Complementary and Alternative Medicine for Veterinary Cancer Patients:
What You and Your Clients Should Know
Michael Childress, DVM, MS, DACVIM
Purdue University
West Lafayette, IN

What is “complementary and alternative medicine?”
Complementary and alternative medicine (CAM) encompasses numerous herbal, nutraceutical, physical, and other treatments whose use is generally not taught in conventional U.S. medical or veterinary school curricula. Some authors make a distinction between alternative medicine, which is treatment intended to replace that recommended by a medical care provider, and complementary medicine, which is treatment given in addition to that prescribed by a medical care provider. While alternative therapy is usually prescribed with the intent of directly treating a cancer, complementary therapy is often aimed at palliating clinical signs, such as pain or nausea, that are associated with cancer or cancer treatment.

Prevalence of CAM therapies for cancer
A recent meta-analysis reviewing data from over 65,000 human cancer patients estimated that 40% of patients employ some sort of CAM as part of their treatment, although the use of CAM may exceed 90% in some human cancer patient populations. Total expenditure for all CAM therapies (used by both cancer patients and non-cancer patients) in the United States is estimated to exceed $30 billion per year.

While the prevalence of CAM use in veterinary cancer patients is not extensively reported, a survey conducted at Colorado State University’s Animal Cancer Clinic found that 76% of owners of dogs and cats with cancer used some form of CAM to treat their pets. Nutritional supplements (including vitamins), special diets, and prayer were the most common CAM therapies employed by survey respondents. It is noteworthy that 85% of respondents who admitted to using CAM for their pet had not discussed the use of such therapy with a veterinarian. This suggests that pet owners may feel uncomfortable discussing CAM therapies with veterinarians or other members of the veterinary team.

Are CAM therapies for cancer helpful?
CAM therapies encompass a vast array of medicinal, nutritional, physical, mental, or spiritual interventions. These include herbal products, nutraceuticals, megadose vitamins, special diets, massage therapy, acupuncture, prayer, and meditation. Proponents of these therapies may report their ability to effect various outcomes, including cancer cure, cancer prevention, palliation of cancer- or treatment-related side effects, augmentation of immune system function, or enhancement of overall health and well-being. For the most part, objective evidence to support claims of clinical anti-cancer efficacy associated with any of these therapies is lacking, particularly for those therapies that claim to cure cancer. This is an important fact to gently emphasize to owners who are considering pursuing a CAM therapy rather than an established cancer therapy, particularly if the established therapy has a high likelihood of therapeutic success.

While few, if any, CAM therapies are likely to have clinically relevant anti-cancer efficacy, some therapies may be effective for palliating cancer- or treatment-related morbidities (such as pain or nausea), or improving the physical or psychological well-being of human cancer patients. Here again though, there is a paucity of high-quality scientific evidence to support the use of CAM therapies for palliative purposes. Moreover, many of the therapies which do show promise, such as mind-body exercises (e.g. meditation, patient support groups), are poorly translatable to veterinary patients due to differences in animal and human cognition. However, a CAM therapy which may be useful for palliative purposes across species boundaries is acupuncture. Acupuncture has been demonstrated to mitigate acute vomiting following cancer chemotherapy and alleviate cancer-related pain in a few well-designed randomized clinical trials involving human cancer patients. However, recent reviews conclude that more study of this CAM modality is required in order to define its true therapeutic potential in the oncology clinic. Acupuncture has also shown some benefit in the management of non-cancer-related pain in dogs. It should, however, be noted that acupuncture has not been scientifically proven to palliate clinical signs related to cancer or cancer therapy in dogs or cats.

Are CAM therapies for cancer harmful?
Fortunately, most CAM therapies are unlikely to be harmful. However, some therapies may be harmful if used inappropriately. Any CAM therapy should be carefully scrutinized as to its potential for harm before its use is recommended or condoned. CAM therapies may be harmful in four ways:
1. They may be directly toxic or injurious to the patient
2. They may interact with another therapy in such a way as to be toxic or injurious to the patient
3. They may interact with another therapy in such a way as to make it less effective
4. Their use may prompt owners to delay seeking treatment by a more effective method, allowing the cancer to progress and rendering other treatments less likely to be effective

While there is little published evidence documenting harm done by CAM therapies to veterinary cancer patients, some lessons may be drawn from the experience of human cancer patients. Knowledge of the molecular mechanisms of action of established cancer therapies or CAM therapies may also help to inform decisions as to which CAM therapies are likely to be harmful. Some examples of harmful or potentially harmful CAM therapies include:

1. **Escharotics** – These are herbal medicinal preparations which often contain components of the bloodroot plant (Sanguinaria canadensis). They are usually available as injectable or topical preparations. Escharotics are so named because of their ability to elicit necrosis with subsequent eschar formation following contact with living tissues. They are most commonly employed for the treatment of cutaneous tumors. Products specifically marketed for companion animals include NeoplaseneX, XXTerra, and Cansema Black Salve Mix. Escharotics have the potential to cause significant tissue injury, and their routine use in the treatment of animal cancer cannot be recommended at this time.

2. **Herbal (botanical) medications** – Many antineoplastic drugs currently in use in humans and domestic animals are derived from natural sources. Examples include vincristine, vinblastine, paclitaxel, docetaxel, and etoposide. These drugs have been licensed for use by the Food and Drug Administration (FDA), and stringent regulations are in place to assure quality control in their manufacture. The efficacy and toxicity of these drugs are well established, as are their pharmacokinetic and pharmacodynamic profiles. In contrast, herbal medications available over the counter and on the Internet may have little quality control in their manufacture, and relatively little is known about their pharmacology. Extracts from plants or other natural sources may contain a number of biologically active substances, some of which may be harmful. Moreover, because their manufacture is not strictly regulated, there may be variable concentrations of active ingredients among ostensibly similar products, and some products may contain harmful adulterants or excipients. Herbal medications may interact with proteins critical for drug metabolism such as cytochrome P450 enzymes and p-glycoprotein. Inhibition of these proteins may alter the pharmacokinetics of other drugs, including standard chemotherapy drugs, thereby augmenting their toxicity.

3. **Antioxidants** – Several anticancer therapies exert their effects through the generation of oxygen free radicals. Examples include radiation therapy and the chemotherapy drug doxorubicin. Antioxidants scavenge and detoxify free radicals, thereby rendering them harmless. While antioxidants are generally not considered harmful in and of themselves, they may reduce the efficacy of therapies that kill cancer cells through free radical production. Therefore, many oncologists recommend that human cancer patients receiving chemotherapy or radiation therapy refrain from taking antioxidants. Experimental data to support such a position are limited; however, a randomized clinical trial conducted by Bairati, et al. showed that β-Tocopherol (Vitamin E) supplementation was associated with greater likelihood of tumor recurrence and second primary cancer formation, as well as increased rates of mortality due to all causes in a group of 540 human patients treated with radiation therapy for head and neck cancer. Most studies fail to show a harmful effect of antioxidant supplementation in human cancer patients receiving chemotherapy, although these studies are criticized for poor design and lack of statistical power.

**Discussing CAM therapy with pet owners**
The apparent popularity of CAM therapies among owners of pets with cancer emphasizes that veterinarians should develop a working knowledge of the benefits and detriments of CAM. When taking a complete medical history, veterinarians should inquire as to whether owners are employing CAM to treat their pet’s cancer. When discussing CAM with pet owners, a dismissive or condemnatory attitude should be avoided; such an approach may cause the owners embarrassment, may discourage more meaningful dialogue about CAM in the future, and may paradoxically result in greater willingness of owners to turn to CAM and eschew traditional medical treatment. The physician Franz Ingelfinger perhaps described this phenomenon best in that, “...an establishment indictment of a popular remedy is one of the best advertisements for that remedy.” An open and compassionate discussion with pet owners will likely facilitate greater willingness of pet owners to divulge which CAM therapies they use on their pets. This in turn may foster greater acceptance of therapies that are potentially helpful and avoidance of those that are potentially harmful.

**Where to look for more information**
The sheer number of CAM therapies marketed for the treatment of cancer in humans and companion animals is daunting. To compound this problem, the explosion of information available about these therapies on the Internet can stymie attempts to find scientifically reliable information on any single therapy. Much of the information on the Internet regarding unconventional therapies
comes in the form of anecdotes, testimonials, or other unsubstantiated claims of efficacy. In contrast, there is little high quality information available to help pet owners and veterinarians decide which therapies are safe and/or potentially effective and which are ineffective or potentially harmful. However, selected print and Internet resources do provide scientifically sound information on CAM therapies for cancer, and these are listed below in the references.

References
National Center for Complementary and Alternative Medicine website. Available at: http://nccam.nih.gov/
American Cancer Society website. Available at: http://www.cancer.org
National Cancer Institute website. Available at: http://www.cancer.gov/cancertopics/cam