

Evaluating Complementary and Alternative Therapies for Cancer Patients

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Abstract

“Complementary and alternative” therapies are actually a vast collection of disparate, unrelated regimens and products, ranging from adjunctive modalities that effectively enhance quality of life and promising antitumor herbal remedies now under investigation, to bogus therapies that claim to cure cancer and that harm not only directly, but also indirectly by encouraging patients to avoid or postpone effective cancer care.

Complementary therapies such as music and massage, herbal teas to aid digestion and relieve nausea, yoga, tai chi, meditation, and the many other well-documented techniques that relieve stress and enhance well-being should be made available to patients to augment and ease the experience of cancer treatment and recovery. Many time-tested herbal and diet-based remedies are now being studied for their abilities to induce or extend remission without toxicity.

At the same time, lack of government regulatory authority leaves consumers at the mercy of those who promote unproved remedies, scores of which line grocery store and pharmacy shelves. Many of these over-the-counter products contain harmful ingredients. Herb-drug interactions, only some of which are documented, occur with frequency and are sufficiently problematic to require that patients stop taking herbal remedies prior to surgery (to prevent

interactions with anesthetics and anticoagulant effects); before radiation (due to potential for increased photosensitivity); and during courses of chemotherapy (to prevent product-drug interactions). Moreover, both good information and misinformation that appear in printed materials and on the Internet appeal to better educated consumers, who are, in fact, the most likely to try complementary and alternative methods. (CA Cancer J Clin 1999;49:362-375.)

Introduction

An advantage of the currently popular phrase, “complementary and alternative” medicine (CAM), is that it highlights important distinctions between the two words. Alternatives may be seen as literally “other therapies”—they are promoted to treat cancer and are used *instead* of mainstream therapy. Complementary or adjunctive therapies, in contrast, are used for symptom management and to enhance quality of life *along with* mainstream care.

Support for this distinction comes both from a major study in the recent medical literature, which showed that all but 2% of those using unconventional remedies did so to complement, rather than replace, mainstream care,¹ and from the National Institutes of Health, which changed the name of its Office of Alternative Medicine (OAM) to the Center for Complementary and Alternative Medicine.

This distinction, however, is not universally applied. Especially in the US, “CAM,” “alternative,” and “complementary” are often used interchangeably to describe a host of disparate activities and

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products. These terms are used occasionally to include self-care, routine private responses to aches and pains, efforts to maintain fitness, and lifestyle activities, as well as unconventional therapies. "Complementary" and "alternative" may also include nutritional cancer "cures," energy healing, and other unproved and sometimes harmful methods, as well as spiritual care and other support services that have been in mainstream use for decades.

Alternative Therapies

Alternative therapies are promoted or used as independent treatments in place of surgery, chemotherapy, or radiation. Typically invasive and biologically active, alternative regimens are unproved, expensive, and potentially harmful. They may cause harm directly through biologic activity, or indirectly, when patients postpone mainstream therapies. Examples of alternative therapies in cancer medicine include the metabolic therapies available in Tijuana, Mexico; shark cartilage; high-dose vitamins; and other products and remedies sold over-the-counter in the US and elsewhere.

Although research evidence is scanty, it appears that approximately 8% to 10% of cancer patients with diagnoses confirmed by tissue biopsy eschew mainstream therapy and immediately seek alternative care.² The vast majority of individuals who seek CAM, however, use complementary rather than alternative therapies. Almost all studies to date of cancer patients and of the general public show that those who seek CAM therapies tend to be female, better educated, of higher socioeconomic status, and younger than those who do not.

Prevalence of CAM Therapies

CAM use by cancer patients is widespread in North America and around the world. A recent systematic review of rel-

evant published data³ located 26 surveys of cancer patients from 13 countries, including five from the US. The average prevalence of CAM use across all studies was 31%. The most commonly used therapies included dietary treatments, herbs, homeopathy, hypnotherapy, imagery/visualization, meditation, megavitamins, relaxation, and spiritual healing. Current surveys substantiate these findings.^{4,6}

All but one of the US surveys obtained information about specific therapies. Patients used Laetrile, metabolic therapies, diets, spiritual healing, megavitamins, imagery, and "immune system stimulants."³ In 1997, additional studies uncovered CAM prevalence rates of 50% in a survey of 113 family practice patients⁷ and 42% in a sample of 1,500 adults.⁸ An earlier telephone survey of a representative national sample of 1,539 adults found that one-third had used CAM,⁹ whereas a 1999 survey of more than 24,000 individuals found only 8% use of CAM, with or without mainstream care.¹

These broad and discrepant findings regarding CAM use may be attributed primarily to varying understanding and definitions of CAM. Often, surveys do not define CAM or define it extremely broadly, resulting in the inclusion of lifestyle activities such as weight loss efforts and mainstream support activities such as group counseling.

HERBAL REMEDIES

Homeopathy, acupuncture, and folk remedies were used by a maximum of only 2% of respondents in all studies. One of the 1997 surveys⁹ of adults in the US found that 3% of respondents had used herbal medicine. In contrast, a general survey of individuals with health insurance conducted that same year revealed the most common CAM therapy to be herbal remedies, used by 17% of respondents.⁸ Moreover, the 1999 survey of 24,000 adults found greater than 20% use of herbal remedies.¹

This growth in use of herbal reme-

dies is not surprising given the enormous increases in sales of such products that have occurred in recent years. Herb sales in drugstores and food stores increased 35% from 1993 to 1994, totaling \$106.7 million for the year;¹⁰ this figure would be greater if health food stores, catalog, and Internet sales were added.

The passage in 1994 of legislation allowing herbal medicines and other "food supplements" to be sold over the counter in the US without FDA review no doubt profoundly encouraged use of these products. It is estimated that sales of dietary supplements have doubled since passage of that 1994 law.

CAM Use Among Pediatric Cancer Patients

Surveys in Australia and Finland,⁵ British Columbia,⁶ and the Netherlands¹¹ indicate substantial interest in CAM, especially in more recent years, with 40% to 50% of pediatric oncology patients in those countries receiving alternative or complementary therapies.

Only one study of CAM use among pediatric oncology patients in the US was published during the past 10 years.¹² The authors found that 65% of 81 cancer patients used CAM, compared with 51% of 80 control-group children undergoing routine check-ups. Prayer, exercise, and spiritual healing accounted for more than 96% of CAM used. Excluded from this sample by definition, however, were pediatric patients taken to alternative treatment clinics in the US, Mexico, or elsewhere.

Distinguishing Legitimate Research from Product Promotion

The quality and accuracy of information about CAM that is available to the public vary widely. Many Web sites and publications that appear to be objective actually are sponsored by commercial enterprises that promote and sell their own products.

It is often difficult for patients to distinguish between reputable sources of information and those with vested interests that might promote ineffective methods. Some materials and books are written by medical doctors and appear to present legitimate information. The *M.D.'s Journal*, for example, a quarterly, 61-page publication sent unsolicited to the general public has included articles such as, "M.D. Cures Terminal Cancer" and "How to Make Yourself Almost Immune to Breast Cancer." The impact of these articles is reinforced by accompanying photographs of an apparently kindly, white-coated doctor, complete with stethoscope. These articles are actually advertisements, however, for "free reports" that accompany a \$79.90 subscription to a periodical.¹³ Unfortunately, this is not an uncommon approach to product promotion.

CAM and Mainstream Medicine

Bolstered by proponent efforts and media exposure, according to CAM critics, or by public interest, according to CAM advocates, CAM has entered mainstream medicine with unprecedented rapidity. The OAM was established at the National Institutes of Health by Congressional mandate in 1992, its stated purpose to investigate unconventional medical practices.¹⁴ The OAM now supports 10 CAM Research Centers. Most, including the Center for Alternative Medicine Research in Cancer at the University of Texas Health Science Center in Houston,¹⁵ are based at major universities. The relevant NIH institute shares support of basic science with the OAM, as well as the clinical research within its purview. In October 1998, apparently in recognition of the significant distinctions between complementary and alternative modalities, Congress renamed the OAM as the National Center for Complementary and Alternative Medicine, appropriating \$50 million for its support.

At least 75 medical schools in the US offer elective courses in CAM, as well devoting portions of required courses to the subject.¹⁶ Nevertheless, a recent analysis¹⁷ of the quality of such courses found that almost all present material uncritically. In addition, numerous medical centers and cancer programs have developed research and clinical service programs in CAM.

The publication of CAM research articles in major medical journals also marks mainstream acceptance. *The Journal of the American Medical Association*, the *New England Journal of Medicine*, *The Lancet*, the *British Medical Journal*, and specialty journals such as *Cancer* and the *Journal of Clinical Oncology* have published reports of CAM research in recent years.

Not all mainstream physicians are pleased with CAM, with current efforts to integrate CAM into mainstream medicine, or with a separate NIH research entity for "alternative" medicine.¹⁸⁻²⁰ Vigorous opposition to CAM as "pseudo science" based on "absurd beliefs" continues to be voiced. CAM's deviation from basic scientific principles, implicit, for example, in homeopathy and therapeutic touch, are decried. A 1997 letter to the US Senate Subcommittee on Public Health and Safety signed by four Nobel Laureates and other prominent scientists deplored the lack of critical thinking and scientific rigor in OAM-supported research.

CAM Costs and Insurance Coverage

Health insurance programs increasingly cover CAM services and providers. More than 30 major insurers, half of them Blues plans, cover more than one alternative therapeutic method.²¹ Expanding insurance coverage of complementary and alternative therapies may reflect consumer demand, but it also represents managed care efforts to control costs.

Although full data are lacking, most alternative practitioners appear to pro-

vide opportunities for cost savings, and food supplements are less costly than prescription pharmaceuticals if used as substitutes. Practitioners of naturopathy, acupuncture, chiropractic, Traditional Chinese, Native American, Ayurvedic (Indian) Medicine, homeopathy, and other alternative therapists rely heavily on natural remedies to treat many disorders. These alternative "natural" remedies include herbs and other botanicals, enzymes, amino acids, vitamins and minerals, and homeopathic products.

Although formal analyses of the costs to insurers of these products are not available, unpublished data from the Blue Cross of Washington and Alaska AlternaPath project have been reported. Analyzing their 1994 to 1995 costs, it was determined that 39 cents of each benefit dollar were spent on natural products.²² In 1994, the program took in \$170,000 and paid out \$650,000.²³ It is believed that some of this cost overrun was due to subscribers stocking up on nutritional supplements.²³ Analogous data on costs and revenues are not publicly available from American Western Life Insurance, Oxford Health Plans, Prudential Health-Care, Blue Cross/Blue Shield of Massachusetts, and the other carriers that provide at least some CAM coverage.

Public interest and willingness to pay out-of-pocket is evident in the 73% growth of pharmacy sales of natural remedies and supplements from 1991 to 1995. Sales of prescription drugs during this same period rose 31%.²⁴

Another unanticipated cost overrun occurred when Blue Cross of Arizona was obliged legislatively in 1983 to cover chiropractic care. It was assumed that the competition would decrease health care costs. However, the average chiropractic case cost was \$576, 8% higher than that for surgeons and 352% higher than for general practice medical doctors.²³ The cost effectiveness of chiropractic services remains a contentious and uncertain issue.²⁵

Naturopathic care is covered by ap-

Table 1
Useful Herbal Remedies⁶⁰

For Anxiety and Stress:	Valerian tea
For Depression:	Hypericum (St. John's wort). Avoid if on antidepressants. Licorice (contains monoamine oxidase inhibitors). Avoid smoked foods and aged cheeses, alcohol, narcotics, cold and allergy remedies; do not take with prescription medication for depression or in the presence of an adrenal disorder.
For Diarrhea:	Peppermint tea
For Headache:	Evening primrose tea, sunflower seeds, garlic, onion
For Heartburn:	Ginger, camomile, fennel, anise or licorice tea
For Indigestion:	Peppermint, ginger, or camomile tea
For Nausea:	Cinnamon, peppermint, or ginger tea

proximately 100 insurance companies in the US, with most of these companies concentrated in Alaska, Connecticut, and Washington State.²⁶ Acupuncture, massage therapy, and other CAM services are covered by many insurers,²⁷ and coverage is most likely if the patient's physician has prescribed the therapy.

CAM Therapies and Practitioners

A review of currently popular therapies, many of which are unproved methods promoted as alternatives to mainstream cancer treatment, follows. In contrast, useful complementary or adjunctive therapies are presented in Table 1.

DIET AND NUTRITION

Today's proponents of dietary cancer treatments typically extend mainstream assumptions about the protective effects of fruits, vegetables, fiber, and avoidance of excessive dietary fat as a potential means of reducing cancer risk, to the idea that food or vitamins can cure cancer. Proponents of this belief make their claims in books such as *The Food Pharmacy: Dramatic New Evidence that Food is your Best Medicine, Prescription for*

Nutritional Healing, and New Choices in Natural Healing.

The chapter on cancer in a popular tome, *Alternative Medicine*, for example, criticizes chemotherapy, radiation, and surgery as "highly invasive... and may shorten the patient's life." It recommends instead that therapy address the entire body and employ a "non-toxic approach... incorporating treatments that rely on biopharmaceutical, immune enhancement, metabolic, nutritional, and herbal, non-toxic methods."²⁸

THE MACROBIOTIC DIET

Although a relatively recent creation, the macrobiotic diet is rooted in the ancient yin-yang principle of balance. Yin and yang, the concept of opposite forces on which Traditional Chinese Medicine is based, is believed to describe all components of life and the universe. In macrobiotics, this worldview of balance is embodied in the diet, including the selection, preparation, and consumption of food.²⁹

No diet has been shown to cure cancer. Nevertheless, the macrobiotic diet as currently constructed is similar to recent USDA recommendations for healthful eating. The macrobiotic diet derives 50%

to 60% of its calories from whole grains, 25% to 30% from vegetables, and the remainder from beans, seaweed, and soups. The diet avoids meat, dairy, certain vegetables and processed foods, and promotes soybean consumption. Soups made with miso, a product of soybean fermentation, represent an important component of the macrobiotic diet.

Genistein, a substance found in soybeans, may contribute to reduced incidence of breast cancer.³⁰ There is no evidence, however, that the macrobiotic diet is beneficial for patients already diagnosed with cancer. Moreover, some versions of this diet are nutritionally deficient, and can cause weight loss in patients with cancer.

MEGAVITAMIN THERAPY

Some patients and alternative practitioners believe that large dosages of vitamins—typically hundreds of pills a day—or intravenous infusions of high-dose vitamin C, can cure disease. There is no evidence that megavitamin or orthomolecular therapy is effective in treating any disorder.

MIND-BODY TECHNIQUES

The notion that we can influence health with our minds is an extremely appealing concept for many Americans. It affirms the power of the individual, a basic value of American culture. Some mind-body interventions have moved from the category of alternative, unconventional therapies into mainstream medicine. Good documentation exists, for example, for the effectiveness of meditation, biofeedback, and yoga in stress reduction and the control of specific physiologic reactions.^{31,32}

Some proponents argue that patients can use mental attributes and mind-body work to prevent or cure cancer. This belief is attractive because it ascribes to patients almost complete control over the course of their illnesses.³³ Studies suggesting that mental factors or prayer

influence the course of cancer are widely publicized despite the fact that they may involve small numbers of patients or remain unreplicated. There is no credible evidence that the course of cancer can be altered through mental efforts.

Bernie Siegel, MD, former surgical oncologist and author of *Love, Medicine, and Miracles*³⁴ and other best sellers, is a popular proponent of the active link between the mind and cancer. Siegel developed the concept of “exceptional cancer patients” (E-CaP), where patients are encouraged to maintain positive attitudes and to assume responsibility for their own health. They are asked to consider why they might “need” their cancer. The premise is that cancer results from unhealthy emotional patterns, correction of which can cure cancer or prolong remission.

A study coauthored by Siegel, however, found no difference in length of survival for E-CaP versus non-E-CaP patients, where both patient groups completed standard mainstream therapy for breast cancer.³⁵ Because the results were negative, failing to confirm more than 12 years of unsubstantiated claims, the article did not receive much media exposure and did not much affect the belief systems of mind-body proponents.

Studies suggesting that mental factors or prayer influence the course of cancer continue to be widely publicized, despite serious methodologic or statistical flaws. For example, a 1989 *Lancet* report suggested that women with breast cancer who attended weekly support group sessions had double the survival rates of women who did not attend.³⁶ Prospective versions of this study have failed, however, to replicate those 1989 results.

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BIOELECTROMAGNETICS

Bioelectromagnetics is the study of interactions between living organisms and their electromagnetic fields. According to proponents, magnetic fields penetrate the body and heal damaged tissues, including cancers.²⁸ No peer-reviewed publications could be located for any clinical cancer-related claims regarding bioelectromagnetics.

ALTERNATIVE MEDICAL SYSTEMS

Ancient systems of healing are based on concepts of human physiology that differ from those accepted by Western science. Two of the most popular healing systems are Traditional Chinese Medicine and India's Ayurvedic Medicine, popularized by best-selling author Deepak Chopra, MD.³⁷

Ayurveda

The term "Ayurveda" is derived from the Sanskrit words "ayur" (life) and "veda" (knowledge). Ayurveda's ancient healing techniques are based on the classification of people into one of three predominant body types, with specific remedies for disease- and health-promoting regimens for each. This medical system has a strong mind-body component, stressing the need to keep consciousness in balance and utilizes techniques such as yoga

and meditation. Ayurveda also emphasizes regular detoxification and cleansing through all physiologic systems of elimination and orifices.

There are said to be 10 Ayurveda clinics in North America, including one hospital-based clinic that has served 25,000 patients since 1985. The number of cancer patients who seek care at Ayurvedic clinics and spas is not documented.

Traditional Chinese Medicine

Traditional Chinese Medicine views the body in terms of its relationship to the environment and the cosmos. Concepts of human physiology and disease are interwoven with geographic features of ancient China and with the forces of nature. Chi, the life force said to run through all of nature, flows in the human body through vertical energy channels known as meridians. The 12 main meridians, which correspond to the 12 main rivers of ancient China, are believed to be dotted with acupoints. Each of the original 365 acupoints corresponds to a specific body organ or system, so that needle stimulation or pressure on the acupoint can redress the life-force imbalance causing the problem in that particular organ.

In addition to acupuncture, which has antiemetic effects for some patients,³⁸ and acupressure, basic therapeutic tools include qi gong and tai chi to strengthen and balance chi. Traditional Chinese Medicine also includes a full

herbal pharmacopoeia with remedies for most ailments, including cancer.³⁹ The protective benefits of Chinese green tea and other herbal remedies are currently being studied.⁴⁰

METABOLIC THERAPIES AND DETOXIFICATION

Metabolic therapies continue to draw patients from North America to the many clinics that offer these modalities in Tijuana, Mexico. Treatments there are based on the belief that toxic products of cancer cells accumulate in the liver, leading to liver failure and death. The Gerson treatment, for example, aims to counteract liver damage with a low-salt, high-potassium diet, coffee enemas, and a gallon of fruit and vegetable juice daily. That clinic's use of liquefied raw calf liver injections was suspended in 1997, following the development of sepsis in a number of patients.⁴¹

Other Tijuana clinics provide their own versions of metabolic therapy, each applying an individualized dietary and detoxification regimen, with additional components according to practitioners' preferences.

Nicholas Gonzalez, MD, is a rare example of a US internist who practices alternative cancer medicine. He uses a version of metabolic therapy involving a restrictive diet, pancreatic enzymes, and coffee enemas. Following recent documentation of one-to-four-year survivals in 11 patients with inoperable pancreatic cancer,⁴² the National Cancer Institute is now supporting a randomized phase III clinical trial of the Gonzalez regimen at New York Presbyterian Hospital in New York City.

Metabolic regimens are based on belief in the importance of detoxification, which is thought necessary for the body to heal itself. Practitioners view cancer and other illnesses as symptoms of the accumulation of toxins. Nevertheless, neither the presence of toxins nor the benefit of eliminating them has been documented.

Detoxification with high colonics in-

volves infusion into the colon of 20 or more gallons of water containing herbs, coffee, enzymes, or other substances believed useful by the practitioner. The use of high colonics, a central component of current Ayurvedic Medicine and other present-day alternative practices, is available independently from colonic practitioners and storefront walk-in colonic clinics in some cities as a purported means of maintaining health. Despite their popularity, high colonics have no known benefits and have been associated with serious clinical problems.^{41,43}

PHARMACOLOGIC AND BIOLOGIC TREATMENTS

Antineoplastons

Antineoplastons represent probably the best known and most popular alternative pharmacologic therapy for cancer today. Developed by Stanislaw Burzynski MD, PhD, antineoplaston therapy is available in his clinic in Houston, Texas⁴⁴ for \$15,000 to \$30,000 per year.

Preliminary data from the Burzynski Institute were recently criticized by respected mainstream researchers as uninterpretable; moreover, antineoplaston therapy was characterized as useless and toxic.^{45, 46} Nevertheless, Burzynski and his patients continue antineoplaston therapy and speak out in favor of its efficacy, disclaiming all critiques.

From the perspective of the public, the effectiveness of this treatment remains unclear. Although antineoplaston therapy is unproved, many patients report anecdotal success. And chemically, 80% of antineoplastons consist of phenylacetate, a metabolite of phenylalanine that is being studied for potential anticancer activity by researchers at the NCI and elsewhere.⁴⁷

Shark Cartilage

Advocates of shark cartilage as a cancer therapy point to its putative antiangiogenic properties. However, shark cartilage protein molecules are too large to be

absorbed by the gut and would be destroyed if absorbed. Shark cartilage decomposes into inert ingredients and is excreted. A recent phase I-II trial of shark cartilage found no clinical benefit.⁴⁸

The dwindling commercial success of shark cartilage as a cancer therapy has led to its promotion for a different medical condition. Full-page color ads in alternative medicine journals read, "The most important joint decision you'll ever make. Your patients can now fight aging bone conditions. The secret is shark cartilage." Because the ads avoid specific claims that the therapy can cure an ailment, they fall within the guidelines of the 1994 Food Supplement Act. Thus, despite the lack of safety or efficacy data, the ads are permitted. In this way, shark cartilage as a putative but waning cancer remedy regains momentum and economic potential.

Cancell

Another well-known biologic remedy, Cancell, appears to be especially popular in Florida and the Midwestern US. Proponents claim that it returns cancer cells to a "primitive state" from which they can be digested and rendered inert. FDA laboratory studies, which showed Cancell to be composed of common chemicals, including nitric acid, sodium sulfite, potassium hydroxide, sulfuric acid, and catechol, found no basis for proponent claims of Cancell's effectiveness against cancer.⁴⁹

MANUAL HEALING METHODS

Manual healing includes a variety of touch and manipulation techniques.

Massage

Hands-on massage is a useful adjunctive technique for cancer patients and others for its stress-reducing benefits.

Chiropractic

The benefit of chiropractic treatment for low back pain was supported by an NIH consensus conference,⁵⁰ but the value of chiropractic is disputed by mainstream

physicians.²⁰ Some cancer patients seek chiropractic treatment for cancer, although there is no evidence whatsoever that this approach is beneficial.

Therapeutic Touch

One of the most popular manual healing methods is therapeutic touch, which, despite its name, involves no direct contact between therapist and client. In therapeutic touch, healers move their hands a few inches above a patient's body and sweep away "blockages" that are believed to obstruct the patient's energy field. A study reported in the *Journal of the American Medical Association* showed that experienced practitioners of therapeutic touch were unable to detect the investigator's "energy field."⁵¹ Despite the lack of documented effects on any disease, and notwithstanding mainstream scientists' unwillingness to accept its fundamental premises, therapeutic touch is taught in North American nursing schools and widely practiced by nurses in the US and other countries.⁵² Debates between skeptics and believers in therapeutic touch enliven numerous Web sites.⁵³

Herbal Remedies for Cancer

Herbal remedies typically are part of traditional and folk healing methods with long histories of use. Anticancer effects are claimed for many herbal remedies, but only a few have gained substantial popularity as alternative cancer therapies.

Essiac

Essiac is one of the most popular herbal cancer alternatives in North America. It was popularized by a Canadian nurse, Rene Caisse (Essiac is Caisse spelled backwards), but was developed initially by a Native Canadian healer. It is comprised of four herbs: Burdock, Turkey rhubarb, sorrel, and slippery elm. Researchers at the NCI and elsewhere have not found Essiac to have any anticancer effect. Illegal in Canada, Essiac is widely available in US pharmacies and health food stores.

Table 2
Herbal Products with Serious Toxic Effects⁶⁰

Chaparral tea, promoted as an antioxidant, pain reliever, etc., has caused liver failure requiring liver transplantation.

Chaste Tree Berry, used for PMS, can interfere with dopamine-receptor antagonists.

Chomper, an "herbal laxative" and "cleansing" agent, is used as part of a diet regimen. The product may be contaminated with digitalis.

Comfrey, ingested or used on bruises, can obstruct blood flow to the liver and possibly lead to death.

Feverfew (used for migraines, PMS), **garlic** (numerous preventive and therapeutic uses), **ginger** (nausea), and **gingko** (dilates arteries), can interact with anticoagulants and increase bleeding. Anticoagulant effects are possible in unusually high doses or when used in combination.

Jin Bu Huan, a sedative and analgesic containing morphine-like substances, can cause hepatitis and dangerously slow heart rate.

Laxatives such as **senna**, **cascara**, and **aloe** can cause potassium loss when used over time. Particularly dangerous when used with digitalis or prescription diuretics.

Licorice (used to treat peptic ulcers and as expectorant) is contraindicated with cardiac glycosides.

Lobelia, an emetic that may cause coma and death at high doses; lesser effects include rapid heartbeat and breathing problems.

Ma huang, or **ephedra**, an herbal form of the central nervous system stimulant commonly known as speed, sold with names like Herbal Ecstasy, Cloud 9, and Ultimate XPhoria.

Plantain leaves, cut or powdered, are found in Plantain Extract, Nature Cleanse Tablets, Botani-Cleanse brands, Blessed Herbs, etc. Contaminated with digitalis glycosides.

"**Siberian ginseng**" capsules sometimes contain instead a weed comprised of male hormone-like chemicals.

Yohimbe (body builder, "enhances male performance") has caused seizures, kidney failure, and death.

Iscador

Iscador, a derivative of mistletoe, is a popular cancer remedy in Europe, where it is available in many mainstream cancer clinics. Although European governments have funded studies of iscador's effectiveness against cancer, definitive data have not emerged.

Pau d'arco Tea

Pau d'arco tea is said to be an old Inca Indian remedy for many illnesses, in-

cluding cancer. Made from the bark of an indigenous South American evergreen tree, its active ingredient, lapachol, has been isolated. Although lapachol showed antitumor activity in animal studies conducted in the 1970s, it does not appear to affect human malignancies. It does, however, induce nausea and vomiting. Despite the absence of efficacy, pau d'arco tea is sold as a cancer remedy in health food stores, by mail, and on the Internet.

Asian Remedies

Asian herbal remedies show greater promise. Several mushroom-derived compounds are approved for use as cancer treatments in Japan, and PC-SPEs, a combination of eight herbs primarily from Traditional Chinese Medicine, reduced prostate specific antigen levels in men with advanced prostate cancer.⁵⁴

A formula of 19 vegetables from Traditional Chinese Medicine believed to have antitumor activity was added to the diets of 12 patients with stages III and IV non-small cell lung cancer. The median survival of control patients was four months versus 15.5 months for those receiving the formula. The completely nontoxic vegetable brew significantly, and positively, affected quality and quantity of life.⁵⁵

Women with advanced metastatic breast cancer receiving a Tibetan herbal formula are now being studied for extended survival at the University of California, San Francisco and Memorial Sloan-Kettering Cancer Center in New York City.

These studies suggest that some herbal cancer remedies, tested to ensure purity and consistency, and carefully evaluated, may represent potentially useful, nontoxic cancer treatments. The difficulty with time-honored herbal remedies is that they are rarely tested for purity, examined for consistency, or studied carefully. They are, nonetheless, in common use.

Herbal Medicine Alert

Cancer patients also occasionally or regularly use over-the-counter herbal products in addition to or instead of those promoted specifically as cancer treatments. It is therefore important to recognize those that are toxic or that interact with other medications (Table 2). Because the FDA does not examine herbal remedies for safety and effectiveness, few products have been formally tested for side effects or quality control. Nevertheless, informa-

tion is beginning to emerge on the basis of public experience with over-the-counter supplements.

Recent reports in the literature describe severe liver and kidney damage from some herbal remedies (Table 2). These reports underscore the fact that “natural” products, contrary to apparent consumer belief, are not necessarily safe or harmless.^{56,57} Indeed, herbs are natural drugs in diluted form. They may contain hundreds of different chemicals, most of which have not been assessed for safety and efficacy. Effects of such “natural” drugs are not always predictable.

The potential for herb-drug interaction is sufficiently problematic that patients on chemotherapy should be cautioned to stop using herbal remedies during treatment. Similar advisories are necessary for patients receiving radiation, as some herbs photosensitize the skin and cause severe reactions. Patients scheduled for surgery should also discontinue “natural” remedies, because some herbs produce dangerous blood pressure swings and other unwanted interactions with anesthetics, as well as multiply the blood thinning effects of medications such as coumadin. The risk of herb-drug interactions appears to be greatest for patients with kidney or liver problems.

Conclusions

Although store shelves contain harmful and worthless products, they also offer a range of remedies that can safely provide relief from a variety of ailments. The challenge is to avoid contaminated products and those that may interact with prescription pharmaceuticals. Dietitians and pharmacists, as well as reputable books and Web sites (Table 3) can offer helpful guidance.

Recently, two journals—*The Scientific Review of Alternative Medicine*, <http://www.hcrc.org/sram>; and *FACT (Focus on Alternative and Complementary Therapies)*, www.fact@exeter.ac.com—

Table 3
Reputable Sources of Information About
Complementary and Alternative Medicine

Cancer-Specific Sites

American Cancer Society: www.cancer.org
 CancerGuide by Steve Dunn: <http://cancerguide.org>
 National Cancer Institute: www.cancernet.nci.nih.gov
 Office of Alternative Medicine: www.altmed.od.nih.gov
 University of Texas Center for Alternative Medicine Research in Cancer:
<http://chprd.sph.uth.tmc.edu/utcam/>

Herb and Other Food Supplement Sites

American Botanical Council: www.herbalgram.org
 Medical Herbalism: A Journal for the Clinical Practitioner: www.medherb.com
 Pharmaceutical Information Network: <http://pharminfo.com>
 US Pharmacopoeia Consumer Information (Botanicals): <http://www.usp.org/infofor/patient1.htm>

Alternative/Unproved Methods Information

National Council Against Health Fraud: www.ncahf.org
 Quackwatch: www.quackwatch.com

General CAM Information

NIH Office of Alternative Medicine Citation Index:
<http://altmed.od.nih.gov/oam/resources/cam-ci/>
 Natural Health Village: www.netvillage.com/
 HealthAtoZ: <http://www.healthatoz.com>
 Bibliographic summary of international CAM information:
http://cpmcnet.columbia.edu/dept/rosenthal/databases/AM_databases.html
 HealthTel Corp Links: www.medmatrix.org/index.asp

Books:

Duke, James A. *The Green Pharmacy*. New York: Rodale Press, 1997.
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have been launched to cover scientific reports of CAM.

Distinguishing reliable journals and articles from useless ones is particularly important with regard to CAM. Some CAM proponents argue that research is not necessary to determine the effectiveness of alternative therapies for cancer; others claim that it is not possible to evaluate CAM, because the therapies are too subtle or too individualized to study with usual scientific methods.

In fact, there is no therapy that cannot be properly evaluated. Several CAM-interested researchers have called for mandated, rigorous, scientific CAM evaluation, and have outlined guidelines for implementation.^{58,59} The notion that proper evaluation is unnecessary or impossible for CAM is held by a minority of CAM proponents. The widely accepted view as articulated in the work of the Cochrane Collaboration on CAM, as well as in recently launched scientific publications, is that CAM therapies require and deserve standard, scientifically accepted research methodologies. **CA**

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