

CHEMO-RADIATION TIPSHEETS

**Nutritional and Other Natural Suggestions
for Minimizing the
Short- and Long-Term Side Effects
Of Chemotherapy and Radiation Therapy**

BeatCancer.org

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Please Note:

The Center for Advancement in Cancer Education (BeatCancer.org) is an educational center, not a medical center, and the information contained in this booklet is meant as a guide for educational purposes only. The Center provides information, counseling and referrals; we do not diagnose or treat. Therefore this information is intended to be descriptive, not prescriptive. The statements contained herein have not been evaluated by the Food and Drug Administration and the products mentioned herein are not intended to diagnose, treat, cure, or prevent any disease.

The suggestions referenced in this report may be of value before, during or after treatment, but their appropriateness for any given patient depends on many individual factors and should be considered in the context of a complete holistic program. In this regard, BeatCancer.org counselors can provide much needed assistance. Because the hundreds of thousands of resources available on the internet may be misleading, confusing and overwhelming, patients are urged to take advantage of our 35 years of experience coaching nearly 30,000 patients.

Before implementing any of the suggestions in this booklet, patients are urged to check with a licensed healthcare professional. Our counselors can often provide a referral to a practitioner experienced in working with these or similar products. In addition to the suggestions that appear in this booklet, there are many other holistic approaches that can be very effective in managing treatment symptoms. We invite our readers to set up a telephone consultation for personalized guidance on these and other excellent resources.

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NUTRITIONAL AND OTHER NATURAL SUGGESTIONS FOR MINIMIZING THE SIDE EFFECTS OF CHEMOTHERAPY AND/OR RADIATION THERAPY

FOOD AND DIETARY SUGGESTIONS

1. Basic Dietary Regime

Food and beverage choices are the most powerful changes one can make to protect from cancer treatment side effects, make treatment more effective, and help prevent recurrence.

We recommend that you watch the DVD “Fight Cancer with Your Fork” and read the books *Kitchen Chemotherapy* and *Cancer’s Best Medicine* (www.BeatCancer.org).

Follow the guidelines in the introductions of *Hungry for Health* and *Hungrier for Health*, our two signature recipe books, and experiment with the 284 simple, tasty, healthful recipes they contain (www.HungryforHealth.net).

Take advantage of the individualized, one-on-one telephone consultation services provided on a donation basis by experienced BeatCancer.org counselors. We can help patients with practical dietary guidance and personalized diet and menu plans (215-942-6438).

2. Raw Vegetable Juices

Juicing is one of the best tools we have to help heal a diseased body. The juice of raw organic carrots, combined with raw beets (roots and tops), spinach, kale, collard greens or other dark green leafy vegetable should be prepared in a special juice extractor, such as a Champion (www.ChampionJuicer.com) or Omega (www.OmegaJuicers.com).

Suggested reading and recipes includes *Juicing for Life* (Calbourn), *Juicing Therapy* (Jensen), *Fresh Vegetable and Fruit Juices* (Walker), *Vegetable Juices & Cancer Treatment*, *Hungry for Health* and *Hungrier for Health* (Silberstein)

If juicing is not possible, extracted powdered juice concentrate such as Juice Plus+ is an excellent option (www.JuicePlus.com).

NUTRITIONAL SUPPLEMENTS

1. Antioxidants

Antioxidants are those substances that protect living tissues from the damaging effects of free radicals produced by ionizing radiation and toxic chemicals. There is much concern about whether cancer patients undergoing therapy should take antioxidants, and many oncologists caution that it might interfere with treatment effectiveness. The preponderance of evidence, however, culled from many research studies and documented by both radiation and medical oncologists, demonstrates that far from interfering with treatment, antioxidants actually help potentiate its effectiveness while protecting healthy tissue.

Suggested reading: *Should Cancer Patients Undergoing Chemotherapy and Radiation Take Antioxidants* (Moss) and *Vegetable Juices & Cancer Treatment* (Silberstein), both available from the BeatCancer.org office.

a. **Mixed Antioxidant Products**

By far, the safest and most effective antioxidants are whole-food based, rather than isolated, fractionated vitamins. Excellent examples are:

Juice Plus+ by The Juice Plus+ Company (www.JuicePlus.com)

Cell Guard Antioxidant Enzymes by Biotec (www.BiotecFoods.com)

Antioxidant by Mega Foods (www.MegaFood.com)

OPC3 by Market America (www.MarketAmerica.com)

b. **Carotenes**

Carotenes, particularly in their full complex, are highly protective against the damaging effects of radiation, especially to the skin. They are potent quenchers of free radicals, support and enhance cellular immunity, and stimulate the body to activate its own interferon immune response. One excellent source: Betaplex by Scientific Botanicals (www.TheDispensaryOnline.com)

c. **Pycnogenol**

Extracted from European pine tree bark, pycnogenol is a potent free radical scavenger with antioxidant activity 50 times stronger than vitamin E and 20 times stronger than vitamin C. Among its dozens of functions, it protects against ionizing radiation, hastens healing, fights inflammation, enhances immune resistance, and increases energy. One good source: Healthy Origins (www.HealthyOrigins.com)

d. **Vitamin E** (mixed tocopherols)

Vitamin E has demonstrated a protective effect against cancer in general, lung damage from smoking, the immune suppression induced by cancer chemotherapy drugs Adriamycin, Mitamycin C and 5-Fluorouracil, and the toxic effects of radiation. Applied topically three times daily, vitamin E can help heal mouth sores (mucositis) often caused by chemotherapy. According to a 2006 study, vitamin E can reduce the damage to nerves caused by the chemo drug cisplatin by a stunning two-thirds. The researchers gave vitamin E to one group of patients on cisplatin, but not to a control group. The group not receiving vitamin E had a 68.5% risk of nerve damage. Just 600 mg daily of vitamin E reduced that risk to only 21.4% with significantly less damage. (*Support Care Cancer* 2006; 14(11): 1134-40.)

e. **Vitamin C**

As an antioxidant, vitamin C aids in maintaining the activity of the glutathione molecule and the peroxidase enzymes, thereby enhancing detoxification of various drugs and chemicals. One good powdered source is Emergen-C by Alacer (www.EmergenC.com). Administered intravenously in very high doses, vitamin C may behave like a non-toxic chemotherapeutic agent and can be given in conjunction with conventional cancer treatments. Because the molecular shape of vitamin C is remarkably similar to that of cancer's favorite food, glucose, the vitamin C readily accumulates in cancer cells.

Basing his work on the research of Dr. Linus Pauling, Dr. Hugh Riordan and his RECNAC research team generated 20 published papers on vitamin C and cancer and proved that intravenous vitamin C at markedly high doses is selectively toxic to cancer cells without sacrificing the performance of chemotherapy (Orthomolecular oncology review: ascorbic acid and cancer 25 years later. *Integrative Cancer Therapies* 4(1) 2005). This research was recently reproduced and published by Dr. Mark Levine at the National Institutes of Health. Intravenous vitamin C also boosts immunity, stimulates collagen formation to help the body wall off the tumor, inhibits hyaluronidase, an enzyme that tumors use to metastasize and invade other organs throughout the body, and induces apoptosis to help program cancer cells into dying early.

When cancer patients receive IVC, they report that their pain level goes down, they are better able to tolerate their treatment, and they bounce back more quickly. One study from Korea (2007) showed that IVC therapy significantly improved quality of life for terminal cancer patients, bringing the global health/quality of life score up from 36 to 55 and yielding improvements in physical, emotional, and cognitive functions. Disease symptom severity also decreased, with patients showing significantly less fatigue, nausea/vomiting, pain, and appetite loss. These results were echoed in a 2011 German study which compared breast cancer patients receiving IV vitamin C and standard therapy together, versus standard therapy alone. Those receiving IV vitamin C

experienced a marked reduction (nearly 50%) in unpleasant symptoms and chemo-radiotherapy side effects such as loss of appetite, fatigue, depression, sleep disorders, and dizziness (www.NaturalNews.com).

f. **Cysteine**

Cysteine is a sulphur-containing amino acid and a strong antioxidant. It has the ability to help process and render harmless toxic chemicals and carcinogens. Cysteine compounds are able to reduce the toxicity of many drugs used in cancer therapy and are effective in reducing the side effects of radiation treatment. In a 2008 study (www.ncbi.nih.gov), cysteine-rich protein was shown to reverse weight loss in lung cancer patients receiving chemotherapy or radiotherapy. L-cysteine is available in pharmaceutical grade v-caps or powder (www.NutraBio.com).

2. Other supplements for treatment side effects

a. **Co-Enzyme Q-10**

Co-Q10, a naturally occurring enzyme in every cell, assists in cellular respiration, oxygenation, and energy production. It has been shown to prevent cardiotoxicity in Adriamycin-treated patients when supplemented at 100 mg/day, beginning 3-5 days prior to and throughout Adriamycin therapy. It is also effective as an immune-enhancing agent and has increased the survival rate of animals infected with leukemia virus. One good source: Kaneka by Healthy Origins (www.HealthyOrigins.com)

b. **Magnesium**

Some chemotherapies (and many pain medications) can cause constipation. Magnesium, nature's natural laxative, from 200-1000 mg daily, in divided doses, has been shown to be very effective. Anxiety and depression, which often accompany cancer and its treatment, may also respond to magnesium supplementation. Experimental studies have linked magnesium deficiency to anxiety and depression (Jacka F et al, Association between magnesium intake and depression and anxiety in community-dwelling adults: the Hordaland Health Study. *Aust N Z J Psychiatry*. 2009 Jan;43(1):45), and a clinical study contrasting the effects of magnesium (450 mg daily) against a popular anti-depressant drug found that magnesium was highly effective in treating depression, as effective as the medication (Barragán-Rodríguez L et al. Efficacy and safety of oral magnesium supplementation in the treatment of depression. *Magnes Res* 2008;21:218–23.)

Cisplatin, a platinum-based chemotherapy drug used to treat various types of cancer, including ovarian cancer, lymphoma, small-cell lung cancer, and sarcomas, can cause a number of serious side effects, including nephrotoxicity, neurotoxicity, and ototoxicity (hearing loss). In addition, cisplatin treatment causes magnesium

deficiency in up to 90% of patients. Magnesium deficiency severe enough to cause psychosis and seizures has been reported in some patients taking cisplatin. The results of a 2008 study indicate that prophylactic magnesium supplementation, in addition to preventing side effects that result directly from magnesium deficiency, can decrease the severity of cisplatin-induced renal damage without interfering with the anticancer effect of the drug. In fact, among cisplatin-treated cancer patients, those given magnesium had significantly slower disease progression and longer survival times, when compared with patients given a placebo. The 4-year survival rate was 63% in the magnesium group and 36% in the placebo group (Bodnar L et al. Renal protection with magnesium subcarbonate and magnesium sulphate in patients with epithelial ovarian cancer after cisplatin and paclitaxel chemotherapy. *Eur J Cancer*. 2008;44:2608). One good magnesium source: Natural Vitality Calm (www.NaturalVitality.com).

c. Shark Liver Oil

Low platelet count (thrombocytopenia) is a frequent side effect of chemotherapy. A natural therapy to restore healthy platelet production is five capsules a day of standardized shark liver oil, containing 200 mg of alkylglycerols per capsule. Some practitioners recommend up to 1000 mg of shark liver oil three to six times daily. Note: Shark liver oil capsules should be taken for a maximum duration of 30 days. A complete blood count (CBC) and platelet count should be obtained weekly to monitor the effectiveness of shark liver oil and to prevent against excessive platelet production (platelet counts exceeding 400,000 have been associated with increased risk of thrombosis). An excellent source is Scandinavian Formulas Shark Liver Oil (www.ScandinavianFormulas.com).

d. Melatonin

Melatonin may also be an especially effective and safe therapy to correct thrombocytopenia (low platelets). In patients who randomly received chemotherapy alone or chemotherapy plus melatonin (20 mg each evening), thrombocytopenia was significantly less frequent in patients treated with melatonin (Lissoni 2002). Melatonin has been shown to protect against chemotherapy-induced myelosuppression (suppression of blood cell production in bone marrow), neuropathies (abnormality of nerve functioning), and stomatitis (mouth inflammation). The appropriate dose of melatonin was between 30-50 mg at bedtime (Lissoni et al 1997). Melatonin should be started before chemotherapy is initiated. Malaise and lack of strength were also significantly less frequent in patients receiving melatonin. Studies have shown that melatonin specifically exerts colony-stimulating activity and rescues bone marrow cells from apoptosis induced by cancer chemotherapy compounds. When used in combination with interleukin-2 (IL-2), melatonin enhances the anticancer action of IL-2 and reduces IL-2 toxicity.

e. Real Build

Containing small RNA fragments, Real Build is a clinically studied formula that helps maintain platelet and white blood cell counts. The contents of two to four cones per week dissolved slowly under the tongue have been shown to be very effective in restoring proper blood counts following chemotherapy-induced thrombocytopenia. A study conducted at Cancer Treatment Centers of America (Levin et al, *BioMed Central Cancer* 2010, 10) showed that this sublingual powder boosts bone marrow synthesis and accelerates platelet recovery. Source: Natural Source International (www.Natural-source.com)

f. Probiotics

Probiotics can play an important role in helping to restore healthy gut flora in patients whose digestion and elimination have been compromised by chemotherapy. Japanese studies have found that giving patients with bladder cancer high doses of probiotics can double the remission time, and the tumors that recurred were less aggressive (*Urol Int* 1992;49(3):125 and *Eur Urol* 27(2):104)). In a study of people who had been treated for colon cancer, probiotics improved immune response, reduced DNA damage, inhibited cancer cell growth, promoted apoptosis, and reduced metastatic spread (*Br J Nutr* 2005 Apr; 93:S73). When choosing a probiotic supplement, look for a product with at least 30 billion microorganisms from multiple strains of microflora. Excellent products include Healthy Origins Probiotic (www.HealthyOrigins.com), Orthomolecular Products Probiotic 225 (www.OrthomolecularProducts.com), and Garden of Life Raw Probiotics.

TISSUE EXTRACTS

1. Thymus Extract

Thymus tissue extract helps enhance immune responsiveness by preventing thymic atrophy caused by immunosuppressive drugs and radiation. Thymic tissue extracts can also help prevent anemias and poor blood counts often resulting from radiation and chemotherapy. Tissue extracts of yearling calf thymus can be useful in nurturing and supporting human thymic tissue, while increasing serum thymic factors and thymic hormone production. This is important because the thymus gland is the master gland of immunity, stimulating T-cell activity and regulating the balance between T-helper and T-suppressor cells. Thymic support products increase white blood cell counts and help induce apoptosis (programmed cancer cell death). Excellent sources for thymic support include Complete Thymic Formula (www.ModernHerbalist.com and www.LogosNutritionals.com), ProBoost Thymic Protein A (www.ProboostMed.com and www.Prohealth.com), and Standard Process Thymus PMG, The latter generally available through practitioners only (www.StandardProcess.com).

2. Bone Marrow Tissue Extract

The bone marrow is a major blood-producing organ, whose activity is very often significantly depressed in those patients receiving radiation and chemotherapy. Bone marrow tissue extract may provide the cellular factors to support and stimulate activity and blood production. Excellent sources include Standard Process Ostrophin, again available only through practitioners (www.StandardProcess.com).

3. Liver Tissue Extract

The liver performs hundreds of functions in the body, among them detoxification of most drugs and chemicals. Liver tissue extract can provide the cellular factors to support the liver in its detoxification processes when over-stressed during chemotherapy. It can help to improve liver function, prevent liver damage, and regenerate liver tissue. It can also provide nutritional factors such as vitamin B-12, which can enhance proper blood production. It is important to find a liver extract that is prepared from organically grown animals and is free of pesticides and synthetic hormones. Excellent sources include Cardiovascular Research Lyophilized Liver Extract (www.PureFormulas.com) and Standard Process Hepatrophin, again available only through practitioners (www.StandardProcess.com).

BOTANICAL PRODUCTS

1. Viscum Album (Mistletoe or Iscador)

Extracts of *Viscum album* have been used in Europe in the treatment of cancer for decades. Research has shown *Viscum* to be a potent immune-potentiator capable of proliferating normal thymic tissue and increasing thymus weight and size. It is also capable of accelerating production of hematopoietic (blood-forming) tissue in the bone marrow and spleens of irradiated animals. Therefore it may help in preventing the immuno-suppression, thymic atrophy, and bone marrow depression caused by radiation and chemotherapy. This product is available in homeopathic form but in large doses is best administered by a physician. (Firuzi Mehta, *Iscador Therapy for Cancer*, *Hpathy Ezine*, Oct. 2010)

2. Glycyrrhiza Glabra (Licorice)

Glycyrrhiza provides immune enhancing properties, including interferon production, thymus protection, and anti-tumor activity. It can also increase the half-life of cortisol (cortisone), enhancing its anti-inflammatory action, while reducing its side effects of

thymic atrophy, immune suppression, and gastric ulcers. Experiments on animals with Lewis lung carcinoma and Ehrlich tumor showed that licorice extract and its derivatives improved the antitumor effect of cyclophosphamide chemotherapy, reduced its toxic effect on peripheral blood leukocytes, and helped to prevent metastasis and recurrence of lung cancer. (*Bull Exp Biol Med* 2008 Feb;145(2):252-5. Goldberg ED et al. Institute of Pharmacology, Tomsk Research Center, Siberian Division of Russian Academy of Medical Sciences.) Patients with a tendency towards hypertension (high blood pressure) should avoid this product. Suggested dose 30-40 drops in water two to four times daily. One good source is Herb Pharm Licorice Liquid Herbal Extract (www.Herb-Pharm.com)

3. Eleutherococcus Senticosus (Eleuthero or Siberian Ginseng)

Siberian ginseng is not technically a species of ginseng and is best referred to by its botanical name *Eleutherococcus*, an adaptogenic herb grown in Northern Asia. Its active eleutheroside and polysaccharide components can significantly enhance the phagocytic activity of white blood cells, oxygenate red blood cells and stimulate energy. Eleuthero extract has also been shown to bind to estrogen and stimulate T-lymphocyte and natural killer cell production. In addition to minimizing the side effects of chemotherapy, this plant has been shown to provide a protective effect against radiation toxicity and to hasten recovery from radiation sickness. One excellent source is Elk Mountain Herbs Siberian Ginseng Root Tincture (www.ElkMountainHerbs.com)

4. Echinacea Angostifolia (Echinacea or Coneflower)

This plant contains polysaccharides which have been demonstrated in many studies to stimulate T lymphocyte and interferon production, to increase macrophage phagocytosis, and to enhance natural killer cell activity. Good sources are Nature's Answer (www.NaturesAnswer.com), Herb Pharm (www.Herb-Pharm.com) or Gaia Echinacea Supreme (www.GaiaHerbs.com)

5. Astragalus Membranaceus (Astragalus or Huang Qi)

Astragalus root has a long history in Traditional Chinese Medicine for strengthening the body's resistance to illness, especially in wasting and exhausting diseases. Recent studies have shown that astragalus can enhance production of interferons, stimulate macrophage activity, and increase cellular immunity in cancer patients. Good sources are available from Nature's Answer (www.NaturesAnswer.com) or Herb Pharm (www.Herb-Pharm.com).

6. Silybum Marianum (Silymarin or Milk Thistle)

Silymarin is a strong antioxidant herb (50 times stronger than Vitamin E) which is tissue specific to the liver. It protects the liver from free radical damage due to toxic exposure and increases glutathione concentrations in the liver. Silymarin can stimulate the

production of new healthy liver cells without having a stimulatory effect on malignant liver tissue. Silymarin also protects the kidneys from the anticancer drug cisplatin, known for its renal toxicity (Gaedeke, Cisplatin nephrotoxicity and protection by silybinin, *Nephrology, Dialysis and Transplantation* 11 (1), 1996).

7. Red Beet

Freshly expressed raw beet juice or compressed food tablets of whole red beet have been found by some medical practitioners to be very helpful in detoxifying the liver and in building the blood, especially in cases of anemia and leukemia. Good sources of tableted beet juice are Pines Beet Juice Powder (www.WheatGrass.com), Standard Process Betafood (www.StandardProcess.com), and Sonne's Whole Beet Plant Juice (www.SwansonVitamins.com).

8. Phyllanthus (Bhumyamalki or Chanca Piedra)

Phyllanthus is a genus referring to several adaptogenic herbs with a long established tradition of use in the Ayurvedic system of medicine, especially for their hepatoprotective (liver detoxifying) and antidiabetic properties (note: diabetics introducing Phyllanthus may find decreased need for medication). In a series of experiments on mice and on human cancer cell lines, scientists found that an extract of Phyllanthus emblica may help slow cancer tumor growth and promote apoptosis, or programmed cancer cell death (*Phytotherapy Research* 2010). A 2012 study from *Pharmaceutical Biology* determined that several species of have high levels of liver-protecting activity. Phyllanthus fraternus is known to protect the body from damage during radiation and chemotherapy. One source: BodyGuard Supreme (www.Supreme NutritionProducts.com)

9. Cereal Grasses

Green cereal grasses (wheat grass, barley grass, etc.) have high concentrations of chlorophyll, a powerful wound healer, detoxifier and blood builder. The molecular structure of chlorophyll is identical to that of hemoglobin, with the exception of magnesium instead of iron, which makes it very helpful in reversing anemia. An added advantage of grass extracts, available in powder and tablet form, is their concentration of essential trace minerals. Good sources are Pines Wheat Grass (www.MyPines.com), Barley Grass Juice Powder (www.LiveSuperfoods.com), Kyolic Kyo-Green® Energy Powdered Drink Mix, and Garden of Life Perfect Food (www.GardenofLife.com).

10. Kelp and Other Seaweed

Kelp and other sea vegetables are rich in vitamins and trace minerals, especially organic iodine, which can protect the thyroid against radiation damage and help detoxify the body from radiation exposure. Sea vegetables contain sodium alginate that helps remove

radioactive particles and heavy metals from the body. They may be consumed as food but are also available in supplement form. Some excellent products include Alaria Supreme (www.SupremeNutritionProducts.com), Nature's Way Kelp (www.NaturesWay.com), and SeaVegg (www.SeaVeggStore.com).

10. Micro-Algae (Chlorella and Spirulina)

Like sea vegetables, single cell micro-algae are rich in carotenes, chlorophyll, iodine and protein. They help protect against radiation illness, boost immunity, improve digestion and detoxification, and stimulate natural killer cells and T-helper cells. Micro-algae also support liver and kidney function and bone marrow and blood health, especially during chemotherapy. A study reported in *Nutrition and Cancer* (1995) showed a complete regression of pre-cancerous mouth lesions in 45 percent of subjects who were given extracts of spirulina for twelve months (Mindell, *Earl Mindell's Secret Remedies*, p 77). Laboratory studies also show that spirulina polysaccharides can work to repair genetic material that has been damaged from heavy metal toxins or from radiation (Stengler, *A Natural Physician's Healing Therapies*, p 428). Daily intake of 5-20g of spirulina has been shown to triple low white blood cell counts within three weeks.

As reported in *Herbal Medicine, Healing & Cancer* by Dr. Donald Yance (1999), in a Medical College of Virginia study, researchers treated 15 glioblastoma patients with powdered and liquid chlorella combined with standard chemotherapy and/or radiation therapy. Although the two-year survival rate in glioblastoma patients is normally only 10 percent, the 15 chlorella-treated patients exhibited a survival rate of 40 percent. Excellent sources of micro-algae include Crypto-Power (www.Shokos.com) and Spirulina Powder (www.NowFoods.com).

10. Medicinal Mushrooms

a. Lentinus Edodes (Shiitake)

Shiitake mushroom has been used for centuries in Chinese medicine to increase resistance to disease. Its lentinan polysaccharide has demonstrated significant immuno-stimulating and antitumor activity in numerous animal and human studies. Shiitake stimulates production of interleukins and T-lymphocytes and enhances T-helper cell function and the cytotoxic activity of macrophages against tumor cells. An edible mushroom, it may be purchased as food or in concentrated capsules. A good source is Standardized Shiitake & Maitake Extract by Nature's Way (www.HerbalRemedies.com)

b. Grifola Frondosa (Maitake)

Recent scientific studies have confirmed that maitake is one of the most potent medicinal mushrooms in terms of enhancing immune function. Its polysaccharide

called beta-glucan stimulates natural killer cells, macrophages, and helper T-cells. Dr. Hiroki Nanba of Japan discovered the remarkable effects of maitake extract used along with chemotherapy for inhibiting tumor growth. Maitake D-fraction has been shown to improve positive benefits of chemotherapeutic agents and ameliorate many of their side effects. An excellent source is Mushroom Wisdom (www.MushroomWisdom.com).

c. Ganoderma Lucidum (Reishi)

Reishi can help increase white blood cell counts, platelets, hemoglobin, and various tumor-fighting cells, as well as improve energy. Because of its stimulating effects on bone marrow, reishi can protect the body during radiation and chemotherapy and accelerate recovery from chemotherapy-induced immuno-suppression. Clinical studies have shown reishi effective in treating leukopenia, as well as improving symptoms of weakness, dizziness, and sleeplessness, and elevating all suppressed blood counts (Yance, *Herbal Medicine, Healing & Cancer*, 1999). Reishi is especially effective in leukemia, lymphoma and multiple myeloma. An excellent source is Mushroom Science Reishi Super Strength (www.MushroomScience.com)

d. Active Hexose Correlated Compound (AHCC)

AHCC is a natural fermented compound made of several mushrooms used in traditional healing. This mushroom hybrid helps maintain peak natural killer cell function, supports enhanced cytokine production (immune-modulating agents like interferon and interleukin), and promotes optimal T-cell and macrophage activity. AHCC is used to protect the immune system of cancer patients undergoing chemotherapy and radiation in over 700 clinics and hospitals in Japan and has been shown to help prevent opportunistic infections.

More than 30 articles have been published on the use of this product in cancer (www.AhccPublishedResearch.com). In one study conducted at Kansai Medical University in Osaka, Japan, patients treated for pancreatic or biliary tract cancer with gemcitabine were given AHCC and compared to a control group. The AHCC group showed a significant improvement in hemoglobin levels (thus preventing anemia) and c-reactive protein levels (indicating an anti-inflammatory response) (Yanagimoto H, et al, Alleviating function of health food (AHCC) for side effects in chemotherapy patients, 16th International Symposium of the AHCC Research Association, 2008). In an animal study, a chemotherapy drug was used to induce hair loss (alopecia) in rats. The rats who also received AHCC had a significantly lower rate and less severity of hair loss (Mukoda T et al, AHCC: research and commentary, *Japanese Journal of Cancer Research* 89: 2405, 2009). Numerous doctors in Japan have reported no loss of hair during radiation and chemotherapy in cancer patients taking AHCC.

An AHCC study done in China showed an 84% improvement in quality of life (fewer side effects, better mood) in 100 cancer patients undergoing treatment for a variety of

types of cancer with chemotherapy and radiation (Tang J et al, 9th International Symposium of the AHCC Research Association, 2001). The recommended usage is 3 grams per day. The original AHCC product, Immpower, is a very pure form brought in to the US by American BioSciences (www.TheHarmonyCompany.com)**.

11. Fermented Wheat Germ Extract (Avemar)

Since 1996, over 100 studies done on Avemar have impressed oncologists and cancer researchers. One of Avemar's unique benefits is that it cuts off a cancer cell's energy supply (glucose) by selectively inhibiting glucose metabolism. The second way Avemar works is to keep cancer cells from repairing and reproducing themselves. Studies have shown that when Avemar is used as an adjunct treatment, it enhances the effectiveness of the standard treatment and is particularly effective in reducing the chances of cancer recurrence. Avemar has been shown to be effective with malignant melanoma, colorectal cancer, lung cancer, oral cancer, breast cancer (ER+, ER-, and triple negative), head and neck tumors, leukemia, lymphoma, and pediatric solid tumors. In clinical trials, the addition of Avemar to standardized chemotherapeutic or radiation therapy was shown to reduce treatment side effects, speed immune system reconstitution, improve response to therapy, improve overall survival, and enhance quality of life (www.AvemarResearch.com). Most people who take Avemar report improvements in appetite, energy and general quality of life within three weeks. An excellent source is American BioSciences Ave Ultra (www.TheHarmonyCompany.com)**.

12. Citrus Oils

Peeling citrus fruits like oranges and tangerines can be very helpful in combating chemotherapy-induced nausea. In addition to peeling, sniffing and eating the fruit, one may add the essential oils of orange or tangerine to a diffuser so the aroma penetrates the room (Yance, *Herbal Medicine, Healing & Cancer*, 1999).

13. Zingiber Officinale (Ginger)

Ginger helps control nausea, detoxifies the liver, and aids digestion. In one study, taking ginger root powder was effective in reducing the severity of chemotherapy-induced nausea in children and young adults ages 8 to 21. Ginger in this study was also given along with standard anti-nausea medications. In the largest study to date evaluating the benefits of ginger for patients undergoing chemotherapy, low doses of ginger were found to cut symptoms of nausea by 40%. Although previous, smaller studies assessing the benefit of ginger for chemotherapy-related nausea had inconsistent results, they did not look at ginger supplementation before initiating chemotherapy, which allows for earlier absorption by the body. The new National Cancer Institute-funded study involved 644 people who had experienced nausea after one cycle of chemotherapy and had at least three more cycles to go. Participants, mostly women with breast cancer, were randomly assigned to receive a placebo or ginger in capsule form

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once a day for six days, starting three days before the first day of a chemotherapy cycle, as well as traditional drugs used to manage the nausea associated with chemotherapy. By the end of the first day, patients who took the equivalent of one-quarter to one-half teaspoon of fresh or dry ginger had no or very slight nausea, whereas those who took a placebo had a lot of nausea (WebMD.com). One hundred percent ginger ale works well for nausea, as does ginger tea. A good ale source is Reed's Premium Ginger Brew (www.Reedsinc.com). A good tea source is Traditional Medicinals Organic Ginger Aid (www.TraditionalMedicinals.com).

PRODUCTS FOR TOPICAL USE

1. Vitamin E

Mixed tocopherols of vitamin E can be very helpful for radiation burns and healing of closed, non-oozing wounds such as scars. Open the soft gel and apply the oil directly to the affected area. Applied topically three times daily, vitamin E can help heal mouth sores (mucositis) often caused by chemotherapy.

2. Salt and Soda Bath

Adding one cup of sea mineral salts and one cup of baking soda to a warm tub of water and soaking 15 to 20 minutes can be very helpful. Patients may continue taking this bath for several days after radiation treatment.

3. Aloe Vera

The Aloe vera plants leaf is filled with a liquid made of 96% water and 4% containing 75 other substances. Aloe vera gel is a mild anesthetic and helps to relieve itching, swelling, and pain. It is also antibacterial and antifungal, increases blood flow to wounded areas, and stimulates fibroblasts, the skin cells responsible for wound healing. In a study reported in the *Journal of the Medical Association of Thailand*, 27 patients with moderate burn wounds were treated with gauze coated in either aloe vera gel or Vaseline petroleum jelly. In the group treated with aloe vera, the burns healed more quickly, with an average healing time of 12 days compared to 18 days for the control group using Vaseline alone. Aloe vera is extremely useful in a gel form, and many cancer patients use this to help heal and soothe their skin from the sun burn type reaction caused by radiotherapy treatment. Specialist nurses and radiotherapists often recommend its use during, and for a few weeks after, radiotherapy treatment. Aloe is particularly soothing when refrigerated. A dilution of 1 oz aloe to 2 oz water can also be used as a gargle three to four times daily to stop the throat and mouth burn from radiation. Both Aubrey Organics 100% Organic Aloe Vera Gel (www.Aubrey-Organics.com) and Fruit of the Earth Aloe Vera Gel (www.Fote.com) contain 100% pure aloe, and the gels are alcohol-free so they will not dry out the skin.

4. Cream Preparations

a. Seven 7 Cream

Developed by a British homeopath, this cream hydrates the skin and promotes healing of radiation-damaged skin. It contains aloe vera, calendula, manuka honey, shea butter, avocado and coconut oils, and other natural ingredients, all of which assist healing burned tissue. Seven7 Cream is registered with Health Canada as a Natural Health Product and with the FDA as a homeopathic (www.natural-skin-health.com).

b. Xclair Cream

Xclair was formulated specifically for use in radiation dermatitis. Xclair contains the moisturizer hyaluronic acid, which can retain up to 1000 times its own weight in water. A natural component of skin, hyaluronic acid helps damaged skin to retain its moisture and has been found to facilitate wound healing. Xclair also contains extracts of chamomile and licorice root-- traditional remedies for reducing inflammation and soothing irritated skin, as well as other ingredients which protect against free radical damage to irradiated cells. Xclair should be applied to the affected area two to three times daily, from the commencement of radiotherapy treatment and continuing after treatment as required (www.Xclair.com).

c. RadX

Radx, although not all natural, is listed here because of its therapeutic value. In addition to its active ingredient Lidocaine, it contains aloe vera gel, almond oil, papain, bromelain, and other anti-inflammatory and anti-reddening ingredients that help protect against radiation damage. Radx is the first company in North America to include sea buckthorn in a skin treatment formulation. Sea buckthorn was used after the Chernobyl Nuclear Reactor meltdown, successfully treating burns caused by nuclear radiation exposure of the skin. Radx has been shown clinically to reduce both skin reddening and swelling during cancer therapy. Patients using this product line while undergoing radiation have found their skin to be soft and supple, without experiencing the usual burning, scarring and skin breakdown. Since 2003, RadX has been repeatedly proven -- in several hundred cancer treatment facilities in the US -- to prevent radiation dermatitis and to relieve many of the skin related side effects of radiation therapy. (www.RadxHelps.com)

Please Note:

The Center for Advancement in Cancer Education (BeatCancer.org) is an educational center, not a medical center, and the information contained in this booklet is meant as a guide for educational purposes only. The Center provides information, counseling and referrals; we do not diagnose or treat. Therefore this information is intended to be descriptive, not prescriptive. The statements contained herein have not been evaluated by the Food and Drug Administration and the products mentioned herein are not intended to diagnose, treat, cure, or prevent any disease.

The suggestions referenced in this report may be of value before, during or after treatment, but their appropriateness for any given patient depends on many individual factors and should be considered in the context of a complete holistic program. In this regard, BeatCancer.org counselors can provide much needed assistance. Because the hundreds of thousands of resources available on the internet may be misleading, confusing and overwhelming, patients are urged to take advantage of our 35 years of experience coaching nearly 30,000 patients.

Before implementing any of the suggestions in this booklet, patients are urged to check with a licensed healthcare professional. Our counselors can often provide a referral to a practitioner experienced in working with these or similar products. In addition to the suggestions that appear in this booklet, there are many other holistic approaches that can be very effective in managing treatment symptoms. We invite our readers to set up a telephone consultation for personalized guidance on these and other excellent resources.

BeatCancer.org
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