

Integrative Oncology Approaches Beneficial in Radiation Therapy

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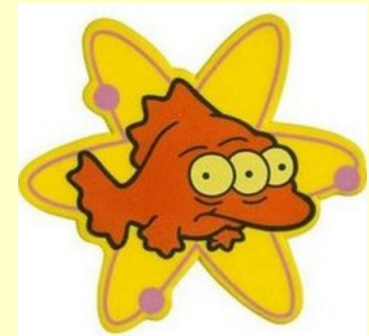
Integrative Medicine Program

The University of Texas

M. D. Anderson Cancer Center



**When people hear the word
“radiation” they often think...**



**The reality of medical use of
radiation therapy is very different**

Introduction

- Radiation has been an effective tool for treating cancer for more than 100 years
- More than 60 percent of patients diagnosed with cancer will receive radiation therapy as part of their treatment
- Radiation used to manage the care of cancer patients, either cure or palliation



Patient being treated with modern radiation therapy equipment.

What Is the Biologic Basis for Radiation Therapy?

- Radiation therapy works by damaging the DNA of cells and destroys their ability to reproduce
- Both normal and cancer cells can be affected by radiation, but cancer cells have generally impaired ability to repair this damage, leading to cell death
- All tissues have a tolerance level, or maximum dose, beyond which irreparable damage may occur



Radiation Therapy Basics

- The delivery of external beam radiation treatments is painless and usually scheduled five days a week for one to ten weeks
- The effects of radiation therapy are cumulative with most significant side effects occurring near the end of the treatment course.
 - Side effects usually resolve over the course of a few weeks
 - There is a slight risk that radiation may cause a secondary cancer many years after treatment, but the risk is outweighed by the potential for curative treatment with radiation therapy



treatment field).

Example of erythroderma after several weeks of radiotherapy with moist desquamation

Source:
sarahscancerjourney.blogspot.com

Clinical Uses for Radiation Therapy

- **Therapeutic radiation serves two major functions**

- **To cure cancer**

- **Destroy tumors that have not spread**
 - **Kill residual microscopic disease left after surgery or chemotherapy**

- **To reduce or palliate symptoms**

- **Shrink tumors affecting quality of life, e.g., a lung tumor causing shortness of breath**
 - **Alleviate pain or neurologic symptoms by reducing the size of a tumor**



External beam radiation treatments are usually scheduled five days a week and continue for one to ten weeks

Palliative Radiation Therapy

- Commonly used to relieve pain from bone cancers
 - ~ 50 percent of patients receive total relief from their pain
 - 80 to 90 percent of patients will derive some relief
- Other palliative uses:
 - Spinal cord compression
 - Vascular compression, e.g., superior vena cava syndrome
 - Bronchial obstruction
 - Bleeding from gastrointestinal or gynecologic tumors
 - Esophageal obstruction



Radiation is effective therapy for relief of bone pain from cancer

Common Radiation Side Effects

Side effects during the treatment vary depending on site of the treatment and affect the tissues in radiation field:



Unlike the systemic side effects from chemotherapy, radiation therapy usually only impacts the area that received radiation

- Breast – swelling, skin redness, dermatitis
- Abdomen – nausea, vomiting, diarrhea
- Chest – cough, shortness of breath, esophageal irritation, radiation pneumonitis
- Head and neck – taste alterations, dry mouth, mucositis, skin redness
- Brain – hair loss, scalp redness
- Pelvis – diarrhea, cramping, urinary frequency, vaginal irritation
- Prostate – impotence, urinary symptoms, diarrhea
- Fatigue is often seen when large areas are irradiated, reduced QOL
- Long term: fibrositis, vascular injury, second malignancies

Modern radiation therapy techniques have decreased these side effects significantly

Integrative Approaches Beneficial in Radiation Therapy





Integrative Oncology Approaches Beneficial to Patients in Radiation Therapy

Moshe Frenkel^{1,2,3} · Samuel Mathis²

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Abstract

Purpose of Review Radiation therapy (RT) remains a cornerstone of multidisciplinary cancer treatment but is frequently associated with acute and chronic toxicities that negatively impact patient quality of life and treatment adherence. This review examines evidence-based integrative oncology interventions—encompassing nutrition, phytochemicals, mind-body therapies, acupuncture, and homeopathy—and their role in mitigating RT-related side effects and supporting patient-centered care.

Recent Findings Emerging clinical trials and meta-analyses have demonstrated that specific integrative strategies can significantly reduce common toxicities associated with RT. Probiotic supplementation lowers the incidence of radiation-induced diarrhea, while high-fiber diets and omega-3 fatty acids may enhance gastrointestinal tolerance and limit therapy resistance. Acupuncture has shown efficacy in managing chronic xerostomia, and calendula-based topical treatments have been effective for radiation dermatitis. Mind-body interventions—including cognitive behavioral therapy, hypnosis, yoga, and mindfulness-based stress reduction—have consistently improved fatigue, anxiety, and overall well-being. Importantly, many of these interventions are low risk, feasible to implement, and increasingly incorporated into supportive oncology care.

Summary Integrative oncology offers a valuable complement to modern RT by reducing treatment-related toxicity and enhancing quality of life. As precision medicine advances the ability to tailor RT based on clinical and genomic risk, the integration of evidence-based supportive therapies aligns treatment with patient goals and promotes resilience. Ongoing research will further clarify best practices for incorporating these interventions into routine care, ensuring radiation oncology evolves to meet the dual goals of disease control and holistic patient well-being.

Keywords Radiation therapy · Complementary medicine · Integrative oncology · Cancer care · Patient centered care · Supportive care

Introduction

Radiation therapy (RT) has long been a cornerstone of multidisciplinary cancer care, offering both curative and palliative benefits across a wide range of malignancies. Its

positive impact on survival is well established: a comprehensive review by Hanna et al. demonstrated that evidence-based RT confers an approximate 2.4% improvement in 5-year overall survival across cancers, with the greatest gains observed in head and neck (16%) and cervical cancers (18%)¹ [1]. These findings underscore RT's critical role in cancer treatment.

However, the benefits of RT must be weighed against its potential toxicities and the need for thoughtful patient selection. Modern RT has evolved from a crude technique developed over a century ago into a sophisticated, precision-targeted modality incorporating advances such as intensity-modulated RT, stereotactic body RT, and image-guided RT. These innovations allow highly conformal treatments that spare adjacent healthy tissues. Despite this progress, RT can still cause acute and chronic toxicities—including

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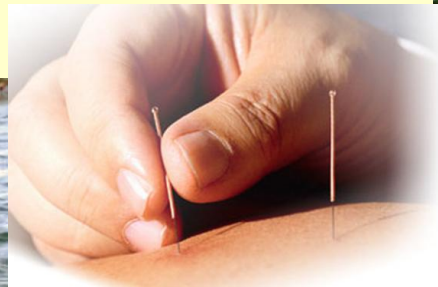
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Integrative Oncology Basics



- Nutrition
- Life-Style Changes (Exercise, Sleep)
- Complementary therapies
- Mind- Body- Spirit





Nutrition During Radiotherapy



- Nutrition is a vital component of recovery and resilience during RT.
- Many patients fail to adhere to EBM dietary recommendations during RT
- Poor nutrition may worsen fatigue, weight loss, and treatment tolerance
- Some side effects of RT makes this issue more problematic (RT Esophagitis, GI Toxicity, HN RT mucositis, xerostomia, taste changes etc.).
- These side effects can precipitate malnutrition and cachexia.





Nutrition During Radiotherapy



Emphasis on Mediterranean diet:

- Vegetables and fruits
- Whole grains
- Legumes
- Olive oil
- Fish and nuts

Associated with:

- Lower inflammation
- Better metabolic health
- Improved recovery and overall wellbeing
- Encourages whole-food rather than highly processed diets





Nutrition During Radiotherapy



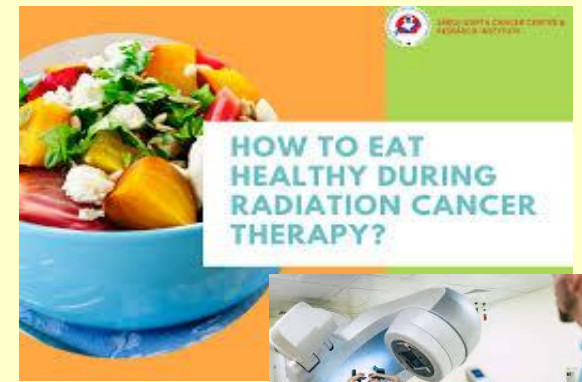
High-Fiber Diets and Pelvic Radiation

- Older approaches often restricted fiber during pelvic RT
- Wedlake et al. demonstrated benefit from higher fiber intake (>18 g/day)
- **Benefits included:**
 - Reduced GI toxicity
 - Improved bowel health
 - Better long-term bowel function
- Fiber should be increased gradually and individualized





Nutrition During Radiotherapy



High-Fiber Diets and Pelvic Radiation

- RCT 2017- 166 Patients undergoing pelvic radiotherapy divided into 3 groups: high fiber diet (over 18 grams a day)($n=56$) compared to low fiber (Less than 10gr a day)($n=55$) or habitual-fiber ($n = 55$)
- Significant reductions in energy, protein, and fat intake occurred in the low- and habitual-fiber groups only.
- Reduced GI toxicity both acutely and at 1 y in the high fiber group (compared with habitual-fiber intake).
- Long term bowel health is better in the high fiber group



Nutrition During Radiotherapy



Practical Sources of Dietary Fiber

- Oats and whole grains
- Lentils, beans, chickpeas
- Apples and pears with skin
- Chia and flax seeds
- Vegetables and cooked legumes

Practical approach:

- Begin slowly
- Increase fluids simultaneously
- Adjust intake according to GI tolerance

Food	Serving Size	Fiber (g)
Oatmeal	½ cup dry oats	4.0
Apple with skin	1 medium	4.4
Lentils (cooked)	½ cup	7.8
Chia seeds	1 tablespoon	4.1
Whole wheat bread	1 slice	2.2
Pear with skin	1 medium	5.5–6.0



Foods Rich in Omega 3



Main sources:

- Salmon
- Sardines
- Mackerel
- Walnuts
- Chia seeds
- Flax seeds

Potential benefits:

- Anti-inflammatory effects
- Reduction in treatment-related toxicity
- Possible reduction in therapy resistance and metastasis
- Supportive role in overall health during RT

Omega-3 Rich Food		
(Per 100gn Uncooked Quantity)		
		
Mackerel 2.5g Omega-3	Salmon 2.3g Omega-3	Herring 2.2g Omega-3
		
Anchovies 1.2g Omega-3	Chia Seeds 17.1g Omega-3	Walnuts 9.1g Omega-3
		
Seaweed 0.8g Omega-3	Cod Liver Oil 9.3g Omega-3	Flaxseeds 5.4g Omega-3



Natural Supplements



- **Curcumin**
- **Green tea catechins (EGCG)**

Potential mechanisms:

- **Anti-inflammatory effects**
- **Modulation of oxidative stress**
- **Protection of healthy tissue**
- **Possible radiosensitization of tumor cells**
- **Evidence is evolving**
- **Avoid high-dose self-prescribed supplements**





Natural Supplements



Mushrooms

Medicinal mushrooms are rich

in polysaccharides (such as β -glucans) and antioxidant compounds.

Though large randomized trials are lacking, the consistent low toxicity profile of specific medicinal mushrooms makes them attractive as supportive agents.

Radiation oncologists should be aware of their widespread use and engage patients in shared decision-making regarding their integration.



Cordyceps



shiitake mushroom



reishi

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Natural Supplements



Mushrooms

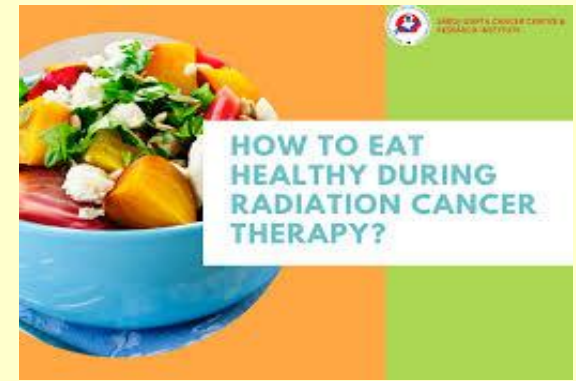
Potential mechanisms:



- **Immune modulation** (Reishi during RT increased CD3, CD4, CD8 overall immune recovery improved, PSK improved lymphocyte count and NK activity)
- **Radioprotection and Toxicity Reduction** (Cordyceps extracts protect bone marrow and GI from RT preserving hematopoiesis, spleen recovery and DNA repair- Animal studies)
- **Enhanced Clinical Outcome** (Lentinan from Shitake improved 1Y Survival and QOL alongside chemoradiation in lung and GI cancers)



Natural Supplements



Mushrooms

Mushrooms as Food –

There are very well-established studies, involving tens of thousands of participants, that point to health benefits – without significant concern for side effects.



Cordyceps



shiitake mushroom

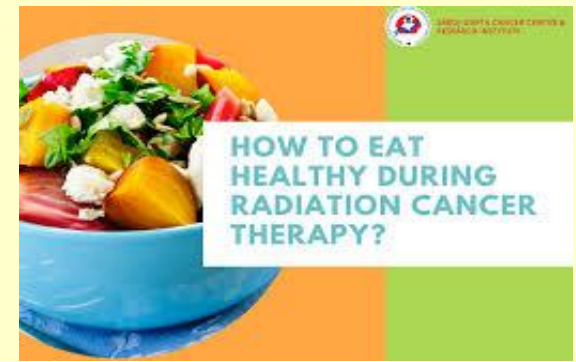


reishi

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Natural Supplements



Mushrooms - CAUTION



Cordyceps



shiitake mushroom



reishi

1. Each mushroom must be examined individually –

Each strain has different effects, and it's important to ensure there are no concerns about interactions with other treatments.

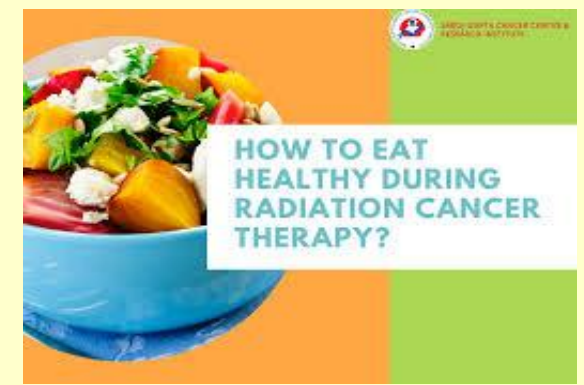
2. **For patients receiving immunotherapy** (like Keytruda) – These drugs work through the immune system, and since mushrooms also have an immune effect, there might be a conflict between their actions. On one hand, mushrooms might reduce the drug's effectiveness; on the other hand, they might over-stimulate the system, which could lead to side effects like colitis, pneumonitis, or thyroiditis.

3. **For hematological diseases** (like leukemia or lymphoma) – Here too, there is a lack of knowledge and concerns about the effects of mushrooms.

4. **For autoimmune diseases** (like MS or Lupus) – The use of mushrooms should be avoided as they activate the immune system and could worsen these conditions



Probiotics



- Best studied in pelvic and abdominal RT – 2019 Meta-analysis
- May reduce radiation-induced diarrhea
- Common strains:
 - Lactobacillus
 - Bifidobacterium

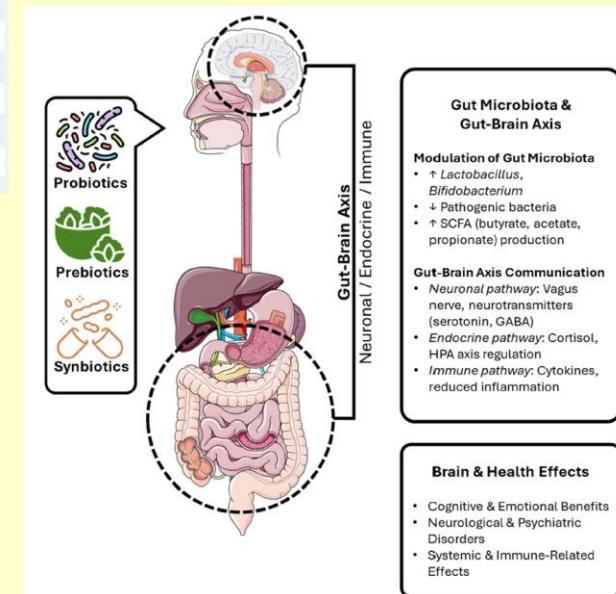


Mechanisms:

- Improve gut microbiome balance
- Support mucosal barrier function
- Reduce inflammation

Caution:

- Avoid in severely immunocompromised patients





Intermittent Fasting



- Early studies suggest limited fasting may:
 - Safe and feasible
 - Reduce treatment related fatigue, GI toxicity
 - Improve immune function, enhanced DNA damage in Ca
- Time-restricted eating is under investigation
- Not standard of care yet
- Must be individualized and medically supervised

Key Takeaway

- Nutrition during RT should focus on:
- Supporting the patient
- Preserving strength and quality of life
- Reducing toxicity safely and evidence-informed



Table 1 Nutrition and supplements that can be beneficial in radiation therapy

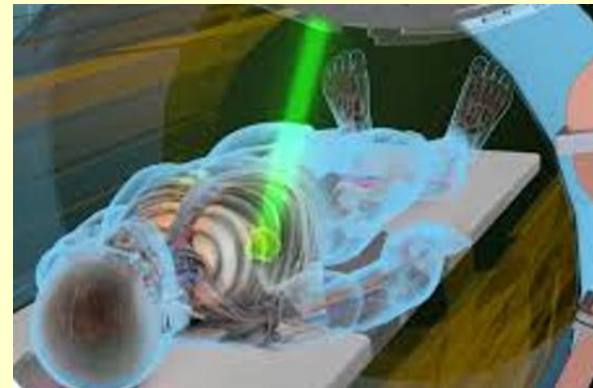
Category	Specific Foods / Supplements	Mechanisms / Benefits	Reference(s)
Foods Rich in Omega-3 Fatty Acids	Fatty fish (salmon, mackerel, sardines), flax seeds, chia seeds, walnuts	Reduce therapy-induced toxicity, modulate NF- κ B and PI3K/Akt pathways, anti-inflammatory effects	5
High-Fiber Foods	Whole grains, legumes, vegetables	Maintain bowel health, reduce RT-induced gastrointestinal toxicity, long-term benefits post-treatment	4
Medicinal mushrooms	Reishi, Turkey Tail, Cordyceps, Shiitake	Reduce RT-induced mucositis, support immune recovery, preserving hematopoiesis, promoting DNA repair.	19-22
Herbal Formulations	Astragalus membranaceus	Reduce incidence and severity of radiation-induced lung injury, improve patient outcomes	6

Other Nutritional Supplements	EPA/DHA (fish oil)	Anti-inflammatory effects, enhanced clinical outcomes when combined with RT	5
Limited fasting	Preliminary data also hint at potential benefits for immune function and enhanced DNA damage within tumors when limited fasting is combined with RT	Reduce DNA damage, scavenge ROS, down-regulate NF- κ B, reduce fibrosis	31-34
Honey (Topical / Oral)	Medical-grade or natural honey	Reduces oral mucositis incidence, severity, and pain, endorsed by MASCC/ISOO guidelines	11, 12
Calendula officinalis	Calendula cream / ointment	Reduces severity of acute radiation dermatitis	15, 16, 17



Mind Body Interventions

- Fatigue, anxiety, sleep disruption, loss of control are common during radiation therapy.
- Mindfulness-based stress reduction (MBSR), cognitive behavioral therapy (CBT), hypnosis, imagery are tools that help patients manage these challenges and regain a sense of agency

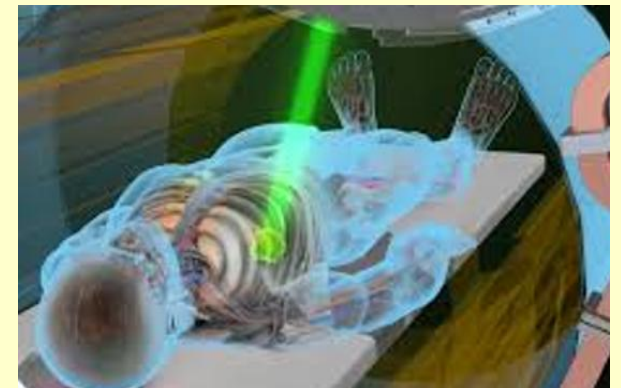




Mind Body Interventions

- **Systematic reviews found that mindfulness interventions reduce fatigue, depression, anxiety.**
- **Review of 163 studies- Mindfulness emerged as feasible, well tolerated treatment that can be implemented in RT departments.**

Lapan K 2021



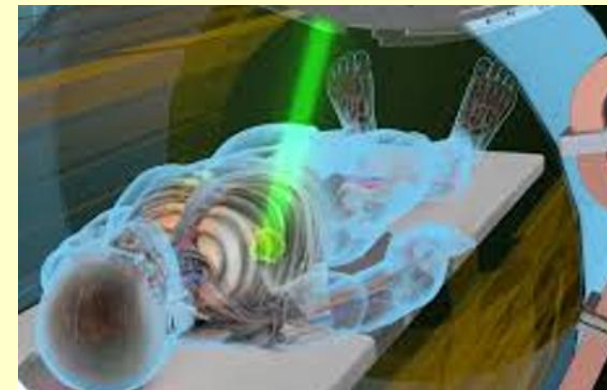


Mind Body Interventions

These interventions are:

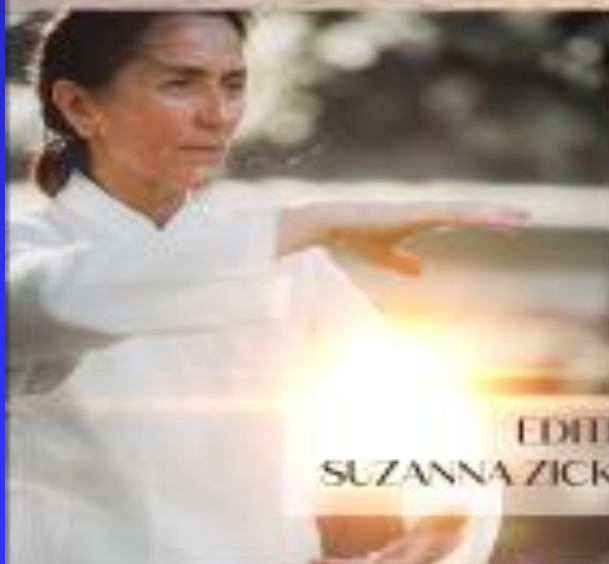
- Low cost,
- Minimal risk of adverse effects,
- Can be practiced long after therapy ended
- Clinical value has been widely recognized

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COMPREHENSIVE INTEGRATIVE ONCOLOGY



EDITED BY
SUZANNA ZICK AND TING BAO



Homeopathy in cancer care

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Cancer patients frequently use complementary and integrative medicine, including homeopathy. While its acceptance in conventional medicine remains limited, homeopathy is increasingly utilized in cancer care, particularly in Europe and India. This chapter explores the evidence supporting homeopathy's role in cancer care.

Research suggests that certain homeopathic remedies may inhibit tumor growth in animal models and induce cellular changes in cancer cells. Clinical studies indicate that integrating homeopathy with conventional treatments can improve quality of life, reduce symptom burden, and potentially enhance survival. Randomized controlled trials have also reported improved global health and well-being in patients receiving homeopathic adjunctive therapy, though the mechanisms remain unclear.

Safety evaluations consistently show that homeopathic remedies pose minimal risks and do not interfere with chemotherapy, immunotherapy, radiation, or supplements. Reviews have reported no serious adverse effects associated with homeopathy.

Given its low cost, safety profile, and potential benefits, homeopathy offers a promising adjunctive approach in integrative cancer care. This aligns with the principle of "First, Do No Harm," underscoring the need for further large-scale studies to confirm its efficacy and expand its application in oncology.

which posits that a substance causing symptoms in a healthy person can, when highly diluted, treat similar symptoms in a sick person. Hahnemann believed that these highly diluted natural substances—homeopathic medicines—could restore the body's "vital force," alleviating symptoms and promoting health.

Foundational principles of homeopathy

Central to homeopathy is the concept of the "minimum dose." Remedies are prepared through serial dilution and succession (vigorous shaking) to create highly diluted solutions. Paradoxically, homeopaths assert that a remedy's therapeutic efficacy increases with greater dilution, a phenomenon known as "potentization." This process involves sequential agitated dilutions in alcohol/water or trituration in powdered lactose, typically in decimal (1:10) or centesimal (1:100) scales. Due to its highly diluted nature, homeopathy at potencies above 12C does not contain detectable original molecules (exceeding Avogadro's number). See the enclosed Table 45.1 - Terminology Table.

To help conventionally trained physicians understand this concept, parallels can be drawn to immunization and al-

Why Explore Homeopathy in Radiation Oncology?

Clinical Rationale

Radiation therapy commonly causes:

- Radiodermatitis
- Fatigue
- Mucositis
- Emotional distress
- Used in some European Integrative Oncology programs as adjunctive care
- Homeopathy has been explored as a low-toxicity supportive intervention



Safety of Homeopathy

”

- No known interactions with conventional medications, chemotherapy, immunotherapy, radiation, nutrition or nutritional supplements
- From wide range of clinical studies that utilize homeopathy in cancer care, no side effects are recorded with single remedies
- Due to its diluted properties, dilutions over 12 c do not have any original molecule (exceeds Avogadro's number) and as such there is no expectation for adverse reactions
- Evidence Grade B- Based on inconsistent or limited quality of Patient Oriented Evidence
- Harm Grade 1- This therapy poses little if any risk or harm

Evidence B  1 Harm



Why Explore Homeopathy in Radiation Oncology?

Do we have any Studies or Clinical Trials that support the use of homeopathy in Radiotherapy?



Radiodermatitis in Breast Cancer

- Randomized, double-blind, placebo-controlled trial
- 66 breast cancer patients enrolled
- Intervention: Belladonna 7CH + X-ray 15CH
- Reported improvement in recovery and reduced discomfort related to skin warmth



Radiodermatitis in Breast Cancer

Retrospective observational cohort

- 30 breast cancer patients receiving radiation therapy
 - 17 patients received preventive homeopathic/integrative protocol
 - 13 patients served as controls receiving routine keratoplastic ointments

Intervention

- Radium bromatum 6CH before each RT session
- Belladonna 6CH after each RT session
- Plus topical Calendula ointment and alkalinizing gel

Main Findings

- The homeopathy/integrative group had milder radiation dermatitis
- 15 of 17 patients in the treatment group developed only Grade 1 erythema
- No Grade 4 toxicity occurred in the treatment group
- In the control group, 3 of 13 patients developed Grade 4 toxicity
- Difference was statistically significant ($P \leq 0.01$)



Attention Dysregulation in Breast Cancer Patients Following a Complementary Alternative Treatment Routine: A Double-Blind Randomized Trial

Integrative Cancer Therapies

Volume 20: 1–10

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Abstract

Introduction: Breast cancer patients and survivors frequently report fatigue, emotional, and cognitive disturbances, which reduce performance at all levels of occupation and make life quality issues a considerable clinical concern. The aim of this study is to evaluate attention and emotion regulation across radiotherapy period and the possible effects of complementary alternative medicine (CAM). **Methods:** Fifty-seven patients with unilateral breast cancer underwent surgery and systemic chemotherapy before participating in this double-blind randomized study. Two thirds were given CAM (n=38) while the rest received placebo (carrier only, n=19). Patients' attention and anxiety were physiologically tested at baseline, 2 and 4 weeks during the radiation period as well as 1-month after the end of radiation session. **Results:** Both groups showed similar levels of anxiety with no significant differences at baseline nor post-radiotherapy. Long-term significant recovery of attention performance was observed in the CAM patients, accompanied by a similar tendency

Homeopathy & Cognitive Function in Breast Cancer Patients Undergoing Radiotherapy

New Study Shows Improvement in 'Chemobrain' Symptoms



- 58 Breast Cancer Patients Undergoing Radiotherapy



Homeopathy Group
38 Patients



Control Group
19 Patients



8 Weeks of Treatment

Study Results:



Improved Cognitive Function



Reduced 'Chemobrain' Symptoms



Better
Memory &
Focus



Less Mental Fog & Confusion

Why Explore Homeopathy in Radiation Oncology?

The most relevant data are in radiodermatitis, with smaller studies in mucositis, fatigue, cognition, and anxiety.

No serious adverse events related to homeopathy were reported in the reviewed studies.

Evidence remains preliminary: small sample sizes, variable study designs, and limited replication.

Practical message: Homeopathy may be considered as adjunctive supportive care in selected patients, ideally within an integrative oncology service.



Acupuncture Role in Radiation Therapy

- Acupuncture is one of the most widely used integrative modalities among oncology patients.
- In radiation oncology, acupuncture has been studied mainly for:



- Radiation-induced xerostomia

Cancer-related

- Fatigue
- Nausea
- Pain and anxiety

Acupuncture Role in Radiation Therapy



Proposed mechanisms

- Stimulation of salivary flow
- Modulation of vagal tone
- Endogenous opioid release
- Regulation of autonomic nervous system activity

Clinical message:

Acupuncture is a low-risk supportive therapy when delivered by trained practitioners experienced in oncology care.

Acupuncture Role in Radiation Therapy



- **Strongest evidence:** head and neck cancer RT
- Garcia et al. — Phase III randomized trial JCO 2019
- Compared true acupuncture, sham acupuncture, and standard care.
- Patients receiving true acupuncture had:
 - Lower incidence and severity of chronic xerostomia at 1 year
 - 35% vs 55% chronic xerostomia compared with standard care
 - Improved dry-mouth symptoms versus standard care
- **Clinical significance**
- Xerostomia is often chronic and difficult to treat pharmacologically.
- Acupuncture offers a non-pharmacologic supportive option with meaningful patient-reported benefit.

Acupuncture Role in Radiation Therapy



Ni et al. 2020 — Systematic review and meta-analysis

- Included 8 randomized trials
- Total: 725 patients
- Found significant reduction in patient-reported xerostomia

Cohen et al. 2024— Multicenter randomized clinical trial,

- Evaluated acupuncture for chronic radiation-induced xerostomia
- True acupuncture improved:
- Patient-reported dry mouth
- Quality of life
- Findings support acupuncture as a clinically relevant option after head and neck RT.

Acupuncture Role in Radiation Therapy



- **Balk et al. 2009— Pilot randomized trial**
- 54 patients with cancer-related fatigue
- Patients had surgery alone or surgery plus chemotherapy and were eligible for RT.
- **Intervention:** True acupuncture once or twice weekly for 4 weeks
- Control: Sham acupuncture
- Fatigue improved more in the true acupuncture group.
- Physical distress, mental distress, and quality of life also improved,

Acupuncture Role in Radiation Therapy



- **Practical use during RT**
- Consider acupuncture for:
 - Head and neck RT patients with xerostomia
 - Patients with persistent fatigue
 - Nausea, pain, anxiety, or symptom clusters
- Avoid needling directly into irradiated, infected, or compromised skin.
- Use caution with severe thrombocytopenia, neutropenia, or bleeding risk.
- **Take-home message:** Acupuncture has the strongest RT-specific evidence for xerostomia and may be a reasonable supportive option for fatigue and symptom management when integrated safely within oncology care.

The Importance of Timing



Timing of Integration



Integrative care should be adapted to the stage of treatment

Phase	Main Goals	Common Integrative Approaches
Before RT	Preparation, anxiety reduction, nutritional optimization	Nutrition counseling, mindfulness, acupuncture, physical activity
During RT	Toxicity reduction and symptom management	Probiotics, acupuncture, skin care, mind-body therapies
After RT	Recovery and survivorship support	Rehabilitation, fatigue management, emotional recovery, exercise

Key Principle

- Integration is most effective when individualized and proactive rather than reactive

Integrative Support for Radiation Therapy:

Integrative oncology offers low-risk, evidence-based pathways to manage radiation therapy side effects, supporting patient resilience throughout the treatment journey.

PRE-TREATMENT PHASE (Planning & Preparation)



Mindfulness-Based Stress Reduction (MBSR)

Level A evidence supporting meditation to manage RT-related fatigue and anxiety.



Early Emotional Conditioning

Introduce mindfulness and guided imagery early to prepare patients emotionally for treatment.



Improving Overall Quality of Life

Mind-body interventions reinforce the patient's active role in their own healing process.

ACTIVE PHASE (During Radiation Therapy)



Homeopathy for Toxicity Management

Level B evidence shows efficacy in managing radiodermatitis, mucositis, and treatment-related fatigue.



Cognitive & Psychological Support

Homeopathic remedies are associated with improved cognitive function, attention performance, and reduced anxiety.



Low-Risk Integration

These interventions carry minimal risk and no known interactions with conventional cancer care.



Integrative Oncology in Radiation Therapy



Based on Frenkel & Mathis, Current Oncology Reports, 2025

Why this matters

Radiation therapy improves cancer outcomes, but side effects can reduce quality of life and treatment adherence. Integrative oncology can help support fatigue, anxiety, sleep problems, pain, dermatitis, mucositis, xerostomia, and emotional distress.



Fatigue



Anxiety



Sleep problems



Pain



Dermatitis



Mucositis



Xerostomia



Emotional distress



Mind-Body Therapies

Evidence level: A

Examples



Mindfulness/
MBSR



CBT



Hypnosis



Guided
imagery



Breathing &
relaxation



Yoga/
meditation

How they help

- ✓ Reduce fatigue and stress
- ✓ Improve anxiety and mood
- ✓ Support better sleep
- ✓ Ease pain and emotional distress
- ✓ Improve quality of life and sense of control



Evidence snapshot

- Randomized trials support CBT plus hypnosis for reducing acute and persistent fatigue during breast radiation therapy.
- Mindfulness and yoga are feasible, well-tolerated, and improve emotional well-being.

Clinical use



1 Before RT:
prepare
emotionally
and build
coping skills



2 During RT:
brief daily
practice or
weekly group
sessions



3 After RT:
continue for
recovery and
long-term
support



✓ Low risk; adapt yoga to physical limitations.



Homeopathy

Evidence level: B

Potential roles



Skin toxicity/
dermatitis



Mucositis



Fatigue



Anxiety



Xerostomia



Sleep
disturbance

Evidence snapshot

- 1 Rossi et al.: 30 breast cancer patients; a preventive homeopathic protocol was associated with milder radiation dermatitis.
- 2 Balzarini et al.: randomized placebo-controlled trial showed improved recovery and less discomfort from skin warmth.
- 3 57-patient randomized trial: improved attention performance and a tendency toward lower anxiety.



Balanced interpretation

- Promising for selected patients as adjunctive supportive care
- Evidence remains limited and more high-quality trials are needed
- No known interactions reported in the review



Use under a trained integrative clinician.
Do not replace conventional radiation treatment.

Integrating These Approaches into RT Care

1

Before RT



Mindfulness,
breathing,
emotional
preparation



2

During RT



Mind-body support
for distress; homeopathy
in selected centers for
mucositis, fatigue, or
emotional distress



3

After RT



Recovery,
resilience,
symptom
support



Mind-body therapies
are ready for routine
supportive use.



Homeopathy may be
considered selectively
within integrative
oncology programs.



Best results come
from individualized,
multidisciplinary
care.

Enhancing Radiation Therapy: An Integrative Oncology Approach

Integrative oncology uses evidence-based nutritional, mind-body, and complementary therapies to manage radiation therapy (RT) toxicities and support patient resilience throughout treatment, addressing acute and chronic side effects.

NUTRITIONAL AND NATURAL INTERVENTIONS

**40%
REDUCTION**
in serious radiation-
induced diarrhoea.



Probiotic supplements significantly lower the incidence of diarrhea during pelvic and abdominal radiotherapy.



MEDICAL-GRADE HONEY for oral mucositis.

Topical application and swallowing honey reduces the severity and pain of RT-induced mouth sores.

OMEGA-3 FATTY ACIDS and high-fibre diets.

High-fibre intake ($\geq 18\text{g/day}$) and Omega-3s help maintain bowel health and reduce therapy resistance.



MIND-BODY AND COMPLEMENTARY THERAPIES

ACUPUNCTURE
reduces chronic dry mouth from
55% to 35%

True acupuncture significantly improves chronic xerostomia symptoms compared to standard oral care.



CBT combined with hypnosis for fatigue.

This combination significantly reduces both acute and persistent fatigue for up to six months post-treatment.



CALENDULA OINTMENT outperforms standard care for skin.

Topical marigold significantly reduces Grade 2+ radiation dermatitis compared to trolamine treatments.



 RT Side Effect	Recommended Integrative Intervention	 Visual Cue
Chronic Xerostomia	Radiation Dermatitis	Radiation-Induced Fatigue
Medical Acupuncture	Calendula officinalis (Marigold) Ointment	Cognitive Behavioural Therapy (CBT) + Hypnosis
 Acupuncture Needles Icon	 Calendula Flower & Ointment Tube Icon	 Brain with Gears & Spiral Icon

Integrative Modalities in Radiation Therapy: An Evidence-Based Guide to Supportive Care

Radiation therapy (Radiation therapy (RT) is vital for cancer treatment but often causes toxicities like dermatitis, mucositis, fatigue, and gastrointestinal distress, compromising quality of life. **Integrative oncology** uses evidence-based modalities to manage these challenges, supporting patient resilience and recovery. This infographic outlines eight key modalities, categorised by clinical indications, optimal timing, safety considerations, and strength of supporting evidence.

High-Evidence Modalities (Level A)

Acupuncture



Clinical Indications: Xerostomia (dry mouth), pain, fatigue, anxiety, nausea.
Timing: During & post RT.
Safety & Caution: Generally safe when performed by licensed practitioners.
Evidence Level: Level A (Strong)

Mind-Body Therapies (Mindfulness, Yoga)



Clinical Indications: Anxiety, fatigue, sleep disturbances, pain, overall QoL.
Timing: Before, during & after.
Safety & Caution: Safe to use; adapt yoga for physical limitations.
Evidence Level: Level A (Strong)

Probiotics



Clinical Indications: Prevention of radiation-induced diarrhoea.
Timing: Before, during & after (best started one week before RT).
Safety & Caution: Avoid in severely immunocompromised patients.
Evidence Level: Level A (Strong)

Nutritional Counselling



Clinical Indications: Prevent malnutrition, optimise intake.
Timing: Before, during & after.
Safety & Caution: Monitor weight loss; avoid unregulated supplements.
Evidence Level: Level A (Strong)

Emerging & Targeted Modalities (Level B)

Medicinal Mushrooms (Reishi, Turkey Tail)



Clinical Indications: Immune modulation, fatigue reduction, QoL.
Timing: During & post RT (best introduced 1-2 weeks before RT).
Safety & Caution: Check for interactions with concurrent immunotherapy.
Evidence Level: Level B (Moderate)

Curcumin (Turmeric Extract)



Clinical Indications: Mucositis, dermatitis, radiosensitisation.
Timing: Before, during & after.
Safety & Caution: Avoid high doses with certain chemotherapies; use 500-1000 mg/day under supervision.
Evidence Level: Level B (Moderate)

Homeopathy



Clinical Indications: Fatigue, mucositis, anxiety, xerostomia.
Timing: During & post RT.
Safety & Caution: No known drug interactions; use under supervision; do not replace conventional care.
Evidence Level: Level B (Moderate)

Reflexology



Clinical Indications: Stress reduction, pain, fatigue.
Timing: During & post RT (sessions 1-2 times per week).
Safety & Caution: Avoid open wounds or the specific radiation field.
Evidence Level: Level B (Moderate)

Table 2 Integrative modalities in radiation therapy

Modality	Clinical Indications During RT	Integration Guidance	Safety & Caution	Level of Evidence	Key References
Acupuncture	Xerostomia (head & neck), cancer-related pain, fatigue, anxiety, nausea	<i>During & post RT</i> Weekly sessions often effective.	Generally safe when performed by licensed practitioner.	A	8, 42–45
Mind-Body Therapies (Mindfulness, Guided Imagery, Yoga)	Anxiety, fatigue, sleep disturbance, pain, QoL	<i>Before, during & after</i> Daily practice or weekly group sessions. Particularly effective for distress management.	Safe. Adapt yoga for physical limitations.	A	7, 35–38
Medicinal Mushrooms (e.g., Reishi, Turkey Tail)	Immune modulation, fatigue, QoL support	<i>During & post RT</i> Use only standardized extracts (e.g., hot water). Best introduced 1–2 weeks before RT. Continue during treatment.	Generally safe; ensure no interactions with immunotherapy if concurrent.	B	19–22
Probiotics	Prevention of diarrhea in pelvic/abdominal RT	<i>Before, during & after</i> Can begin 1 week prior to RT. Use well-studied strains (e.g., <i>Lactobacillus rhamnosus</i> , <i>Saccharomyces boulardii</i>).	Avoid in severely immunocompromised patients.	A	25, 35
Curcumin	Mucositis, dermatitis, radiosensitization, fatigue	<i>Before, during & after</i> Consider starting with 500–1000 mg/day standardized extract. Continue during RT under supervision.	Avoid high doses with certain chemotherapies. Consult with oncology team.	B	29
Homeopathy	Fatigue, mucositis, anxiety, xerostomia, sleep disturbance	<i>During & post RT</i> May reduce skin toxicity, fatigue, and attention disturbances in selected patients, under supervision by trained integrative clinician.	No known interactions; avoid in place of conventional care.	B	9, 39–41
Reflexology	Stress reduction, pain, fatigue	<i>During & post RT</i> 1–2 sessions/week during RT can support well-being.	Ensure sterile environment; avoid open wounds or radiation field areas.	B	35, 36, 38
Nutritional Counseling	Optimize intake, prevent malnutrition, support immunity	<i>Before, during & after</i> Start pre-RT when possible. Focus on whole foods, high antioxidant fruits/vegetables, adequate protein.	Monitor for weight loss, avoid unregulated supplements during RT.	A	3–6, 11, 12, 19–22, 30–34



THANK YOU FOR LISTENING.

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