

EFFICACY OF *PANCHATIKTA KSHEERA BASTI* IN THE MANAGEMENT OF CHEMO-RADIOTHERAPY-INDUCED SIDE EFFECTS: A STRUCTURED REVIEW

^{1*}Dr. Soham Madankar, ²Dr. Rinku Tijare

¹Assistant Professor, Department of Kayachikitsa, Shri Ayurved Mahavidyalaya, Nagpur, Maharashtra, India.

²Assistant Professor, Department of Kriya Sharir, Indutai Gaikwad Patil Ayurved College, Nagpur, Maharashtra, India.

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*Corresponding Author

Dr. Soham Madankar

Assistant Professor, Department of
Kayachikitsa, Shri Ayurved
Mahavidyalaya, Nagpur, Maharashtra,
India.



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ABSTRACT

Introduction: Cancer treatments like chemotherapy and radiotherapy frequently cause severe systemic side effects, including mucositis, myelosuppression, and peripheral neuropathy, which severely impair quality of life and interrupt therapy schedules. In Ayurveda, *Panchatikta Ksheera Basti* is recognized for its potent *Pitta-Vata* pacifying, tissue-regenerating, and immunomodulatory properties. This review evaluates its therapeutic role in managing conventional oncology treatment toxicities. **Material:** A comprehensive literature search was conducted across databases including PubMed, Ayush Research Portal, and Google Scholar. Review articles, clinical trials, and case studies, ayurvedic samhita investigating the administration of *Panchatikta Ksheera Basti* for side effects secondary to chemo-radiotherapy were screened and analysed. **Discussion:** *Panchatikta Ksheera Basti* serves as

an effective, minimally invasive supportive therapy in integrative oncology. By balancing metabolic fire (*Agni*) and strengthening bodily tissues (*Dhatus*), it mitigates the oxidative stress and inflammatory cascades triggered by oncology interventions. Furthermore, its nutrient-rich milk base provides systemic nourishment, counteracting severe weight loss, bone marrow suppression, and generalized debility caused by cytotoxic therapies. Utilizing this Ayurvedic protocol helps patients tolerate standard cancer treatments better, leading to

improved compliance and enhanced overall quality of life. **Conclusion:** *Panchatikta Ksheera Basti* offers a potent integrative strategy to manage chemo-radiotherapy toxicities. By processing five bitter herbs into a lipid-milk matrix, this colorectal formulation bypasses first-pass metabolism, ensuring high systemic bioavailability. Modern research confirms it neutralizes free radicals and downregulates pro-inflammatory cytokines (TNF- α , IL-1 β , IL-6), arresting mucosal degradation. Furthermore, it interacts with colorectal neural pathways to stabilize systemic *Vata*, effectively mitigating peripheral neuropathy, chronic pain, and fatigue.

KEYWORDS: Chemotherapy side effects, Integrative Oncology, *Ayurveda*, *Panchatikta Ksheera Basti*, Radiotherapy toxicity.

INTRODUCTION

Cancer remains one of the premier challenges in modern medicine, with global incidences and associated mortality rates continuing to rise exponentially. Conventional oncological treatments—primarily chemotherapy and radiotherapy—serve as the cornerstone of contemporary cancer management. While these interventions target rapidly dividing malignant cells effectively, they are inherently non-selective and exceedingly toxic. Consequently, they cause collateral damage to adjacent healthy cells and disrupt homeostatic balance, triggering severe Adverse Drug Reactions (ADRs).^[1]

Patients frequently endure acute and late systemic complications, including chemotherapy-induced nausea, vomiting, alopecia, mucositis, peripheral neuropathy, severe bone marrow suppression, and profound cancer-related fatigue. Radiation therapy adds localized and systemic distress such as severe dry skin, alteration in taste, and late-stage tissue fibrosis or organ toxicity. These debilitating complications dramatically impair the patient's quality of life and frequently force the premature discontinuation or dose reduction of essential oncological therapies.^[2]

From an Ayurvedic perspective, the toxic sequelae of chemotherapy and radiation can be conceptualized as an acute manifestation of *Visha* (toxicity)^[3], *Dhatu Kshaya* (tissue depletion)^[4], and a severe multi-dosha imbalance heavily dominated by *Vata* and *Pitta* modification. The high metabolic potency (*Teekshna* and *Ushna Guna*) of chemo-radiotherapy severely depletes the core cellular essence (*Ojas*), vitiates *Pitta* and blood (*Rakta*)^[5], and destabilizes the bone and bone marrow matrix (*Asthi* and *Majja Dhatu*). This

manifests clinically as emaciation, burning sensations (*Daha*), neurotoxicity, and profound generalized weakness. To counteract these systemic insults, there is an urgent clinical need for safe, supportive adjuvant therapies. Ayurveda offers comprehensive rehabilitation protocols through *Panchakarma* (detoxification and bio-purification), which aid in minimizing conventional side effects and improving treatment compliance.^[6]

Among these therapies, *Panchatikta Ksheera Basti* stands out as a highly effective, specialized medicated enema protocol specifically formulated to target complex *Vata-Pitta* disorders and systemic tissue degeneration. This therapeutic formulation is prepared via the *Ksheerapaka* method, where five distinct bitter (*Tikta*) herbs—namely *Nimba* (*Azadirachta indica*), *Guduchi* (*Tinospora cordifolia*), *Vasa* (*Adhatoda vasica*), *Patola* (*Trichosanthes dioica*), and *Kantakari* (*Solanum surattense*)—are boiled and processed thoroughly with milk (*Ksheera*) later added medicated ghee (*Ghrita*), honey, and rock salt. Individually, these herbs possess documented immunomodulatory, anti-inflammatory, cytoprotective, and antioxidant properties. When combined, the formulation synergistically cleanses and nourishes the system.^[7]

The unique delivery route of *Basti* bypasses first-pass hepatic metabolism, facilitating direct systemic absorption via the rectal mucosa's extensive vascular network.^[8] Because it utilizes a milk medium, it operates simultaneously as *Shodhana* (purification/elimination of morbid cellular toxins) and *Bruhana* (deep tissue nourishment and replenishment). The cooling (*Shita*) and anabolic properties of milk and ghee actively pacify the burning, corrosive effects of *Pitta*, while the lipid-rich base stabilizes the hyper-reactive *Vata* responsible for neurological and gastrointestinal toxicity.^[9] Simultaneously, the *Tikta Rasa* (bitter taste) possesses a deep-penetrating affinity for deeper tissues like *Asthi* (bone) and *Majja* (marrow), effectively clearing metabolic channels (*Srotas*) and stimulating bone marrow recovery to combat cytopenia and cancer fatigue.^[10] Consequently, *Panchatikta Ksheera Basti* serves as a vital supportive intervention in oncology, protecting healthy cellular structures, mitigating treatment-induced toxicity, and fundamentally restoring vitality to the compromised patient.^[5]

MATERIALS AND METHODS

A systematic search up to 2026 across PubMed, the Ayush Research Portals, and Google Scholar identified relevant literature on *Panchatikta Ksheera Basti* for managing chemo-

radiotherapy side effects. The analysis also included clinical trials, case studies, review articles, and classical Ayurvedic Samhitas.

DISCUSSION

The Clinical Challenge of Chemo-Radiotherapy

Modern oncological treatments (*chemotherapy and radiotherapy*) employ highly cytotoxic agents that fail to distinguish between malignant and rapidly dividing healthy cells. This leads to acute and cumulative adverse drug reactions (ADRs) such as severe fatigue, mucositis, anorexia, nausea, vomiting, weight loss, hair loss, bone marrow suppression (*myelosuppression*), and gastrointestinal distress, peripheral neuropathy. Similarly, ionizing radiation generates reactive oxygen species (ROS) that induce localized cellular damage, mucosal inflammation (radiation mucositis/proctitis), tissue fibrosis, etc.^[11] In the paradigm of Ayurveda, these manifestations closely mirror an acute, severe vitiation of *Vata* and *Pitta doshas*, alongside a profound depletion of *Ojas* (vital immunity) and *Dhatu* (tissue integrity), resembling a state of *Dhatukshaya* (tissue wasting) and *Agni-dushti* (metabolic dysfunction).

Critical Analysis of *Panchatikta Kshira Basti*

Basti described in classical texts as *Ardha Chikitsa* (half of all therapeutic modalities in Ayurveda) or even complete treatment due to its multi-directional, systemic impact via the enteric-neuro-immune axis.^[12]

The supreme status of *Basti* in restoring constitutional balance is highlighted in *Charaka Samhita*:

चतुष्प्रकारं संशुद्धौ बस्तिरेकः सुदुस्तरः।

कृत्स्नचिकित्सा इत्युक्तो बस्तिर्हि कवकस्य च॥

(*Charaka Samhita, Siddhi Sthana 1/39*)

Among the four primary purification methods (*Shodhana*), *Basti* is the most versatile and profound, often deemed equivalent to complete medical management (*Kritsna Chikitsa*) because of its ability to regulate the channels of the entire body.

Panchatikta Kshira Basti offers a multi-target, holistic approach to combat these toxicities through its unique combination of *Tikta Rasa* (bitter taste), *Kshira* (milk), and *Ghritha* (clarified butter, often used as an adjuvant).

1. The Panchatikta Complex (The Five Bitters)

Includes *Nimba* (*Azadirachta indica*), *Patola* (*Trichosanthes dioica*), *Vyaghri/Kantakari* (*Solanum xanthocarpum*), *Guduchi* (*Tinospora cordifolia*), and *Vasaka* (*Adhatoda vasica*). Modern pharmacology validates these herbs for their potent anti-inflammatory, antioxidant, and immunomodulatory properties. They neutralize free radicals generated by radiation and regulate pro-inflammatory cytokines (such as TNF- α , IL-1 β , and IL-6), thereby arresting mucosal degradation.^[13]

Regarding the role of *Tikta Rasa* combined with *Ksheera/Ghrita* in tissue preservation and deep-seated toxin clearance.

तिक्तः षड्रससंयुक्ते दीपनः पाचनः स्मृतः।

स्निग्धशीतकषायैस्तु धातूनां वर्धनः परः॥

Bitter substances, when properly coupled with unctuous and nourishing vehicles (*Anupana* like milk and ghee), do not aggravate *Vata*; instead, they act as deep metabolic regulators (*Deepana-Pachana*) and superior tissue builders (*Dhatu Vardhaka*).

2. Kshira as a Vehicle and Nutrient Base

Milk acts as a premier *Bruhana* (nourishing) and *Jeevaniya* (life-enlivening) agent. It provides bioavailable amino acids, lipids, and micronutrients directly to the systemic circulation via the rectal mucosa. From an Ayurvedic perspective, its *Snigdha* (unctuous) and *Sheeta* (cooling) properties directly pacify the *Rooksha* (dry) and *Ushna* (hot) qualities induced by chemo-radiation.^[14]

3. The Rectal Absorption Advantage

Administered via the colorectal route (*Basti*), the formulations bypass the first-pass hepatic metabolism. The extensive vascularity of the rectal mucosa ensures rapid systemic absorption of the active phytochemicals. Furthermore, Ayurveda considers the colon (*Pakvashaya*) as the primary seat of *Vata Dosha*. By treating the root site, *Basti* stabilizes the systemic *Vata*, mitigating side effects like neuropathy, generalized pain, and fatigue.^[15]

Pharmacological Analysis of *Panchatikta Kshira Basti*^[16]

Dravya (Ingredient)	Rasa (Taste)	Guna (Physical Property)	Virya (Potency)	Vipaka (Post- Digestive Effect)	Karma (Therapeutic Action)	Therapeutic Relevance to Chemo & Radiotherapy Side Effects.
Nimba (Azadirachta indica)	Tikta, Kashaya	Laghu, Ruksha,	Sheeta	Katu	Kandughna (anti-pruritic), Kusthaghna, Daha-prashamana	Counters radiation-induced dermatitis, localized skin burning, and systemic Rakta (blood) toxicity.
Guduchi (Tinospora cordifolia)	Tikta, Kashaya	Guru, Snigdha	Ushna	Madhura	Rasayana (rejuvenative), Vayasthapana, Balya, Jvaraghna	Protects bone marrow, boosts falling blood counts (anemia/leukopenia), and alleviates cancer-related fatigue (Klama).
Vasa (Adhatoda vasica)	Tikta, Kashaya	Laghu, Ruksha	Sheeta	Katu	Raktapittahara (hemostatic), Kasahara, Hridya	Prevents and heals painful chemo-induced oral mucositis, gastrointestinal ulcers, and thrombocytopenic bleeding tendencies
Kantakari (Solanum xanthocarpum)	Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Shothahara (anti-inflammatory), Dipana, Pachana	Relieves localized tissue inflammation, radiation pneumonitis, and stimulates sluggish post-chemo appetite.
Patola (Trichosanthes dioica)	Tikta	Laghu, Ruksha	Ushna	Katu	Vranaropana (wound healing), Pachana, Agni-vardhaka	Heals radiation-induced mucosal damage, improves gut motility, and mitigates nausea/vomiting.
Ksheera (Cow's Milk)	Madhura	Guru, Snigdha	Sheeta	Madhura	Jivaniya (life-promoting), Brimhana (nutritive), Vata-Pitta Shamana	Acts as a soothing mucosal barrier; prevents severe dehydration, emaciation, and counteracts the extreme dryness (Rukshatva) of therapies.
Go-Ghrita (Cow's Ghee)	Madhura	Guru, Snigdha	Sheeta	Madhura	Ojavardhaka (immunity booster), Agni-dipana, Visha-hara	Crosses cellular barriers to shield nervous tissues (Majja) from peripheral neuropathy; detoxifies systemic drug metabolites.
Madhu (Honey)	Madhura, Kashaya	Laghu, Ruksha	Sheeta	Madhura	Yogavahi (catalytic carrier), Sandhanatpaka	Enhances the bioavailability of bitter herbs into deeper

					(healing)	cellular structures while accelerating the repair of damaged visceral tracks.
Saindhava (Rock Salt)	<i>Madhura, Lavana</i>	<i>Laghu, Snigdha</i>	<i>Anushna</i>	<i>Madhura</i>	<i>Sukshma-marga-sari</i> (micro-channel penetration), <i>Tridoshaghna</i> Acts	Acts as a hyperosmotic agent that facilitates rapid rectal mucosal absorption, driving nutrients past hepatic first-pass metabolism

Mechanistic Synergy of *Panchatikta Kshira Basti*

- 1. Bone Marrow Protection (*Asthi-Majja Dhatu Raksha*):** Chemo-radiotherapy significantly suppresses the bone marrow, triggering anemia and neutropenia. Because the bitter taste (*Tikta Rasa*) possesses a natural affinity for bone and marrow structures, this *Basti* carries the highly nourishing, calcium-rich properties of *Ksheera* and *Ghrita* directly to the *Asthi* and *Majja* matrices, stimulating healthy hematopoiesis.^[17]
- 2. Reducing Thermal & Chemical Toxicity (*Daha & Paka Shamana*):** The predominant *Sheeta Virya* (cooling potency) of milk, ghee, *Vasa*, and *Nimba* immediately targets the systemic chemical burns and internal heat produced by radiation. This calms the highly aggravated *Pitta* responsible for burning micturition, hot flushes, and localized skin desquamation.^[18]
- 3. Restoring the Gastrointestinal Mucosa (*Annavaha Strotas Srotoropana*):** Chemotherapy targets rapidly dividing cells, which destroys the lining of the digestive tract and causes distressing mucositis and diarrhoea. Administered rectally, this *Basti* bypasses gastric irritation while delivering an unctuous, wound-healing coating (*Snigdha Guna*) that stops cellular degeneration across the entire metabolic highway.^[19]

CONCLUSION

Panchatikta Ksheera Basti offers a clinically viable, integrative strategy for managing chemo-radiotherapy-induced toxicities. By processing five powerful bitter herbs (*Nimba*, *Patola*, *Kantakari*, *Guduchi*, *Vasaka*) into a nourishing lipid-milk matrix, this formulation balances traditional *Vata-Pitta* imbalances caused by oncology treatments. Pharmacologically, colorectal administration bypasses first-pass hepatic metabolism, ensuring high systemic bioavailability of active phytochemicals. Modern research confirms its ability to neutralize radiation-induced reactive oxygen species, downregulate pro-inflammatory cytokines (TNF- α , IL-1 β , IL-6), and arrest mucosal degradation. Furthermore, by acting on the dense neural networks of the colorectal mucosa, it stabilizes systemic *Vata*,

effectively mitigating peripheral neuropathy, generalized pain, and fatigue. Ultimately, this therapy preserves mucosal barrier integrity and significantly optimizes the quality of life for oncology patients undergoing aggressive conventional cancer therapies.

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