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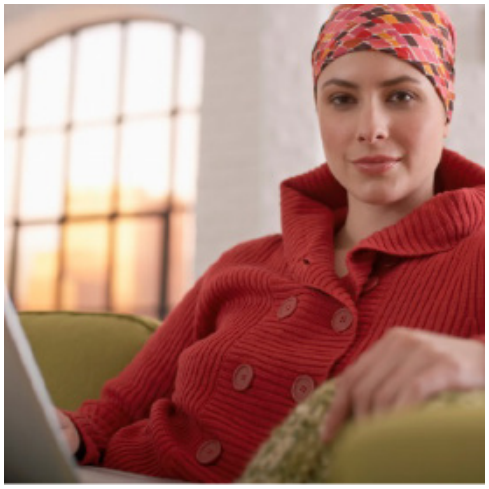

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Cancer

People with cancer want to do everything they can to combat the disease, manage its symptoms, and cope with the side effects of treatment. Many turn to complementary health approaches, including natural products, such as herbs (botanicals) and other dietary supplements, and mind and body practices, such as acupuncture, massage, and yoga.

This fact sheet was produced through a collaboration between the National Center for Complementary and Integrative Health (NCCIH) and the National Cancer Institute (NCI). It provides an introductory overview of complementary health approaches that have been studied for cancer prevention, treatment of the disease, or symptom management, including what the science says about their effectiveness and any concerns that have been raised about their safety.

Key Facts

- **Symptom management.** A substantial amount of scientific evidence suggests that some complementary health approaches may help to manage some symptoms of cancer and side effects of treatment. For other complementary approaches, the evidence is more limited.
- **Disease treatment.** At present, there is no convincing evidence that any complementary health approach is effective in curing cancer or causing it to go into remission.
- **Cancer prevention.** A 2012 study indicated that taking a multivitamin/mineral supplement may slightly reduce the risk of cancer in older men. No other complementary health approach has been shown to be helpful in preventing cancer.

Keep in Mind

- **Unproven products or practices should not be used to replace or delay conventional medical treatment for cancer.**
- Some complementary approaches can interfere with standard cancer treatments or have special risks for people who've been diagnosed with cancer. **Before using any complementary health approach, people who've been diagnosed with cancer should talk with their health care providers to make sure that all aspects of their care work together.**

— Tell all your health care providers about any complementary health approaches you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

About Cancer

Cancer is a term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and spread to other parts of the body through the bloodstream and the lymph system. Although cancer is the second leading cause of death in the United States, improvements in screening, detection, treatment, and care have increased the number of cancer survivors, and experts expect the number of survivors to continue to increase in the coming years. Detailed information on cancer is available from NCI at www.cancer.gov.

About Complementary Health Approaches

Complementary health approaches are a group of diverse medical and health care systems, practices, and products whose origins come from outside of mainstream medicine. They include such products and practices as herbal supplements, other dietary supplements, meditation, spinal manipulation, and acupuncture.

The same careful scientific evaluation that is used to assess conventional therapies should be used to evaluate complementary approaches. Some complementary approaches are beginning to find a place in cancer treatment—not as cures, but as additions to treatment plans that may help patients cope with disease symptoms and side effects of treatment and improve their quality of life.

Use of Complementary Health Approaches for Cancer

Many people who've been diagnosed with cancer use complementary health approaches.

— According to the 2007 National Health Interview Survey (NHIS), which included a comprehensive survey on the use of complementary health approaches by Americans, 65 percent of respondents who had ever been diagnosed with cancer had used complementary approaches, as compared to 53 percent of other respondents. Those who had been diagnosed with cancer were more likely than others to have used complementary approaches for general wellness, immune enhancement, and pain management.

— Other surveys have also found that use of complementary health approaches is common among people who've been diagnosed with cancer, although estimates of use vary widely. Some data indicate that the likelihood of using complementary approaches varies with the type of cancer and with factors such as sex, age, and ethnicity. The results of surveys from 18 countries show that use of complementary approaches by people who had been diagnosed with cancer was more common in North America than in Australia/New Zealand or Europe and that use had increased since the 1970s and especially since 2000.

— Surveys have also shown that many people with cancer don't tell their health care providers about their use of complementary health approaches. In the NHIS, survey respondents who had been diagnosed with cancer told their health care providers about 15 percent of their herb use and 23 percent of their total use of complementary approaches. In other studies, between 32 and 69 percent of cancer patients and survivors who used dietary supplements or other complementary approaches

reported that they discussed these approaches with their physicians. The differences in the reported percentages may reflect differences in the definitions of complementary approaches used in the studies, as well as differences in the communication practices of different groups of patients.

What the Science Says About the Safety and Side Effects of Complementary Health Approaches for Cancer

- **Delaying conventional cancer treatment can decrease the chances of remission or cure.** Don't use unproven products or practices to postpone or replace conventional medical treatment for cancer.
- Some complementary health approaches may interfere with cancer treatments or be unsafe for cancer patients. For example, the herb St. John's wort, which is sometimes used for depression, can make some cancer drugs less effective.
- Other complementary approaches may be harmful if used inappropriately. For example, to make massage therapy safe for people with cancer, it may be necessary to avoid massaging places on the body that are directly affected by the disease or its treatment (for example, areas where the skin is sensitive following radiation therapy).
- People who've been diagnosed with cancer should consult the health care providers who are treating them for cancer before using any complementary health approach for any purpose—whether or not it's cancer-related.

What the Science Says About the Effectiveness of Complementary Health Approaches for Cancer

No complementary health product or practice has been proven to cure cancer. Some complementary approaches may help people manage cancer symptoms or treatment side effects and improve their quality of life.

Incorporating Complementary Health Approaches Into Cancer Care

In 2009, the Society for Integrative Oncology issued evidence-based clinical practice guidelines for health care providers to consider when incorporating complementary health approaches in the care of cancer patients. The guidelines point out that, when used in addition to conventional therapies, some of these approaches help to control symptoms and enhance patients' well-being. The guidelines warn, however, that unproven methods shouldn't be used in place of conventional treatment because delayed treatment of cancer reduces the likelihood of a remission or cure.

A comprehensive summary of research on complementary health approaches for cancer is beyond the scope of this fact sheet. The following sections provide an overview of the research status of some commonly used complementary approaches, highlighting results from a few reviews and studies focusing on preventing and treating the disease, as well as managing cancer symptoms and treatment side effects.

Talking With Your Health Care Providers About Complementary Approaches and Cancer

The National Institutes of Health (NIH) has resources that can help you talk with your health care providers about complementary approaches and cancer.

— NCI's Office of Cancer Complementary and Alternative Medicine has a workbook to help cancer patients and their health care providers talk about and keep track of complementary approaches that patients are using. You can download it here: cam.cancer.gov/talking_about_cam.html?cid=ARcam_camnews.

Complementary Health Approaches for Cancer Symptoms and Treatment Side Effects

Some complementary health approaches, such as acupuncture, massage therapy, mindfulness-based stress reduction, and yoga, may help people manage cancer symptoms or the side effects of treatment. However, some approaches may interfere with conventional cancer treatment or have other risks. **People who've been diagnosed with cancer should consult their health care providers before using any complementary health approach.**

— There is substantial evidence that **acupuncture** can help to manage treatment-related nausea and vomiting in cancer patients. There isn't enough evidence to judge whether acupuncture relieves cancer pain or other symptoms such as treatment-related hot flashes. Complications from acupuncture are rare, as long as the acupuncturist uses sterile needles and proper procedures. Chemotherapy and radiation therapy weaken the body's immune system, so it's especially important for acupuncturists to follow strict clean-needle procedures when treating cancer patients.

— Recent studies suggest that the herb **ginger** may help to control nausea related to cancer chemotherapy when used in addition to conventional anti-nausea medication.

— Studies suggest that **massage therapy** may help to relieve symptoms experienced by people with cancer, such as pain, nausea, anxiety, and depression. However, investigators haven't reached any conclusions about the effects of massage therapy because of the limited amount of rigorous research in this field. People with cancer should consult their health care providers before having massage therapy to find out if any special precautions are needed. The massage therapist shouldn't use deep or intense pressure without the health care providers' approval and may need to avoid certain sites, such as areas directly over a tumor or those where the skin is sensitive following radiation therapy.

— There is evidence that **mindfulness-based stress reduction,** a type of meditation training, can help cancer patients relieve anxiety, stress, fatigue, and general mood and sleep disturbances, thus improving their quality of life. Most participants in mindfulness studies have been patients with early-stage cancer, primarily breast cancer, so the evidence favoring mindfulness training is strongest for this group of patients.

— Preliminary evidence indicates that **yoga** may help to improve anxiety, depression, distress, and stress in people with cancer. It also may help to lessen fatigue in breast cancer patients and survivors. However, only a small number of yoga studies in cancer patients have been completed, and some of the research hasn't been of the highest quality. Because yoga involves physical activities, it's important for people with cancer to talk with their health care providers in advance to find out whether any aspects of yoga might be unsafe for them.

— Various studies suggest possible benefits of **hypnosis, relaxation therapies,** and **biofeedback** to help patients manage cancer symptoms and treatment side effects.

— A 2008 review of the research literature on **herbal supplements** and cancer concluded that although several herbs have shown promise for managing side effects and symptoms such as nausea and vomiting, pain, fatigue, and insomnia, the *scientific evidence is limited*, and many clinical trials haven't been well designed. Use of herbs for managing symptoms also raises concerns about potential negative interactions with conventional cancer treatments.

Coping With Cancer

People who have cancer, or who've been treated for cancer, may have physical or emotional difficulties as a result of the disease or its treatment. Many conventional approaches can help people cope with these problems. For example, counseling may help people who are distressed about being diagnosed with cancer, medicines can control nausea related to chemotherapy, and exercise may help decrease treatment-related fatigue. Some people find that complementary approaches also help them cope with cancer and improve their quality of life. In addition, using complementary approaches can help people feel they are playing an active part in their own care. If you have cancer or if you've been treated for cancer, be sure to tell your health care providers about all approaches—both conventional and complementary—that you're using. Your health care providers need this information so they can make sure that all aspects of your care work well together. Additional information on coping with cancer is available from NCI at www.cancer.gov/cancertopics/coping.

Complementary Health Approaches for Cancer Treatment

This section discusses complementary health approaches to directly treat cancer (that is, to try to cure the disease or cause a remission).

No complementary approach has cured cancer or caused it to go into remission. Some products or practices that have been advocated for cancer treatment may interfere with conventional cancer treatments or have other risks. **People who've been diagnosed with cancer should consult their health care providers before using any complementary health approach.**

— Studies on whether **herbal supplements** or substances derived from them might be of value in cancer treatment are in their early stages, and *scientific evidence is limited*. Herbal supplements may have side effects, and some may interact in harmful ways with drugs, including drugs used in cancer treatment.

— The effects of taking **vitamin and mineral supplements,** including **antioxidant supplements,** during cancer treatment are *uncertain*. NCI advises cancer patients to talk to their health care providers before taking any supplements.

— A 2010 NCCIH-supported trial of a standardized **shark cartilage** extract, taken in addition to chemotherapy and radiation therapy, *showed no benefit* in patients with advanced lung cancer. An earlier, smaller study in patients with advanced breast or colorectal cancers also showed no benefit from the addition of shark cartilage to conventional treatment.

— A 2011 systematic review of research on **laetrile** found *no evidence that it's effective* as a cancer treatment. Laetrile can be toxic, especially if taken orally, because it contains cyanide.

Beware of Cancer Treatment Frauds

The U.S. Food and Drug Administration (FDA) and the Federal Trade Commission (FTC) have warned the public to be aware of fraudulent cancer treatments. Cancer treatment frauds aren't new, but in recent years it has become easier for the people who market them to reach the public using the Internet.

Some fraudulent cancer treatments are harmful by themselves, and others can be indirectly harmful because people may delay seeking medical care while they try them, or because the fraudulent product interferes with the effectiveness of proven cancer treatments.

The people who sell fraudulent cancer treatments often market them with claims such as "scientific breakthrough," "miraculous cure," "secret ingredient," "ancient remedy," "treats all forms of cancer," or "shrinks malignant tumors." The advertisements may include personal stories from people who've taken the product, but such stories—whether or not they're real—aren't reliable evidence that a product is effective. Also, a money-back guarantee isn't proof that a product works.

If you're considering using any anticancer product that you've seen in an advertisement, talk to your health care provider first. Additional information on cancer-related health frauds is available from the FDA at www.fda.gov/ForConsumers/ConsumerUpdates/ucm048383.htm and from the FTC at www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt079.pdf.

Complementary Health Approaches for Cancer Prevention

A large 2012 clinical trial has shown that taking a multivitamin/mineral supplement may slightly reduce the risk of cancer in older men. No other complementary health approach has been shown to be helpful in preventing cancer, and some have been linked with increased health risks.

— **Vitamin and Mineral Supplements.** The results of a study of older men completed in 2012 indicate that taking a multivitamin/mineral supplement slightly reduces the risk of cancer. In this study, which was part of the Physicians' Health Study II (a complex trial that tested several types of supplements), more than 14,000 male U.S. physicians were randomly assigned to take a multivitamin/mineral supplement or a placebo (an identical-appearing product that did not contain vitamins and minerals) for 11 years. Those who took the supplement had 8 percent fewer total cancers than those who took the placebo.

— Other studies of vitamins and minerals—most of which evaluated supplements containing only one or a few nutrients—haven't found protective effects against cancer. Some of these studies identified possible risks of supplementing with high doses of certain vitamins or related substances. Examples of research results include the following:

- In another part of the Physicians' Health Study II (not the part described above), supplementing with relatively high doses of either vitamin E or vitamin C did not reduce the risks of prostate cancer or total cancer in men aged 50 or older. Men taking vitamin E had an *increased* risk of hemorrhagic stroke (a type of stroke caused by bleeding in the brain).

- A 2010 meta-analysis of 22 clinical trials found no evidence that antioxidant supplements (vitamins A, C, and E; beta-carotene; and selenium) help to prevent cancer.
- Two large-scale studies found evidence that supplements containing beta-carotene *increased* the risk of lung cancer among smokers.
- The Selenium and Vitamin E Cancer Prevention Trial (SELECT), funded by NCI, NCCIH, and other agencies at NIH, showed that selenium and vitamin E supplements, taken either alone or together, did not prevent prostate cancer. It also showed that vitamin E supplements, taken alone, *increased* the risk of prostate cancer in healthy men. There was no increase in prostate cancer risk when vitamin E and selenium were taken together. The doses of selenium and vitamin E used in this study were much higher than those typically included in multivitamin/mineral supplements.
- Although substantial evidence suggests that calcium may help protect against colorectal cancer, the evidence of potential benefit from calcium in supplement form is limited and inconsistent. Therefore, NCI doesn't recommend the use of calcium supplements to reduce the risk of colorectal cancer.

— **Other Natural Products.** A 2009 systematic review of 51 studies with more than 1.6 million participants found "insufficient and conflicting" evidence regarding an association between consuming **green tea** and cancer prevention. Several other natural products, including ***Ginkgo biloba*, isoflavones, noni, pomegranate,** and **grape seed extract,** have been investigated for possible cancer-preventive effects, but the evidence on these substances is too limited for any conclusions to be reached.

Do You Want To Learn More About Cancer Prevention?

People can reduce their risk of cancer in many ways. They include avoiding exposure to agents that cause cancer (such as cigarette smoke), having tests (such as colonoscopies) that find precancerous conditions early, and, for some people who are at high risk, taking medicines to reduce cancer risk (chemoprevention). Additional information on cancer prevention is available from NCI at www.cancer.gov/cancertopics/pdq/prevention/overview/patient.

NIH Research on Complementary Health Approaches for Cancer

Both NCI and NCCIH fund many laboratory studies and clinical trials related to cancer. Some ongoing studies are investigating:

— The effects of genetic factors and intakes of calcium and magnesium on the risk of developing precancerous colorectal polyps

— Mechanisms of action of natural products that may be of value in cancer prevention or treatment, such as bamboo extract, grape seed extract, white tea, red ginseng, and S-adenosyl-L-methionine (SAMe)

— The use of acupuncture for difficulty in swallowing after treatment for head and neck cancer

— Mind and body practices to improve sleep in cancer patients.

Additional information is available from NCI at http://cam.cancer.gov/ and from NCCIH at nccih.nih.gov/health/cancer.

If You Have Been Diagnosed With Cancer: More to Consider

— Cancer patients need to make informed decisions about complementary health approaches. NCCIH and NCI have written a brochure that can help: *Thinking About Complementary and Alternative Medicine: A Guide for People With Cancer* (http://www.cancer.gov/cancertopics/thinking-about-CAM).

— Gather information about the complementary health product or practice that interests you, and then discuss it with your health care providers. If you've been diagnosed with cancer, it's especially important to talk with your health care providers before you start using any new complementary health approach. If you're already using a complementary approach, tell your health care providers about it, even if your reason for using it has nothing to do with cancer. Some approaches may interfere with standard cancer treatment or may be harmful when used along with standard treatment. Examples of questions to ask include:

- What is known about the benefits and risks of this product or practice? Do the benefits outweigh the risks?
- What are the potential side effects?
- Will this approach interfere with conventional treatment?
- Can you refer me to a practitioner?

— Do not use any health product or practice that has not been proven safe and effective to replace conventional cancer care or as a reason to postpone seeing your health care provider about any health problem.

— Tell all your health care providers about any complementary health approaches you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

For More Information

NCCIH Clearinghouse

The NCCIH Clearinghouse provides information on NCCIH and complementary health approaches, including publications and searches of Federal databases of scientific and medical literature. The Clearinghouse does not provide medical advice, treatment recommendations, or referrals to practitioners.

Toll-free in the U.S.: 1-888-644-6226

TTY (for deaf and hard-of-hearing callers): 1-866-464-3615

Web site: nccih.nih.gov

E-mail: info@nccih.nih.gov

National Cancer Institute

NCI is the Federal Government's lead agency for cancer research. NCI's Cancer Information Service provides comprehensive information about cancer.

Toll-free in the U.S.: 1-800-4-CANCER (1-800-422-6237)

Web site: www.cancer.gov

NCI's Office of Cancer Complementary and Alternative Medicine coordinates and enhances NCI's activities in complementary and alternative medicine research.

Web site: cam.cancer.gov

Information on complementary and alternative medicine in cancer treatment: http://www.cancer.gov/about-cancer/treatment/cam/hp/cam-topics-pdq

PubMed®

A service of the National Library of Medicine (NLM), PubMed contains publication information and (in most cases) brief summaries of articles from scientific and medical journals.

Web site: www.ncbi.nlm.nih.gov/pubmed

NIH Clinical Research Trials and You

NIH has created a Web site, NIH Clinical Research Trials and You, to help people learn about clinical trials, why they matter, and how to participate. The site includes questions and answers about clinical trials, guidance on how to find clinical trials through ClinicalTrials.gov and other resources, and stories about the personal experiences of clinical trial participants. Clinical trials are necessary to find better ways to prevent, diagnose, and treat diseases.

Web site: www.nih.gov/health/clinicaltrials/

Key References

Boehm K, Borrelli F, Ernst E, et al. Green tea *(Camellia sinensis)* for the prevention of cancer. *Cochrane Database of Systematic Reviews.* 2009;(3):CD005004. Accessed at http://www.cochranelibrary.com/ on February 14, 2013.

Cramer H, Lange S, Klose P, et al. Can yoga improve fatigue in breast cancer patients? A systematic review. *Acta Oncologica.* 2012;51(4):559-560.

Deng GE, Frenkel M, Cohen L, et al. Evidence-based clinical practice guidelines for integrative oncology: complementary therapies and botanicals. *Journal of the Society for Integrative Oncology.* 2009;7(3):85-120.

Elkins G, Fisher W, Johnson A. Mind-body therapies in integrative oncology. *Current Treatment Options in Oncology.* 2010;11(3-4):128-140.

Ernst E. Massage therapy for cancer palliation and supportive care: a systematic review of randomised clinical trials. *Supportive Care in Cancer.* 2009;17(4):333-337.

Ernst E, Lee MS. Acupuncture for palliative and supportive cancer care: a systematic review of systematic reviews. *Journal of Pain and Symptom Management.* 2010;40(1):e3-5.

Gaziano JM, Glynn RJ, Christen WG, et al. Vitamins E and C in the prevention of prostate and total cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA.* 2009;301(1):52-62.

Gaziano JM, Sesso HD, Christen WG, et al. Multivitamins in the prevention of cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA.* 2012;308(18):E1-E10.

Klein EA, Thompson IM Jr, Tangen CM, et al. Vitamin E and the risk of prostate cancer: the Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA.* 2011;306(14):1549-1556.

Ledesma D, Kumano H. Mindfulness-based stress reduction and cancer: a meta-analysis. *Psycho-Oncology.* 2009;18(6):571-579.

Lin K-Y, Hu Y-T, Chang K-J, et al. Effects of yoga on psychological health, quality of life, and physical health of patients with cancer: a meta-analysis. *Evidence-Based Complementary and Alternative Medicine.* 2011;2011:659876.

Lippman SM, Klein EA, Goodman PJ, et al. Effect of selenium and vitamin E on risk of prostate cancer and other cancers: the Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA.* 2009;301(1):39-51.

Lu C, Lee JJ, Komaki R, et al. Chemoradiotherapy with or without AE-941 in stage III non-small cell lung cancer: a randomized phase III trial. *Journal of the National Cancer Institute.* 2010;102(12):859-865.

Mansky PJ, Wallerstedt DB. Complementary medicine in palliative care and cancer symptom management. *Cancer Journal.* 2006;12(5):425-431.

Mao JJ, Palmer CS, Healy KE, et al. Complementary and alternative medicine use among cancer survivors: a population-based study. *Journal of Cancer Survivorship.* 2011;5(1):8-17.

Milazzo S, Ernst E, Lejeune S, et al. Laetrile treatment for cancer. *Cochrane Database of Systematic Reviews.* 2011;(11):CD005476. Accessed at http://www.cochranelibrary.com/ on February 14, 2013.

Miller S, Stagl J, Wallerstedt DB, et al. Botanicals used in complementary and alternative medicine treatment of cancer: clinical science and future perspectives. *Expert Opinion on Investigational Drugs.* 2008;17(9):1353-1364.

Myung S-K, Kim Y, Ju W, et al. Effects of antioxidant supplements on cancer prevention: meta-analysis of randomized controlled trials. *Annals of Oncology.* 2010;21(1):166-179.

Paley CA, Johnson MI, Tashani OA, et al. Acupuncture for cancer pain in adults. *Cochrane Database of Systematic Reviews.* 2011;(1):CD007753. Accessed at http://www.cochranelibrary.com/ on February 14, 2013.

Pillai AK, Sharma KK, Gupta YK, et al. Anti-emetic effect of ginger powder versus placebo as an add-on therapy in children and young adults receiving high emetogenic chemotherapy. *Pediatric Blood & Cancer.* 2011;56(2):234-238.

Ryan JL, Heckler CE, Roscoe JA, et al. Ginger (*Zingiber officinale*) reduces acute chemotherapy-induced nausea: a URCC CCOP study of 576 patients. *Supportive Care in Cancer.* 2012;20(7):1479-1489.

Wilkinson S, Barnes K, Storey L. Massage for symptom relief in patients with cancer: systematic review. *Journal of Advanced Nursing.* 2008;63(5):430-439.

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