increased symptom discomfort, anxiety and a lower quality of life. Several research studies have revealed that cancer patients seek out complementary and alternative medicines (CAM) to address these unmet needs. In India, Ayurveda is the most often utilised alternative therapy that patients employ. Our previous research papers. Several case studies have demonstrated that the *Rashadis*-based *Rasayana* therapy procedure has a high potential for enhancing therapeutic outcomes in cancer patients. In this article, we discussed the therapeutic use of *Rasayana* treatment cancer. *Rasayana* helps in the replenishment and enhancement of *Dhatu*s and *Ojas*. *Rasayana* therapy's primary advantages are *Deerghayu*, *Smriti*, *Medha*, *Arogyam*, *Tarunam Vaya*, *Prabha*, *Varna*, *Swararodarya*, *Indriya Balam*, *Vaksidhi*, *Pranati*, and *Kanti*.

INTRODUCTION

Various studies have demonstrated that, despite advancements in cancer therapies, there remain various unmet requirements of cancer patients that depending on the stage and kind of disease. Unmet requirements in cancer patients have been linked to increased symptom discomfort, anxiety and a lower quality of life. Several research studies have revealed that cancer patients seek out complementary and alternative medicines (CAM) to address these unmet

needs. According to the Ayurvedic system of medicine, the body is composed of *Tridosha*, known as *Vata*, *Pitta* and *Kapha*, the psychophysiological principles that regulate various functions in the body.^[1] *Vata* governs functions associated with the movement and communication. *Pitta* governs functions associated with metabolism, digestion, and transformation. *Kapha* governs the structure and cohesion of the body. For optimal functioning of the body the 3 *Doshas* need to be in a state of equilibrium with each other and its alterations affect the normal functions and health of the individual. The balance in *Tridosha* is highly sensitive and is susceptible to variation because of age, environmental changes (diurnal, nocturnal, and seasonal modifications) and altered lifestyle (changes in food habits, physical activity).^[2]

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Cancer chemotherapy includes the use of cytotoxic medicines and hormones. Clinically relevant anti-neoplastic drugs are more toxic to sensitive malignant cells than to normal host cells. Acute radiation mostly affects cell renewal tissues such as the skin, oropharynx, mucosa, small intestine, rectum, bladder and vaginal mucosa. These cell renewal tissues are actively multiplying. Some sources believe that the anorexia-cachexia syndrome is the leading cause of mortality in cancer patients.^[3]

Ayurveda is frequently referred to as 'Ashtanga Ayurveda' since it is divided into eight sections. *Rasayana Prakarana* belongs to this group.^[4] *Rasayana* improves the body's metabolic functions by acting at the cellular level. The major goals of *Rasayana* Therapy are the preservation and promotion of healthy individuals' health, the maintenance of *Dhatu* homeostasis, illness management, the prevention of premature ageing and the provision of lifespan, the enhancement of immunity, and the invigoration of the system.^[5]

Rasayana means Rejuvenation, Healing and Regeneration

Rasa + Ayana equals *Rasayana*

It basically refers to nourishment at the microcellular level.

Rasayana helps in the replenishment and enhancement of *Dhatu*s and *Ojas*. *Rasayana* therapy's primary advantages are *Deerghayu*, *Smriti*, *Medha*, *Arogyam*, *Tarunam Vaya*, *Prabha*, *Varna*, *Swararodarya*, *Indriya Balam*, *Vaksidhi*, *Pranati*, and *Kanti*.^[6]

Purpose of Rasayana

Rasayana should primarily be used for three purposes:

1. Maintenance of health
2. Prevention of illnesses and old age
3. Avoidance of disease recurrence

Mode of Action of Rasayana Dravyas

The most likely mechanisms of *Rasayana Dravyas* that may be interpreted with current features include antioxidant activity, immune-modulatory action, hemopoetic impact, adaptogenic action, anti-ageing action, anabolic action, nutritional property and neuroprotective action. As a result of *Ojas Vardhan*, the patient's immunity and balance are improved. *Rasayana Dravya* has a good impact on vitiated *Doshas*, which are primarily responsible for tissue damage. The majority of the medicines in this formulation contained *Madhur Rasa*, *Sheeta Veerya*, and *Madhur Vipaka*. *Rasayana* has the following cumulative properties. *Madhura Rasa*, *Snigdha* property, *Madhura Vipaka*, *Sheeta* potency and *Vata-Pitta shamaka doshghnata*. All of them are beneficial in replenishing the depleted *Kapha Dosh*, contributing to increased body weight

and filling the cellular substance with more *Dhatu Poshaka Dravya*, that is *Poorana Karma*, via *Dhatwagni's* function. *Kapha's* biological role supports healing and tissue formation. These also calm the vitiated, which plays a significant part in the onset of negative consequences.

Rasayana Treatment in Cancer Management

A clinical application the primary pathophysiology of cancer is disturbance of the cell cycle, known as *Vaishyamy* in Ayurvedic nomenclature. Ayurveda *Shamana* treatment's basic principle is to restore harmony and dynamic equilibrium to any body's dysregulated systems. *Rasayana chikitsa* operates on this basis and aids in the establishment of cell cycle harmony. *Ras* treatment also seeks to qualitatively enhance normal cell function and prevent them against mutation, which can cause cell cycle dysregulation (*Vaishayamy*). It also enhances the body's healthy cells, lowering the possibilities of metastasis. *Rasayana* formulations have been shown to increase quality of life and this impact of *Rasayana* is critical in cancer care. *Rasayana* also enhances pers survivability, which is beneficial. The concepts of ageing and *Rasayana* therapy appear to be comparable in *Dhatu Siddhanta* and stem cell theory. Prasad BS is the first to establish the idea of *Rasayana* with relation to *Dhatu* and stem cells in Ayurveda.^[7]

Rasayana Chikitsa plays an important part in the management of *Avarana*. *Rasayana* medications are often used to increase health and lifespan by balancing *Tridosha*, *Saptadhatu*, and *Trimala*. *Rasayana Chikitsa* of Ayurveda has been popular since antiquity. *Rasayana* medications' unique activities in the *Poshaka Rasa* (nutrient supplement), *Agni* (metabolic appreciation) and *Srotas* levels (tissue nutrition) are highly accepted.^[8]

A large range of *Rasayana* medicines have demonstrated immunomodulatory effects in response to defence mechanisms.^[9] *Rasayana* medicines have also demonstrated tissue and disease-specific immunomodulatory action.^[10] These *Rasayana* medicines not only boost immunity, but they also have anti-stress, inotropic, and antioxidant properties that aid in patient quality-of-life (QOL) enhancement. As a result, improved or adequate care/nourishment of body tissue may improve QOL. *Rasayana* medications may be used as an adjuvant in individuals undergoing stem cell treatment. Recent research has also indicated that Ayurvedic *Rasayana Ashwagandha* and *Shilajeet* treatment can regulate a patient's immunological profile.^[11] *Rasayana* medications may be useful in developing a microenvironment (niche) in which a cell or tissue may flourish. The stem cell niche idea was initially proposed in 1978.^[12]

Some Examples of Rasayana Therapy**Amalaki (*Emblica officinalis*)**

Emblica officinalis fruits contain antioxidant and antiemetic effects. The effectiveness of *Emblica officinalis* in alleviating dyspeptic symptoms and facilitating ulcer healing is widely documented.^[13] The anabolic action of *Amalaki (Emblica officinalis)* raises the positive nitrogen balance and the total protein level leads to a rise in body weight.

Ashwagandha (*Withania somnifera*)

Ashwagandha (Withania somnifera) contains adaptogenic, immune-stimulating, and anti-mutagenic characteristics, indicating that it has tremendous promise for cancer therapy.^[14]

Yashtimadhu (*Glycyrrhiza glabra*)

Sodium glycyrrhizate, found in *Yashtimadhu*, has anti-ulcer action and promotes skin regeneration (USSR 1991). *Yashtimadhu* includes carbenaxolone, which is produced from glycyrrhizic acid. It has been observed that carbenaxolone can promote mucus secretion, which can prevent vagus irritation in the gastrointestinal tract and expedite the antiemetic action. Psychogenic stress stimulates the vagus nerve, causing nausea and vomiting. *Yashtimadhu's* anticholinergic action alleviates stomach discomfort. When administered intraperitoneally before a whole-body exposure to 11 greys of Co-60, the hydro-alcoholic extract of *Ocimum sanctum* produces a radioprotective effect, as well as a chemoprotective impact.^[15]

Ksheera Grita Rasayanam^[16]

Ghrita and *Ksheera* are referred to as *Ajasrika Rasayana*. *Ajasrika Rasayana* is one of the *Rasayana* classes that, when administered consistently, nourish the *Rasa-raktadi dhatus*, which in turn improves *Ojas*. *Goksheera*

Goksheera possesses the traits of *Madhura rasa*, *Sheetavirya*, *Mridu*, *Snigdha*, *Bahala*, *Shlakshana*, *Guru*, *Manda* and *Prasanna*. These 10 characteristics are similar to *Ojas*. Acharya Charaka stated that "*Sarvada Sarva Bhavanam Samanyam Vriddhikaranam*"^[17] implies that by ingesting any *Dravyas* with identical attributes in terms of *Dravya*, *Guna* and *Karma* are constantly raised or strengthened. Acharya Sushruta stated the usage of "*Swayonidravaya Prayoga*" in *Dhatu Kshayaavastha*, which indicates that any material with comparable attributes to *Dhatu* will augment that *Dhatu* by drinking *Dravyas* with similar qualities. According to Acharya Sushruta, *Goksheera* is *Alpabhisyanthi*^[18], however according to Acharya Charaka, *Goksheera* is *Jeevaniya* and does *Ojovardhana* and *Rasayana* deeds. Because *Ksheera's* attributes are similar to those of *Ojas*, it is accountable for *Ojovardhana*. As a result, it boosts an individual's *Bala*

and *Vyadhikshamatva* and aids in the attainment of longevity.

Ghrita

Ghrita (ghee) possesses *Madhura Rasa* (sweet taste), *Sheet Veerya* (potency), *Vatapitta Shamaka* and *Kapha Vardhaka* qualities, as well as *Vayah Sthapana* and *Vishahara* activities. All of these play an important part in reestablishing homeostasis balance and repairing the physiological process (*Dhatuvyapar*).^[19] *Ghrita*-carrying essential fatty acids enter any normal cell. Following that, beta-oxidation occurs, and the medication is delivered to the target area. Their importance as prostaglandin precursors has also been shown. In terms of *Brimhanam*.^[20]

This leads to the nourishment of the primary *Dhatu*, *Rasa Dhatu*, as well as all other *Dhatus*. As a result, when all *Dhatus* are fed, the essence of *Saptadhatu*, i.e., *Ojas*, is likewise strengthened. Thus, *Ghrita* operates as an *Ajasrika Rasayana*, producing *Ayuprakashya*, *Swara Varna prasada*, *Medhya*, *Chakshushya*, *Shukravardhaka* and other benefits. Ghee is a fantastic source of energy for youngsters. It includes saturated fatty acids, which offer energy as well as stamina. It aids with brain growth. It also includes mono-saturated Omega-3s, fat-soluble vitamins A, D, E, and K, as well as substantial amounts of butyrate, a fatty acid associated to an immune system response for inflammation control. Ghee also promotes intestinal health, which is directly related to immunity.

Methods for rejuvenating the *Sapta dhatus*. *Rasayana* drugs are also thought to have medicinal properties. As it nourishes the sperm, the notion of *Rasayana* may also extend to the next generation of human life through the birth of a healthy progeny immune to illnesses as well as with the best genetic constitution or with fewer genetic abnormality. *Amalaki*, *Haritakydi*, *Trifala* and *Chyavanaprasa* are only a handful of the *Rasayana*. Sharangadhara has suggested that each age group should take a distinct *Rasayana* to be healthy and fit. It is important to remember that *Rasayana* is more preventative than curative. As a result, it is done after disease treatment to avoid recurrence or to nourish the tissues that have been harmed by the disease. It can also be done in the absence of an illness to avoid disease onset.

Some of Commonly used Formulations used in Cancer Patients**Heerak Bhasma**

One of the most significant components of Ayurvedic cancer therapy, *Heerak Bhasma* calms the *Tridoshas*, operates on the *Sapta-Dhatus*, notably *Madhyam Koshta* and *Manovaha Srotas*, and boosts the therapeutic efficacy of supporting drugs. *Ayushya*

Vardhak, Balya and *Lekhana* are the names. It is used to treat *Arbuda, Granthi, Dhatukshaya, Ojakshaya, Vandhyatva, Pandu, Shotha, Udara*, and all essential disorders. *Heerak* works to return cells to their original structure and to re-establish normal system functioning. It operates on all body cells and tissues and favourably affects its immune system, lowering the chance of cancer progression significantly. *Heerak* is well renowned for improving patient survival and quality of life.

Arpisa Rasayana

Arpisa Rasayana is a one-of-a-kind blend of *Suvarna, Rajat, Mouktik, Jasad, Suvar sindur, Abhrak* and *Suvarna makshik Bhasmas*. This *Rasayana* is recommended for enhancing *Dhatuposh Idhatiparinaman (Prenana Karma)* as well as *Prakrut Mala Nirmitee*. *Arpisa Rasayana* is a cardioprotective *Rasayana*, and as such, it is beneficial for *Trimarma*-protection of the brain, heart, and kidneys. It operates on all three *Marma* at the same time and protects against multiple organ failure. However, *Arpisa* is very beneficial in *Hridaya Marmaghata*. *Arpisa* improves heart function by increasing blood flow to the cardiac muscles.

Dasma Rasayana

Dasma Rasayana is a mix of *Somnathi tamra bhasma* and *Heerak bhasma*. It is a hepatoprotective, immunomodulator *Rasayana* that serves to balance *Janana* and *Lekhana* at the *Sukshma* and *Sthoola* levels. It aids in the recovery of liver inflammation or damage. It is one of the ingredients of *Somanathi Tamra bhasma* that is advised in situations related with cancer patients such as *Parinama shoola, Udara shoola, Shwasa, Gulma, Pleeha roga, Yakrita roga, Kshaya, Agnimandhya*, and *Grahani* in traditional *Rasa granthas*. *Heerak Rasayan* is a cardioprotective, immunomodulator, and cell cycle researcher. The combination of these two medications results in a clever and effective *Rasayana* that is highly beneficial in the therapy of various types of malignancies, particularly hepatobiliary tumours.

Pinzar Rasayana

Pinzar Rasayana is a mix of *Heerak, Suvarna, Rajat, Tamra* and *Abharak Hartal*, among other things. This *Rasayana* was created specifically for *Dhatugata Dosha Pachana* and *Dhatu Balavardhana*. It is crucial in establishing cell cycle rhythm. *Pinzar Rasayan* can be used to treat tumours of the reproductive system in both sexes, as well as cancers of the gastrointestinal tract. It's also used to treat pancreatic, liver, brain, and haematological cancers. It also increases the strength and health of critical organs such as the heart, liver, and kidneys.

DISCUSSION

Chemo-radiotherapy is thought to be an effective technique to aid cancer survivors, but it is very toxic and damages neighbouring healthy cells, resulting in a slew of side effects. Cancer survivors have the poorest quality of life. According to Ayurvedic theory, radiation side effects are indications of exacerbated *Pittadosha*. It also vitiates *Jatharagni* and produces *Annavaha srothodusti*. As an adjunct to chemo-radiotherapy and post-surgery care, *Rasayana* therapy and *Pittashamaka* regimen will undoubtedly assist to reduce the negative effects of these conventional therapies. These results point to the effectiveness of *Rasayana* therapy in combating the cancer anorexia-cachexia syndrome, the leading cause of malnutrition in cancer patients. The dietary nutritional status of the patients can have a significant influence on the efficacy of cancer treatment. Malnourished patients are vulnerable to infections due to immune suppression. They may have had poor wound healing following surgery, and starvation may have exacerbated the ill effects of chemotherapy and radiation therapy. Cancer anorexia-cachexia syndrome is also the leading cause of mortality in cancer patients.

Therapeutic Outcome of Rasayana Therapy

Rasayana treatment has been demonstrated to improve therapeutic results in practically all stages of cancer patients. The following are some of the most typical consequences of *Rasayana* treatment.

Improving Patients' Quality of Life

Quality of life is a significant factor in cancer treatment. Cancer patients frequently complain about poor health-related quality of life. Patients with late stages of cancer are the most likely to report poor quality of life." When a patient is nearing the end of his or her life and there is no hope of a cure, the major goal of therapy is generally to enhance the patient's quality of life. *Rasayana* therapy has shown to have a very significant effect in improving patient's health related quality of life. *Rasayana* improves physical, functional and emotional domains of health-related quality of life. Thus, including therapies to improve patients' quality of life should be an import aspect to consider when planning therapy of cancer patients.

Increased survival

Overall survival (OS) is the gold standard end point for evaluating the outcome of any oncologic clinical study. OS is widely recognised as unambiguous, impartial, and with a specified end point of fundamental clinical value. Cancer, like diabetes and hypertension, is now recognised by scientists as a chronic disease. It is a disorder that can have remissions followed by relapses and exacerbations. As a result, cancer therapy should be geared towards

thoroughly controlling the patient's risk and providing maximal survival with few relapses and the best quality of life. Patients treated with *Rasayana* therapy have a very good survival rate, which is many times higher than that described in the literature for a specific kind and stage of cancer.

Symptom management

Cancer patients have a wide range of symptoms. Inadequate symptom management may impair an individual's ability to carry out regular activities." The load of symptoms in cancer patients leads to poor quality of life and treatment results." It is critical to design therapy for treating patients' problems. Fatigue, discomfort, anorexia, and insomnia are the most common symptoms found in cancer patients. Symptom load increases after anticancer therapy as well. *Rasayana* treatment efficiently treats symptoms while also preventing them from progressing to a severe state. Proper and early symptom treatment improves not just patients' quality of life but also their survival. As a result, appropriate symptom evaluation and treatment planning for these symptoms should be a priority in cancer treatment.

Reducing the risk of recurrence

After a successful remission, cancer patients have a considerable risk of relapse. Relapsed tumours react poorly to therapy and typically have poor results when compared to initial tumours. Some people who get intensive anticancer treatments may develop a second malignancy after a few years of treatment. *Rasayana* therapy could effectively tackle all of these issues by providing medications that strengthen *Dhatus* and key organs while also modulating immunity and inflammation in cancer patients.

CONCLUSION

The current study concludes that *Rasayana* Therapy outperforms the control group in terms of reducing the side effects of chemotherapy and radiation. As a result, combining *Rasayana Avaleha* with chemotherapy and radiation may enhance cancer patients' quality of life. Despite the limited sample size, the research provides a glimmer of hope for the effective integration of an allopathic modality with Ayurvedic medicine as an adjuvant. This treatment unquestionably improves the patient's quality of life and may increase life expectancy. In a word, *Rasayana Avaleha* is an excellent adjuvant medication for shielding patients from the side effects of chemotherapy and radiation. Ageing causes changes in cells and tissues to varying degrees, depending on their regeneration capacity and susceptibility to external stimuli. Ageing is a process in which all organs and tissues of the human body participate. *Rasayana Chikitsa* is a unique idea of the Ayurvedic system for

healing diseases and rationalising the ageing process. Future medical researchers may benefit from the reciprocal inclusion of *Dhatu Siddhanta* principles, *Rasayana* medications of Ayurveda and stem cell therapies of modern science.

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