

Nutritional Support During Radiation and Chemotherapy Treatments

By Fern Leaf, BA, NE, NC, NANP Registered, MPH cand.

“We now know that the treatment efficacy of conventional medicines can be enhanced when used in combination with supportive therapies that include nutritional pharmacology, botanical medicine, psychosocial support and improved physical conditioning.”

Keith Block, M.D.

As early as AD 170, the Roman physician Claudius Galen, considered the founder of scientific physiology, opined that cancer is a disease of the entire body, not confined to the site of the tumor. Hippocrates (460-377 BC) was the first to use the word carcinoma and he recommended that cancer patients be put on a special diet. Since the Greek word for diet – *diata* – is more accurately defined as way of life or lifestyle, this might suggest that Hippocrates was actually prescribing abstinence from anything that might be spiritually as well as physically harmful. Paracelsus, a prominent Renaissance era doctor, felt the physician’s job was to stimulate the body’s natural healing processes so as to correct imbalances that result in illness. (Null; 1992; 126-127)

While the science of oncology in the early 21st Century continues to focus on surgical, chemical and radiological (slash and burn) protocols aimed at excising the end product of severely disordered cellular metabolism, this technology fails to address the patient as a whole body, much less accommodate the mental and spiritual patterns that may be contributing factors to either wellness or disease.

“It may be that cancer is the price humanity pays for its flexible genome and evolutionary development,” suggests the American Institute for Cancer Research’s 1997 publication, *Food, Nutrition and the Prevention of Cancer: A Global Perspective*. This comprehensive report sets out specific guidelines in support of its most dramatic conclusion that “cancer is largely a preventable disease and that [its] incidence can be substantially reduced by means of diet.” (AICR; Executive Summary; 3)

All cancer cells have two things in common; they grow uncontrollably and they have the ability to metastasize. They can spread through the lymphatic system, the bloodstream, or avenues such as the cerebrospinal fluid. A combination of genetic, behavioral, environmental and lifestyle factors are believed to be involved in turning normal cells into abnormal cells, and abnormal cells into cancer (Balch, 2000, 246)

Modification of risk by dietary factors can occur at different stages of the cancer process. For example, they may reduce the effects of environmental carcinogens, damage DNA directly or indirectly, and either promote or inhibit the production of cancer. Overall, the report states, **“between 30 and 40% of all cases of cancer are preventable by feasible and appropriate diets and by physical activity and the maintenance of appropriate body weight.”** Other means to reduce risk would include avoiding tobacco use and limiting exposure to occupational and other environment carcinogens. (ACIR 8-9)

Research has also begun to show a connection between toxins in the bowel and breast cancer. Bile acids including lithocholic acid (a known carcinogen) are found in the bowel at 100 times the concentration found in blood. Without adequate fiber, the body’s ability to bind and eliminate toxins is impaired. Regardless of health status, it is a relatively simple matter to supplement with probiotics to reduce the proliferation of

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toxic bacteria and to help decrease production of toxic bile acids. As well, eating a high fiber diet provides the body with effective transport facilities for eliminating toxic overload. (Pizzorno; 1998; 304)

Whether by choice or necessity, cancer sufferers must often undergo radical slash and burn therapies to excise or decrease the size of individual tumors. Too often, “oncologists wonder why their patients are getting sick during treatment. It’s because they’re not dealing with the adverse affects of all the toxins produced by the therapies they use. They’re not dealing with the most critical aspect of cancer therapy – detoxification,” says prominent alternative cancer treatment pioneer Dr. Stephen B. Edelson. (Mead; 1996; 3) Indeed, as regards cancer, the tumor itself is only half the problem. To change the conditions surrounding the tumor and its environment in a biologically specific and meaningful manner is now emerging more generally as an essential aspect of effective treatment. As well, in order to successfully modify one’s biochemical terrain it is critical to focus on the whole person, not simply the disease. The more a patient feels his or her choices truly matter, the more likely that patient is to eat in a way that can make a difference in the progression of the disease at a biochemical and molecular level. (Bland and Levin; 1997; 13-89)

When supported with wholesome organic foods, the body is capable of restoring its internal balance even if confronted with illness or stress. This is due to “organ reserve”: The functional capacity of human organs is four to ten times that required to sustain life. (Yance; 1999; 40) When we continuously deplete our reserves through bad diet, alcohol, drugs, smoking, environmental assault, lack of sleep and other staples of modern life, we risk developing a degenerative disease, of which cancer is the most virulent.

Amelioration of cancer promoting biochemistry begins with adopting a conscious diet that supports an individual client’s optimal personal health. While a severely depleted person may need the nourishment of organic animal proteins, someone who has been eating processed foods and animal protein throughout their lives may best be served by adopting a vegetarian or vegan based diet.

Refined carbohydrate consumption can create abnormally high levels of blood glucose. This is a common factor in many cancers. The excess glucose feeds the fermentation process of cancer cells and suppresses the immune system. People with active cancer are 3-8 times more likely to show high blood glucose levels. Another sign that the metabolism is not properly oxidizing the products of sugar breakdown is high blood lactic acid levels, also seen more frequently in persons with active cancers. The liver will simply convert excess lactic acid back to glucose, feeding tumor growth. Additionally, high levels of lactic acid contribute to the pain cancer can cause. (Yance; 43)

The most complete cancer care strives not only to increase tumor killing potential with the prudent use of anticancer agents like chemotherapy, but also to prevent damage to healthy tissue through nutritional intervention, complementary mind-body therapies and the use of specific supplements as directed by one’s physicians and nutritionist according to Keith Block. Jeffrey Bland suggests that physician’s who only consider what he characterizes as “the molecules of death” (cytotoxic drugs) are

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missing at least half the equation. Bland's "molecules of life" repair and support the regeneration of healthy tissue. The message for healthy tissue is carried in every gene, chromosome, and genome. With cancer conditions, the wrong messages are often turned on and the right messages are turned off. Nutrients play a key role in message switching at the genetic level. According to Bland, food is information for our genes. We can choose to eat disinformation or coherent information. (Bland; 1999; 2)

In part, many cytotoxic drugs work by poisoning the electron transport chain. Bland suggests preserving energy function *between* radiotherapy and chemotherapy treatments by using supplements that will increase oxidative chemistry in the cancer cell while enabling the host cell to maintain proper aerobic efficiency. Bland's suggested daily cocktail of antioxidants would include:

- natural vitamin E (includes alpha, beta, and gamma forms along with 200-400 mg tocotrienols) (up to 1,000 IUs)
- lipoic acid (500-2,000 mg)
- coenzyme Q10 (50-200 mg)
- N-acetylcysteine (500-2,000 mg)
- elemental zinc (50 mg)
- selenium (400 micrograms)
- in manganese-deprived patients with lower superoxide dismutase (SOD) activity, elemental manganese (5-10 mg)
- when copper-insufficient, elemental copper (up to 5 mg). (Bland; 1999; 6)

Low platelet count (thrombocytopenia) is common to most cancer patients and can be worsened by chemotherapy. Many chemotherapies result in an anemic condition not caused by iron deficiency. Iron reacts with oxygen to release one of the most deadly free radicals: hydroxal. So throwing more iron at the problem is not good strategy. Natural approaches allow deeper support for building the blood. Donald Yance provides many suggestions in his excellent book *Herbal Medicine, Healing and Cancer* for addressing anemic conditions:

Table 1: Supplements for Low Platelet Count

Supplement	Daily Dose
Red Root	60-120 drops (1/2 – 1 teaspoon) 3X/day
Marrow Plus or Composition A (Health Concerns)	4 tablets 3X/day or 4-5 tablets 3X/day
SP 500 Spleen Extract	2-6 tablets daily with meals
Melatonin	1-10 mg taken before bed
Shark oil	1,000 mg, 3-6X daily

(Yance; 1999; 308)

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Table 2: Herbal Formulas and Supplements for Anemia

Supplement	Daily Dose
Hydroxy Folate (B ₁₂ and folic acid) sublingually	10-20 drops (200 mcg per drop) taken
Aqueous Liver extract	2 capsules, 3X/day
Laktoferrin	4 capsules, before bed
Marrow Plus or Composition A	3-5 tablets, 3-4X/day

(Yance; 1999; 309)

Additional support specific to combating anemia is available from:

- Nettles leaf (1:1 extract), 1 to 5 dropperfuls, 1-3X/day
- Yellow dock, 1-2 dropperfuls, 1-3X/day
- Herbal bitter before meals. Improves appetite and improves assimilation of blood building nutrients
- Beetroot juice mixed with carrot juice
- Organic liver and small portions of organic meat (be sure to take herbal bitter 20 min before meal)
- Bone marrow soup with plenty of dark leafy greens

Excess uric acid frequently results from chemotherapy due to the negative effects cytotoxic drugs have on the kidneys. Arthritic pain from gout can become an additional burden for cancer sufferers. Gout is a good reason to avoid meat, shellfish and all alcohol. In addition to taking 10 drops of Hydroxy folate (B₁₂ and folic acid) and 500 mg each of bromelain and quercetin 3X/day between meals, the following formula is useful in ameliorating this condition:

Herbal Formula for Gout

Take 1 Teaspoon 3-6 times per day in black cherry concentrate or in a cup of watermelon seed tea			
Celery Seed	6 droppersful	Juniper	1 dropperful
Nettles (leaf, root, seed)	6 droppersful	Avena	2 droppersful
Burdock seed	3 droppersful	Colchicum	1.5 droppersful
Devil's claw	3 droppersful	Pipsissewa	1.5 droppersful

(Yance; 1999; 314)

Radiation Treatment and Nutrition Guidelines

To help clear dead cells and rebuild tissue when undergoing radiation therapy, it is helpful to take 3 - 5 tablets of Wobenzym (or other high quality, full-spectrum proteolytic enzyme formula) 3-4X/day on an empty stomach. Add one teaspoon L-glutamine powder at each meal. A good green supplement is important to help with detoxification. Yance suggests 1-6 teaspoons of Chlorella or Greens Plus in their powdered form each day.

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Radiation may affect your taste buds so that food may taste bitter or you may have a metallic taste in your mouth. The gastro-intestinal system is often disrupted. Ideas for overcoming side-effects include:

- Eat more plant-based proteins including legumes, whole grains and organic soy.
- Eat few or no animal proteins. When you do, marinate organic meats for better flavor.
- Cold or room temperature foods may be more palatable than hot.
- Use herbs such as thyme, tarragon, mint, and basil for added flavor.
- Add sauces (apple sauce, yogurt, salad dressing) to make food easier to chew.
- Snack on protein powder milk shakes (especially those made with organic soy or whey proteins)
- To sooth gastrointestinal tract, 4 fl oz of Aloe Vera juice (on empty stomach) can be helpful. (*Also see recipe for post-radiation tea below*)
- Minimize cow dairy consumption. Live culture organic yogurt or kefir may be well-tolerated. Give goat dairy products, especially yogurt and non-aged cheeses, a try.
- SpiruTein and similar meal replacement drinks are lactose free.

Many herbs can help with acute nausea and to support (not boost) the immune system through the assault of radiation. These include: Siberian ginseng, astragalus, ginko, ashwaganda, schizandra, licorice, green tea, uno de gato and reishi. Mix together as extracts (4-8 oz batches) and take 1 teaspoon in an ounce of aloe leaf juice 3-4X/day.

Post Radiation Tea

Mucilaginous and soothing, this tea is very healing to the mucous membranes, especially the linings of the respiratory, urinary and digestive tracts.

- 1) Equal parts slippery elm bark, marshmallow, plantain, mullein, horsetail, and comfrey.
- 2) Add 2 heaping tablespoons of mixed herbs to 3 points of cool water.
- 3) Let sit several hours or overnight.
- 4) Then heat herbal mixture gently being careful NOT TO BOIL.
- 5) Strain and drink throughout the day.

(Reference: *Herbal Medicine, Healing and Cancer*)

As noted, cancer loves glucose. Avoid sugar, alcohol and heavily processed or refined foods. In addition to the specific guidelines discussed so far, cancer sufferers are advised to eat a high quality, balanced, and slightly calorie restricted diet adjusted to each individual's circumstance. High quality means fresh whole foods, organically grown, prepared and cooked to maximize their life-enhancing nature. A balanced diet includes a variety of mostly plant-based foods distributed 40-60% carbohydrates, 20-30% protein and 20-30% *healthy* fats. Other general dietary considerations include:

- Drink plenty of fluids - 48 ounces each day - primarily clear liquids such as water, apple juice, clear broths or herbal teas. Avoid caffeine (black tea, coffee, colas) as these are dehydrating.
- Eat small quantities of food more frequently rather than large meals for easier digestion and to regulate your energy.

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- Eat whole grain crackers, brown rice, or a baked potato if you feel nauseous.
- Enjoy avocado often as it is an excellent source of calories, essential fatty acids, potassium and glutathione – unless contraindicated (*if on Procarbazine or other medication requiring a low tyramine diet – refer to charts below*)

Specific Chemotherapy Agents and Nutritional Guidelines

Asparaginase, Elspar	Drink extra fluids. Consume extra calories.
Bleomycin, Blenoxane	Bland foods
Busulfan, Myleran	Drink extra fluids. Eat foods rich in B vitamins.
Carmustine, BiCNU	Bland foods, avocado.
Chlorambucil, Leukeran	Drink extra fluids. Bland foods, avocado.
Cisplatin and carboplatin	Avoid purine rich foods (liver, caviar, sardines, anchovies). Eat plenty of magnesium, potassium and zinc rich foods (whole grains and nuts). Drink extra fluids.
Cladribine, 2-CdA, Leustatin	No special diet.
Cyclophosphamide, Cytoxan	Drink extra fluids. Don't cut back on salt or sodium containing foods. Avoid alcohol. Eat bland and low fat foods.
Cytarabine, Ara-C, Cytosar-U	Drink extra fluids. Bland foods, avocado.
Dacarbazine, DITC-Dome	Drink extra fluids. Bland foods, avocado.
Daunorubicin, Cerubine	Drink extra fluids. Eat foods rich in B vitamins, particularly riboflavin (milk, lean meat, egg yolks, wheat germ).
Doxorubicin, Adriamycin	Drink extra fluids. Eat foods rich in B vitamins particularly riboflavin (see above).
Etoposide, VePesid, VP-16	Bland foods, avocado.
5-Fluorouracil, Adrucil	Drink extra fluids. Eat foods rich in B vitamins.
Fludarabine, Fludara-IV	Drink extra fluids.
Hydroxyurea, Hydrea	Drink extra fluids.
Idarubicin, Idamycin	Drink extra fluids.
Ifosfamide, Ifex	Drink extra fluids.
Lomustine, CeeNU	Bland foods, avocado.
Mechlorethamine, Mustargen	Drink extra fluids. Restrict simple sugars.
Melphalan, Alkeran	Drink extra fluids.
Mercaptopurine, Purinethol	Drink extra fluids, avoid alcohol. Avoid foods rich in purines (anchovies, kidneys, liver, meat extracts, sardines, beans and lentils). Eat foods rich in B vitamins like wheat germ.
Methotrexate, Mexate	Drink extra fluids, avoid alcohol, bland diet. Eat foods that produce an alkaline urine to assist excretion (almonds, milk, fruits and vegetables <i>except</i> cranberries, plums, corn and lentils).
Mitomycin, Mutamycin	Drink extra fluids, bland diet, avocado. Eat foods rich in folate (green, leafy vegetables, citrus fruits) and foods rich in calcium (dairy foods, broccoli).
Mitoxantrone, Novantrone	Drink extra fluids (discolored urine)
Pentostatin, Nipent	Bland foods, avocado.
Procarbazine, Matulane	Avoid tyramine containing foods (aged cheeses, yogurt, raisins, eggplant, canned figs, salami, sour cream, avocados, bananas, soy sauce, lima beans, tenderized meats, etc. - ask for a list from doctor). Maintain tyramine free diet for 14 days after treatment ceases. No alcohol.

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Tamoxifen, Nolvadex	Avoid high fat foods. Exercise regularly to minimize possible weight gain side effect. Eat foods rich in calcium and magnesium (dairy foods, broccoli, nuts and seeds).
Taxol	Drink extra fluids.
6-Thioguanine, Tabloid	High fiber diet.
Vinblastine, Velban	Drink extra fluids.
Vincristine, Oncovin	Drink extra fluids, bland diet, avocado.

Immune-Based Anti-Cancer Agents

*Interferon-recombinant <i>Intron, Roferon</i>	Drink extra fluids, bland diet, avocado.
*Other cytokines	Eat plenty of protein.

Other Drugs used with Chemotherapy

Dexamethasone, Decadron	Low salt, high potassium diet (avocado, bananas, citrus fruits, most vegetables). Adequate chromium in diet (whole grains, brewer's yeast)
Prednisone, Deltasone,	Low sugar diet. No alcohol.
Meticorten, Orasen	Low salt, high potassium diet. No alcohol. Adequate chromium in diet (see above).
Mesna, Mesnex	Plenty of fluids.

If your oncologist is using combinations of the above medications modify the advice so that you retain the most important parts. Remember to involve him or her in your nutrition plan.

Nutritional Suggestions for General Immunotherapies

Acetaminophen	Eat plenty of foods rich in vitamins B (e.g. wheat germ) as this may deplete liver levels of B vitamins niacin, thiamin and pyridoxine.
Allopurinol (5FU)	Avoid purine rich foods, e.g. anchovies, sardines, liver or other organ meats.
Benadryl	Eat a diet that forms acidic urine. This means more meat, beans, cranberries and plums or prunes.
Busulfan	Drink plenty of fluids. No special protocol.
Corticosteroids	Eat chromium rich foods, e.g. wheat germ or supplement with no more than 200 micrograms of chromium GTF (glucose tolerance factor) or polynicotinate daily. Avoid candies and sweets and focus on starchy foods. Drink plenty of fluids.
*Interferons and other cytokines	General immune supportive diet rich in fruits and vegetables. Cooked foods may be recommended for part of the treatment period to minimize bacterial content.
Mesna	Drink plenty of fluids.

Reference:

The Cancer Nutrition Center Nutrition Handbook
<http://www.cancernutrition.com/treatment.htm>

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