

Breast Cancer Care and Prevention: Non-Pharmacological Interventions

What Is Breast Cancer?

Cancer is marked by the uncontrolled growth of abnormal cells in the body caused by an interplay of genetic and environmental factors including: genetic vulnerability, food choices, lifestyle, and estrogen exposures.¹ Breast cancer occurs in one of eight women and is the most common cancer in women. It occurs in one percent of men.^{2,3} Seventy percent of breast cancers are hormone receptor positive, and genetic mutations such as BRCA 1 and 2 mutations increase breast cancer development with 60-80% lifetime risk.⁴⁻⁶

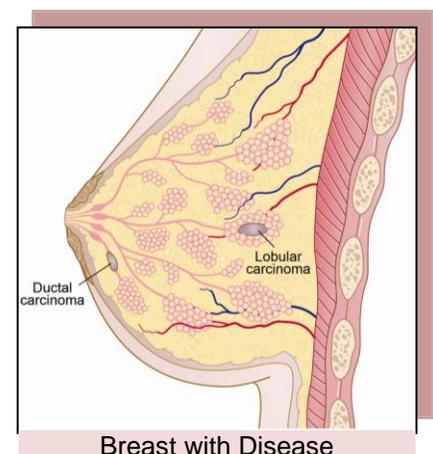
What Is an Integrative Approach to Breast Cancer Care?

Integrative medicine encourages an empowered approach to care which emphasizes lifestyle choices which may help prevent breast cancer, slow its growth when it occurs, and prevent recurrence.¹ It combines conventional and complementary and alternative (CAM) approaches to care that address physical, emotional and spiritual aspects of the person. Evidence based therapies are used when available. The healing intention of all therapies is emphasized. Cancer may serve as an opportunity for growth and greater health. CAM therapies, which interfere with conventional therapies, are avoided during that portion of treatment. Each person has a unique path to healing. CAM therapies may also reduce cancer treatment side effects.

What Are the Risk Factors for Breast Cancer?

Risk factors are reviewed by Costanza and Chen in UpToDate.⁷

- **Risk factors that increase risk of breast cancer include:**
 - Alcohol consumption of greater than 1 drink per day^{1,8,9}
 - Increased lifetime exposure to estrogen: exogenous and endogenous¹
 - Obesity^{1,10,11}
 - Increasing age¹
 - High fat, low fiber, processed food diet, low intake of fruits and vegetables¹
 - Exposure to radiation¹
 - Paternal or maternal family history of breast cancer^{12,13}
 - BRCA 1 or 2, or P53 mutations^{12,13}
 - Night shift work¹⁴⁻¹⁶

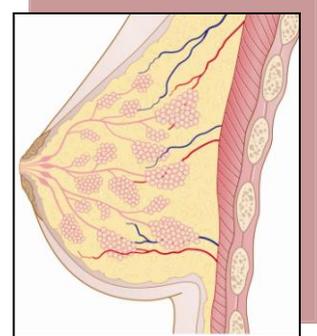




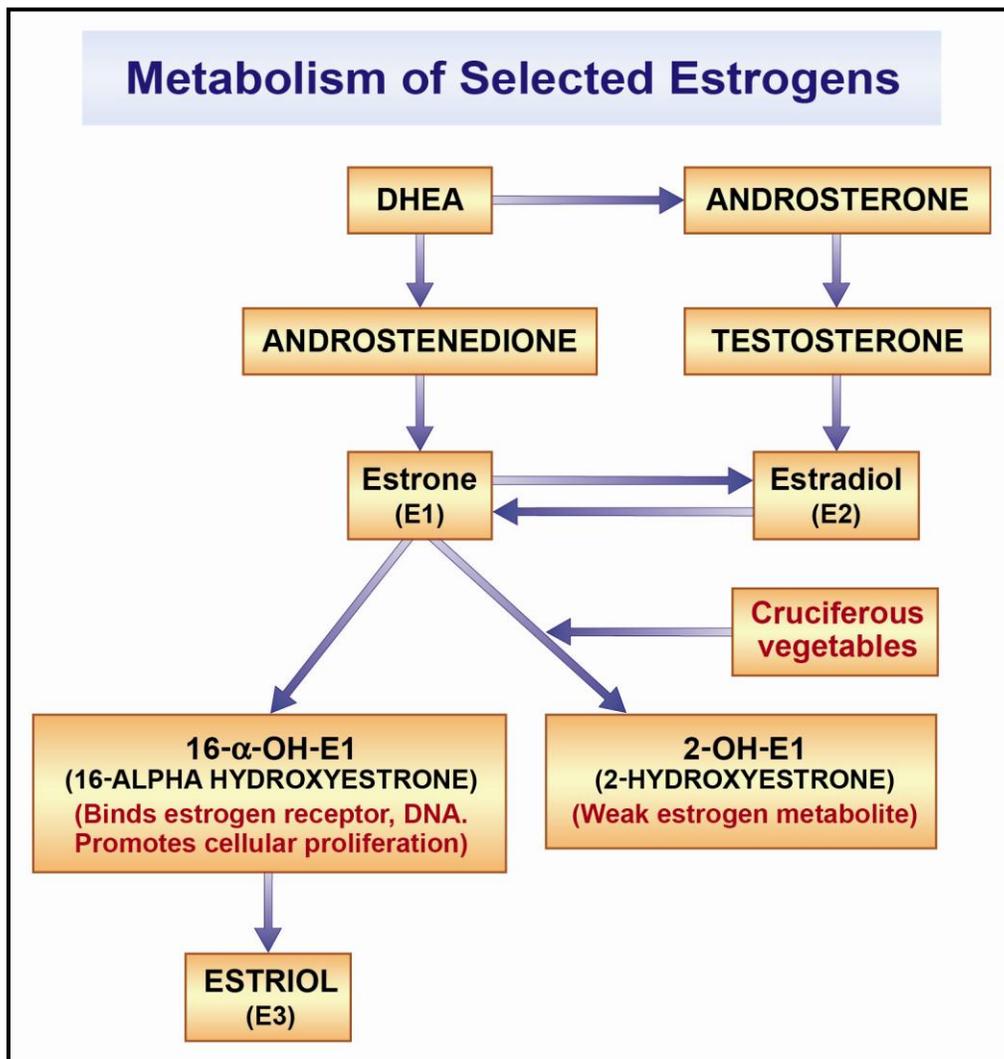
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Factors that decrease risk:

- Regular exercise 30-60 minutes 3-5 times per week.¹⁷
- Prolonged breastfeeding¹²⁻¹³
- Fresh foods including 5-9 servings of fruits and vegetables daily^{10, 17}
- Higher ratio of weak 2-hydroxyestrones versus stronger 16-hydroxyestrones metabolites in body. Can be measured with urine testing.¹⁸⁻²⁰



Healthy Breast





What are Some Integrative Non-pharmacological Therapies for the Prevention and Treatment of Breast Cancer?

Two important monographs on exercise and nutrition, one for cancer prevention and the other focused on the period during and after treatment, were created by the American Cancer Society (ACS). A panel of experts reviewed the scientific evidence and best practices guidelines. These guidelines were published in 2006 and updated in 2012.^{10,17} Access condensed versions here. See links on page 10 for the complete articles.

- **Prevention:** <http://www.cancer.org/acs/groups/cid/documents/webcontent/002577-pdf.pdf>
- **Treatment:** <http://www.cancer.org/Treatment/SurvivorshipDuringandAfterTreatment/NutritionforPeoplewithCancer/nutrition-and-physical-activity-during-and-after-cancer-treatment-answers-to-common-questions>

- **Nutrition**

Diets high in fruits and vegetables, fish, fresh foods, low in animal fat, and high in olive oil (the Mediterranean diet) may reduce the risk of breast cancer and many other cancers, whereas, the western diet high in fats and low in fruits and vegetables may increase risk.²¹ The Mediterranean diet favors weak estrogenic metabolites, which stimulate vulnerable breast tissue less than stronger estrogen metabolites, which may lead to breast cancer development.^{19,22,23} For an easy to follow food pyramid that defines key ingredients of the Mediterranean diet, see the website at the University of Michigan Integrative Medicine Program at <http://www.med.umich.edu/umim/food-pyramid/about.htm>.

- **Polyunsaturated Fatty Acids**

Polyunsaturated fatty acids include omega 3 and 6 fatty acids. In large quantities and especially if hydrogenated for extended shelf life, oils such as sunflower, safflower, soy, sesame and corn oils can be pro-inflammatory in the body. Omega 3 fatty acids including EPA and DHA are anti-inflammatory, and include fish oil, flax seed oil and the oil in walnuts. Omega 3 fatty acids are present in fatty fish such as salmon, sardines and mackerel, walnuts, green leafy vegetables and flax seed meal. The VITamins and Lifestyle (VITAL) Study demonstrated that fish oil reduced the risk of ductal but not lobular breast cancers.²⁴ In another study, fish omega 3 intake was found to reduce risk of breast cancer in pre and postmenopausal women with the greatest reduction in postmenopausal women.²⁵

Dosing: High potency fish oil: about 1000 mg of combined DHA and EPA daily in less than 3 gms of total fish oil. Flax seed oil can be substituted on a vegan diet.

Contraindications: If any bleeding occurs, stop fish oil immediately. Stop one week prior to surgery. Stop if platelets are less than 20,000K.



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- **Monounsaturated Fatty Acids**
Oleic acid (omega 9 fatty acid) found in olive oil, as well as avocados, hazelnuts, and cashew nuts, may help suppress HER 2/Neu tumor cell growth.

- **Green Tea**
Green tea is a polyphenol and natural aromatase inhibitor. Green tea ingestion of 3 cups or more per day in two studies reduced the risk of breast cancer.^{26,27}
Dosing: Three or more cups a day.

- **Soy**
Soy has been controversial in the past in estrogen positive tumors because it is a phytoestrogen with weak estrogen receptor binding properties. In rat models, isolated isoflavones stimulated estrogen positive tumors, but soy foods have opposite protective effects.²⁸ The large Shanghai Breast Cancer Survival Study showed that soy food intake was associated with increased survival and less recurrence of tumors in estrogen positive and negative women, and in users and nonusers of tamoxifen.²⁹ In other studies, this finding has been replicated.³⁰⁻³² One to three servings of soy foods are recommended daily unless sensitive to soy.

- **Flax**
Flax as flax seed meal or oil, is a rich source of phytoestrogens containing alpha-linoleic acid. As an omega 3 fatty acid containing food, it inhibits aromatase activity, binds weakly to estrogen receptors, and increases the weaker 2-OHE's. It reduces the risk of breast cancer and decreases breast cancer cell growth.^{18,19,33} Use 1-2 tablespoons a day added to food.

- **Antioxidants**
Diets high in antioxidants contained in fruits and vegetables may lower risk of breast cancer.²¹ Carotenoids in fruits and vegetables reduced the risk of invasive breast cancer in premenopausal women.³⁴ Antioxidants in foods are safer than high dose supplement forms given synergistic effects and better absorption. Scant evidence exists for antioxidant supplements during cancer treatment, and there are potential risks of them interfering with treatment.³⁵ Recommend 5-9 servings of fruits and vegetables daily.

- **Whey protein**
Whey protein powder is a by-product of cheese production. It is much less allergenic than casein protein. It is high in glutamine and helps prevent mouth sores (stomatitis) in patients receiving chemotherapy and may be useful in preventing the peripheral neuropathy of certain chemotherapy agents such as taxanes. 20-30 gms of whey protein powder twice daily in smoothies will provide enough glutamine to help prevent these complications of chemotherapy. If there exists sensitivity or allergy to whey, glutamine can be taken as a supplement, 3-5 gms one to three times daily.³⁶



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- **Brassica (Cruciferous) vegetables**

Cruciferous vegetables include kale, broccoli, cauliflower, brussels sprouts and cabbage. Indole-3-carbinol contained in these vegetables helps decrease cancer cell proliferation, increase apoptosis, and increases the ratio of weak to strong estrogens (2-OHE/16-OHE) favorably. Breast cancer risk may be reduced by 20-40% with 1-2 servings of cruciferous vegetables daily.^{23,37-39} Indole-3-carbinol as a supplement can interfere with Tamoxifen and is safer to eat in vegetable form than in supplement form.¹ 1-2 servings per day.

- **Exercise**

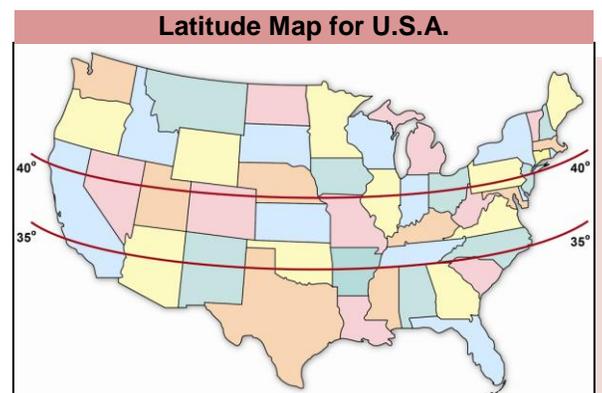
In the prevention of cancer, exercise may help control weight, improve immunity and mood control. In cancer treatment, it may benefit mood, energy levels, immunity, overall health, survival, prevention of recurrence, and quality of life. Exercise may also improve balance with decrease in falls and improves vasomotor instability in menopause.^{40,41} Exercising more than 3 hours a week lowered breast cancer mortality.⁴² It also improves fitness during conventional cancer therapies.⁴³

- **Supplements**

One important resource for evaluating which supplements can improve the effectiveness of chemotherapy agents, and which interfere is *The Definitive Guide to Cancer, 3rd Edition: An Integrative Approach to Prevention, Treatment and Healing* by Lise Alschuler, ND and Karolyn Gazella, 2010.¹

- **Vitamin D**

Vitamin D deficiency is common in latitudes farther from the equator and can result in osteoporosis, weakness, low back pain, and sternal pain. Individuals at risk include those 65 years or older, little unprotected sun exposure, darker skin color, and medication use with glucocorticoids or anticonvulsants.^{44,45} Strong evidence exists that adequate vitamin D levels may reduce breast cancer risk especially in those with higher levels.^{46,47} Food sources except oily fish contain inadequate amounts of vitamin D, and their taking a daily supplement is advised unless adequate sun exposure is available. One study found that levels of vitamin D in the 60-80 ng/ml lowered the risk of premenopausal breast cancer.⁴⁸ Recommend obtaining a 25 hydroxy-vitamin D level in winter for patients living at latitudes farther from the equator. Recommend vitamin D3: 1000-2000 IU daily.⁴⁹⁻⁵¹ During the summer months at latitudes greater than 35-40 degrees north of the equator, or daily at latitudes closer to the equator, moderate exposure to sun, at least 20 minutes midday without sunscreen for patients who are not at risk for sunburn or skin cancer, will help maintain normal vitamin D levels.⁵²





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- **Melatonin**

Melatonin has antioxidant, immune enhancing, cytotoxic, and estrogen regulating properties. It can help in the treatment of insomnia. It is contraindicated in bipolar illness, and in some vulnerable individuals may worsen depression. Exercise caution with other sedative medication. Melatonin comes in two forms: an immediate release preparation for individuals having difficulty in falling asleep, and a sustained release preparation for those having difficulty staying asleep.^{53,54} Dosing ranges from 1 mg to 20 mg before bed, and a starting dose is 3 mg before bed. Titrate to desired effect, without causing a hangover the next day.

- **Botanicals**

Botanicals may be helpful in the treatment of cancer but must be used carefully during chemotherapy, since many botanicals can interfere with the metabolism of the chemotherapy agent by increasing or decreasing its metabolism in the body. Certain botanicals interfere with the metabolism of taxanes, platinum based drugs, cyclophosphamide, doxorubicin, etoposide, and irinotecan.¹ Generally, botanicals do not interfere with radiotherapy. Botanicals such as St John's Wort can interact with other drugs the patient may be taking via the cytochrome P450 metabolic pathway.

For specific information on botanical and supplement interactions with chemotherapy drugs, refer to the text *The Definitive Guide to Cancer, 3rd Edition: An Integrative Approach to Prevention, Treatment and Healing* by Lise Alschuler and Karolyn Gazella, Celestial Arts, 2010.

- **Spiritual and Emotional Care**

Small group psychological interventions for breast cancer patients led by a psychologist and concentrating on stress management and strategies to optimize conventional treatment and improve mood helped decrease recurrence and mortality.⁵⁵

Integrative Management of Side Effects from Breast Cancer Treatment

- **Fatigue**

Fatigue is a common symptom of cancer and treatment. Daily gentle exercise and acupuncture may help.^{40,56-58}

- **Vasomotor Instability**

Exercise, acupuncture, and a number of pharmacological medications may help with vasomotor instability from menopause.⁵⁹⁻⁶³ Black cohosh is not estrogenic; in one study it decreased risk of breast cancer, but generally it is not helpful in controlling hot flashes.^{35,64,65} Black cohosh can cause liver toxicity and must be used cautiously.

Breast cancer survivors tend to have 10% more sleep disturbances even long term than age matched women without cancer. These sleep disturbances in both groups are associated with hot flashes, depression, more distress, and worse physical conditioning.⁶⁶ In one study, breast cancer survivors had less physical activity and more hot flashes than women without breast cancer.⁶⁷



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- **Nausea and Vomiting**

Acupuncture with and without moxibustion helped alleviate nausea and vomiting in cancer treatment.⁶⁸⁻⁷¹ Nausea intensity decreased in one study with exercise.⁷² Ginger may also help alleviate nausea. Its mechanism for this is unknown. Take 500 to 1000 mg ginger root extract every 4 to 6 hours as needed, or eat 1 tsp or 5 gm crystallized ginger every 2 to 3 hours as needed. Too much ginger may cause heartburn.⁷³ A systematic review to evaluate the use of cannabis as a therapeutic agent for treating chemotherapy-induced nausea and vomiting in cancer patients concluded that dronabinol was statistically and clinically more effective as an anti-emetic than neuroleptics. Caution is suggested related to the small sample size and number of studies.⁷⁴

- **Anxiety/ Stress/ Depression**

Anxiety and depression may be improved with a number of studied interventions including acupuncture, an 8-week Mindfulness-based Stress Reduction Program, art therapy, and exercise.^{57,75-79} Massage therapy, yoga, and support groups have also proved beneficial to cancer patients.^{68,78-86} Aromatherapy, dance, journaling, guided imagery, biofeedback, cognitive behavioral therapy, meditation, relaxation, and hypnosis also were helpful during treatment.^{35,87}

- **Insomnia and Other Sleep Disturbances**

Good sleep hygiene helps induce sleep at night when production of melatonin is optimal. Minimizing sleep during the day, exercising regularly, sleeping in a quiet dark room, and going to sleep at a similar time each night promotes sleep. Relaxation, meditation and yoga can increase melatonin and optimize sleep.⁸⁸ Cognitive behavioral therapy also has positive effects on sleep.⁸⁹

Regular exercise can help to reinforce normal circadian rhythm and endogenous melatonin production by increasing wakefulness during the day and sleep at night.⁴⁰ Melatonin in supplemental form can be used.

- **Pain and Peripheral Neuropathy**

Acupuncture may be helpful with pain relief. One study showed improved pain scores and psychological functioning with an 8-week course of acupuncture.⁵⁷ The Society for Integrative Oncology upon review of the literature strongly endorses acupuncture for this indication.⁶⁸ Massage may also be very helpful in relieving pain.⁶⁸ Exercise maintains fitness during treatment.⁴³ Cannabinoids may also help neuropathic pain.⁹⁰ Mind-body therapies may also be efficacious for pain.⁹¹

- **Lymphedema and Musculoskeletal Issues**

Lymphatic massage and exercise may prevent some degree of lymphedema and prevent or relieve shoulder dysfunction.^{68,92} One study showed that gentle weight lifting twice weekly did not worsen lymphedema, but improved it and increased strength.⁹³ Acupuncture increased shoulder range of motion and decreased lymphedema and its symptoms of heaviness and tightening in a small study by Alem and Gurgel.⁹⁴

- **Dermatitis from Radiation Therapy**

Calendula cream applied multiple times daily to the skin being irradiated may reduce the severity of dermatitis from therapy.⁹⁵



Therapeutic Review: Treatment of Symptoms in Cancer Treatment

SYMPTOM	TREATMENT
Fatigue	<ul style="list-style-type: none">● Exercise● Acupuncture
Post menopausal hot flashes	<ul style="list-style-type: none">● Medications such as SSRI's, SNRI's, and gabapentin● Acupuncture● Exercise
Nausea and vomiting due to chemotherapy	<ul style="list-style-type: none">● Acupuncture● Ginger● Cannabis
Anxiety, stress, depression	<ul style="list-style-type: none">● Acupuncture● Mindfulness Based Stress Reduction● Art Therapy● Exercise● Yoga● Massage● Support groups
Insomnia	<ul style="list-style-type: none">● Exercise● Melatonin● Relaxation techniques● Sleep hygiene
Pain and peripheral neuropathy	<ul style="list-style-type: none">● Acupuncture● Exercise● Cannabinoids● Massage● Mind-body therapies
Lymphedema	<ul style="list-style-type: none">● Acupuncture● Exercise● Lymphatic massage
Radiation dermatitis	<ul style="list-style-type: none">● Calendula cream

Patient Education

Three patient handouts related to breast cancer care and prevention are also available.

- [Breast Cancer Care and Prevention: Guidelines for a Healthy Lifestyle](#)
- [Breast Cancer Care and Prevention: Non-Drug Approaches](#)
- [Integrative Ways to Reduce Side Effects of Breast Cancer Treatment](#)



WEB RESOURCES⁹⁶

<p>InspireHealth Integrated Cancer Care Research Updates</p>	<p>Summary of important research studies that inform integrative cancer care. International studies reviewed.</p>	<p>To subscribe to newsletters, email: mwiebe@inspirehealth.ca Hard copy or electronic copy. Phone: 604-734-7125 1330 West 8th Avenue, Vancouver, BC V6H 4A6</p>
<p>American Cancer Society</p>	<p>Monographs sited in references on the research of exercise and nutrition in the prevention, and during and after cancer treatment.</p>	<p>Prevention: http://onlinelibrary.wiley.com/doi/10.3322/caac.20140/pdf During and after treatment: http://onlinelibrary.wiley.com/doi/10.3322/caac.21142/pdf</p>
<p>Susan G. Komen Breast Cancer Foundation</p>	<p>Dedicated to education and research about causes, treatment, and the search for a cure.</p>	<p>www.komen.org</p>
<p>Society for Integrative Oncology Monograph available for integrative oncology practice guidelines.</p>	<p>International organization of clinicians, researchers and others interested in evidence based integrative oncology</p>	<p>www.integrativeonc.org Deng GE, Frenkel M, Cohen L et al. Evidence-based clinical practice guidelines for integrative oncology: complementary therapies and botanicals. J Soc Integrative Oncology 2009;7(3): 85-120.</p>
<p>Breast Cancer Recovery</p>	<p>Breast Cancer Recovery's mission is to help women heal in mind, body and spirit after breast cancer. All programs are designed and conducted by survivors for survivors.</p>	<p>www.bcrecovery.org</p>
<p>National Institutes of Health, National Cancer Institute (NCI) Office of Cancer Complementary and Alternative Medicine (OCCAM)</p>	<p>Evidence based information on CAM and its applications in oncology</p>	<p>http://www.cancer.gov/cancertopics/cam</p>



WEB RESOURCES (con't.)

<p>National Institutes of Health, Office of Dietary Supplements</p>	<p>Provides information on dietary supplements.</p> <p>The PubMed Dietary Supplement Subset succeeds the International Bibliographic Information on Dietary Supplements (IBIDS) database active from 1999-2010.</p>	<p>http://www.dietary-supplements.info.nih.gov</p> <p>http://ods.od.nih.gov/Research/PubMed_Dietary_Supplement_Subset.aspx</p>
<p>Memorial Sloan-Kettering Cancer Center</p>	<p>Maintains a searchable database that provides evidence-based information on herbs, botanicals, vitamins, and other supplements. It includes evaluations of alternative or unproven cancer therapies.</p>	<p>http://www.mskcc.org/mskcc/html/11570.cfm</p>
<p>Natural Standard</p>	<p>Evidence based review of CAM therapies. Founded by clinicians and researchers.</p>	<p>www.naturalstandard.com</p>
<p>The University of Texas MD Anderson Cancer Center</p>	<p>Evidence based review of CAM and integrative medicine therapies.</p>	<p>www.mdanderson.org/CIMER</p>
<p>Natural Medicines Comprehensive Database</p>	<p>Subscription service for evidence based reviews of supplements and botanicals. Excellent patient version handouts.</p>	<p>www.naturaldatabase.com</p>

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