

R.M. Clemmons, DVM, PhD
Associate Professor of Neurology & Neurosurgery
Department of Small Animal Clinical Sciences

Introduction:

Cancer represents a unique state whereby the body's healing system fails to eliminate cells with damaged or altered DNA. This allows these cells to escape the normal regulatory signals leading to uncontrolled cell growth. While most auto-immune diseases represent a failure of the healing system from an over-active immune system, cancer represents the extreme opposite, whereby the immune system is hypoactive (at least in regard to the tumor). On the other hand, both chronic immune diseases and cancer probably represent outcomes from the failure of the healing system brought about by living within a polluted environment, coupled with the genetic make-up of the dog.

While we are beginning to unravel the complex biochemistry of cancer development and have begun to understand how DNA is damaged and repaired, we still have a long way to go before the cure for cancer will be found. Spontaneous healing of cancer has been documented many times in human beings and animals, suggesting that a cure is possible. On the other hand, there is a great deal of information about the potential for preventing many forms of cancer. Most of these techniques involve the use of diet and dietary supplements. We can not control the air we breath, unless we do this as a whole. Using alternative means of transportation, car-pooling and clean energy production are good for the environment and for those living in it. It does pay to fool Mother Nature, she will get even in the end. We can, however, control the food our pets eat and the water they drink; thereby, reducing their pollution load. We can provide our pets with anti-oxidants and bioflavonoids, compounds which help protect DNA and the healing system. We can give them sufficient fiber in there diets to support digestion and protect the gi tract from cellular damage.

Treatment of cancer with traditional Western medicine involves surgery (to remove or de-bulk the tumor mass), ionizing radiation (to expose the tumor to lethal doses radiation, minimizing radiation exposure to surrounding healthy tissue), and chemotherapy (to poison the rapidly growing cancer cells without poisoning the rest of the body). One or all of these methods may be employed in a given patient in an attempt to delay or prevent further cancer growth. On average, the success of Western approaches to cancer provides 1 to 18 months of relief from the cancer. While longer survival times are seen with certain forms of cancer, the long term

prognosis for even the best forms of "systemic" cancer is poor to grave. The best chance for a good prognosis is for localized cancer (particularly benign lesions) which can be removed completely with surgery. When surgical removal of the cancer is not possible, or when the cancer has already spread to other organs (metastasized), control of the tumor may not be possible by conventional means and the owner must make difficult choices about the continued care of their pet. Some of these choices are very expensive. Traditional Western diagnostic methods have advanced dramatically in the last few years and provide the best chance to discover the nature of the tumor and to predict its clinical course. Advanced imaging techniques like diagnostic ultrasound, computer-assisted tomography (CAT scans) and magnetic resonance image (MRI scans) have vastly improved tumor diagnosis. Fine-needle aspirates or "true-cut" biopsies of tumors (sometimes performed in conjunction with an imaging technique) can provide cytological confirmation or histological diagnosis of the tumor type, leading to better therapeutic recommendations.

In isolated cancers where "focused" radioablative surgery can be performed (such as in brain tumors), this can be an excellent treatment option. It is not inexpensive, but can be performed at selective veterinary medical facilities and provides stereotaxic precision to the radiotherapy. In addition, all of the radiotherapy can be done at one time, under a single anesthesia. Stereotaxic radioablation also minimizes damage to surrounding tissues. Moreover, the patient's immune system (and healing system) is not compromised outside the bounds of the tumor, allowing the patient greater potential for healing. While stereotaxic radioablation is currently limited to the brain (and, in some cases, the liver), it offers great potential for good. I am, personally, not enthralled with other forms of radiotherapy or with chemotherapy. Chemotherapy uses compounds which are toxic to the body and destroys the animal's immune system, hoping that the tumor is killed before the patient. While animals do not suffer all of the side-effects as human beings undergoing radiation therapy or chemotherapy, these treatments can still have significant and, in some cases, life-threatening side-effects in dogs. Owners must weigh the benefits and the risks carefully before making the decision to put their pet through radiation treatments or chemotherapy.

To me, the answer to cancer lies in the immune system. This is the major reason why I have trouble with Western chemotherapy. Spontaneous remission from cancer only occurs when the patient's immune system acts to clear the cancer. Therefore, stimulation of the patient's immune system to selectively attack the cancer seems to be the key to achieving a successful outcome. New methods in immunotherapy and immunotargeted chemotherapy are likely to be the Western methods which lead to the greatest advances in cancer treatment over the next few decades.

Traditional Eastern medicine has also been used successfully in the treatment of cancer for thousands of years, long before we understood the basic pathobiology of tumors. It is not a replacement for Western diagnosis and therapy, but may be used with Western approaches to

help heal patients. When the option for Western therapy is lacking, there are Eastern therapies which can be employed to help the patient live a quality life, reducing the rate to cancer expansion or, in some cases, leading to remission of the cancer. Eastern medicine may be best suited to prevention of the development of cancer through healthy living. On the other hand, herbal medications have been shown to lead to spontaneous remissions of cancer. In some cases, these herbal products can be used in conjunction with traditional Western therapies, improving the outcome and reducing the side-effects from Western therapy alone. An integrative approach combining the best of both Western and Eastern medicine seems to be the only sensible course of action, providing the best overall care for the patient.

Reducing risk factors for cancer, eating a properly balanced diet (free of pesticides and preservatives), drinking pure water, providing appropriate anti-oxidants, vitamins and minerals, and exercising regularly can help prevent cancer. Once cancer has been found, additional supportive measures are needed. Cancer cells utilize carbohydrates for fuel and compete for the body for amino acids. However, these cancer cells do not metabolize fats. Some data suggests that high fat diets can help the patient overcome the effects of cancer and even reduce cancer expansion. A number of herbal products can stimulate the immune system to attack cancer or block the mediators which the tumor uses to spread to other areas of the body, mediators which the tumor needs to survive. The following is a guide to the integrative treatment of cancer, using those compounds where there is scientific data to support their use in cancer management, helping the patient survive the disease.

The Cancer Diet:

Although eating healthy is the best tool in the fight against cancer, once cancer takes hold certain dietary changes may help the patient fight against the effects of the cancer. Tumor cells rely heavily upon carbohydrates for their energy and rob the body of amino acids. On the other hand, tumor cells cannot utilize lipids (fats) for energy while the rest of the body can. As such, diets with increased fat content may slow tumor growth, allowing the patient to fight against the tumor. Protein content must be maintained at levels sufficient for tissue repair, but carbohydrates should be held to a minimum. For those who prefer to prepare their dog's food, the following diet contains the ingredients important for cancer patients. In addition, it supplies the important nutrients for cancer protection. For those who can not cook for their dog, a commercial food should be of good quality, moderate protein (18-22%) content, low carbohydrate (3-13%) content, and high fat (55-60%) content. One of these is *Mighty Dog Bacon & Cheese* dog food. Your veterinarian can assist you in finding a food which fits these criteria and is satisfactory to your dog.

Home cooked cancer diet: *(for 60-90 pounds body weight)*

-
- 4 oz Pork Back Fat (boiled, baked or fried in olive oil)
- 4 oz Tofu (firm soybean curd)
- 2 tsp Extra Virgin Olive Oil
- 2 Whole Carrots (boiled and then cut up)
- 1 cup Spinach (cooked)
- 4 Tbs Green Bell Pepper (chopped and steamed)
- 4 Broccoli Spears (boiled and then cut up)
- 2 Sardines (in olive oil, drained)
- 2 cloves raw Garlic (crushed and added before serving)
- 1 tsp dry, ground Ginger (added before serving)
- ½ tsp dry, yellow Mustard (added before serving)

Dietary Supplements:

Vitamins & Antioxidants:

The vitamins and antioxidants for cancer patients are the same for all dogs, including vitamin E, vitamin C, selenium, beta-carotene, ginkgo bilboa, green tea and grape seed extract. In addition, the membrane stabilizers omega-3-fatty acids, gammalinolenic acid and coenzyme Q-10 are important for cancer patients. Many of the antioxidants help stabilize DNA and help reduce cancer development or progression. Some data suggests that antioxidants can reduce the effectiveness of radiation and chemotherapy, but this is not well documented. It may be best to stop antioxidants 3 days before radiation therapy or at the start of chemotherapy, reinstating the antioxidants a few days later. Most of the herbal antioxidants are good for preventing cancer, too.

Immunostimulants:

Echinacea:

American Indian medicine gave us a useful native plant that is another immune-system booster: purple coneflower, *Echinacea purpurea* and related species. The root of this ornamental plant is held in high esteem by herbalists, naturopathic doctors, and many lay-people because of its antibiotic and immune-enhancing properties. You can buy echinacea products in any health food store: tinctures, capsules, tablets, and extracts of fresh or dried roots. Although few medical doctors in America are familiar with echinacea, much research on it has been done in Germany, and the plant is in widespread use as a home remedy in Europe and America. Follow the directions for adult dosing.

Astragalus:

Another Chinese herbal remedy with similar properties comes from the root of a plant in the pea family, *Astragalus membranaceus*. This plant is a relative of our locoweed, which is toxic to livestock. The Chinese species is nontoxic, the source of a very popular medicine called *huang qi* that you can buy in any drugstore in China for use against colds, flus, and other respiratory infections. Recent studies in the West confirm its antiviral and immune-boosting effects, and preparations are now available in most health food stores here. Follow the directions for adult dosing.

Anti-Cancer herbs:

Cat's Claw (una de gato):

Cat's claw (name derived from the pattern of thorns found on the vines), *Uncaria tomentosa*, comes from the Peruvian rain forest and was traditional used by the indigenous people to treat cancer and arthritis. Recent studies indicate that it contains immune-enhancing substances, including several antioxidant compounds. These compounds may account for the antitumor properties reported for cat's claw. Treatments have been reported to lead to remission of brain and other tumors. While published data is lacking, cat's claw should be considered in tumors of the central nervous system. Use $\frac{1}{4}$ the adult human dose for small dogs, $\frac{1}{2}$ for medium dogs and the equivalent dose in large dogs.

Reishi and Maitake Mushrooms:

Like astragalus, mushroom extracts stimulate the patient's immune system by presenting unique macromolecules to the intestinal tract, where they alter the immune regulation by intestinal antigen processing systems. In addition, maitake mushroom extract has been shown to activate NK Killer cells which attack tumor cells and to prevent destruction of T-Helper cells. There is no known toxicity from these mushroom extracts. Use $\frac{1}{4}$ the adult human dose for small dogs, $\frac{1}{2}$ for medium dogs and the equivalent dose in large dogs.

Pau D'Arco:

This herbal extract from the inner bark of trees of the *Tahebuia genus* (found in South American rain forests) contains lapachol which has been reported to induce strong biological activity to cancer. No adverse effects have been reported with the drug. Studies with pure lapachol have not indicated that blood levels are inadequate to provide the anti-cancer and anti-inflammatory actions attributed to Pau D'Arco. On the other hand, its effectiveness may not be related solely to lapachol, but influenced by other phytochemicals in the extract. Use $\frac{1}{4}$ the adult human dose for small dogs, $\frac{1}{2}$ for medium dogs and the equivalent dose in large dogs.

Other Dietary Supplements:

Milk Thistle:

Milk thistle is an herbal product that help protect the liver from toxic damage. It may be useful in treating chronic active hepatitis or as a prevention of injury from other drugs. It has been used to protect the liver from damage from chemotherapy in human patients. It may help prevent damage from traditional anti-convulsants (phenobarbital). I recommend starting at 1 capsule twice a day.

Shark Cartilage:

Mounting evidence suggests that shark cartilage has anti-angiogenic properties, reducing blood vessel development into tumors. While it is not ecologically sound to harvest sharks for their cartilage, it is hard to deny to benefit of reducing tumor blood flow in reducing tumor size and preventing distant metastasis. On the other hand, a recent study using shark cartilage in terminally ill human cancer patients showed no evidence of benefit either in tumor growth or in the quality of life of the patients. If your dog has neoplasia, you can consider using 1000-2000 mg of shark cartilage daily, taking into account that it may do nothing beneficial.

Miscellaneous:

You may want to add Essiac tea, Wheatgrass extract, Soybean Concentrate or Chlorella (see www.wheat-grass.com) {these are not proven, only antidotal}

Soybean concentrate contains many of the same compounds found in Tofu, in a liquid form. My feeling is that if you use the diet which is based upon Tofu for much of its protein, you do not need soy concentrates. On the other hand, this might be useful in dogs who remain on commercial dog food.

Barley grass, wheat grass, and alfalfa are green plants that some people believe to be full of nutritional blessings. The first two are the young shoots of sprouted grains. Freshly squeezed wheat-grass juice is sold in some health-food stores as are dried green powders and tablets of all three plants. There is no evidence to back the claims made for these products, and I do not recommend using them. Alfalfa may contain natural substances that harm the immune system.

Spirulina and chlorella are two varieties of freshwater algae, primitive plants that are cultivated for nutritional use, dried and sold as dark green powders or tablets. They are very expensive and heavily promoted as miracle supplements. What they provide is mostly protein, which you do not need, along with some vitamins and minerals. Claims made for these products are not substantiated by research.

Additional Measures:

Acupuncture:

While acupuncture cannot prevent cancer, it can be very effective in relieving pain caused by cancer and may help balance the energy flow throughout the body, directing the body's healing system to fight the tumor. Acupuncture is widely accepted as a method to provide analgesia without the side-effects of drugs. It stabilizes the adrenal gland function and may increase endogenous corticosteroid secretion without the side-effects of exogenous steroid medication. Electrical acupuncture will stimulate reflex activity, improving muscle strength and allowing more rapid return of function. Post-operatively, needle acupuncture is useful to reduce muscle spasms without drug intervention. Generally, acupuncture is given over several treatments. If it does not provide benefits within 3-5 treatments, then further therapy may not be warranted. Acupuncture should be performed only by a veterinarian who is trained and certified in its use; your veterinarian should be able to refer you to a qualified veterinary acupuncturist in your area.

Static Magnetic Therapy:

Magnetism has been used for years to treat a number of medical conditions; however, only recently has the use of magnets been rediscovered as relatively simple and safe methods of promoting health with few or no side-effects. Static magnets have a number of physiologic effects which can be useful in the treatment of tumorous growths. "North" pole magnets create alkalinity by decreasing hydrogen ion concentration in the tissues (since the north pole of a magnet is positive, it repels positively charged molecules). In addition, north pole magnets suppress cell mitosis, inhibit viral and bacterial growth, shrink tumors and decrease both tissue edema and inflammation. Applying north pole magnets over the area of the tumor for 15-20 minutes a day may help in tumor control. Most medical magnets need to be of 1000-3000 gauss. The higher the magnetic strength, the greater the tissue penetration. For superficial tumors, lower gauss magnets are fine.

Healing Touch:

Healing touch is based upon the capacity of human beings to pass "life-force" from themselves into others willing to accept this gift. Although many forms of healing touch are taught in the West, they represent teachings of the same physical process. Many studies have indicated that human contact can help lower blood pressure, reduce stress and improve the state of well-being of the recipient. Human contact has also been shown to increase the immune

resistance of others. These principles can be used to help animal patients heal, as well. While it is not easy to demonstrate measurable results in all cases, certainly healing touch does no harm. When done as taught by practitioners of healing touch, it does not cost the "giver" personal energy, since the "giver" acts as a conduit of "universal" life-force which is freely available from a limitless supply of life-force within the cosmos. The "recipient" is free to accept and use this life-force energy. Most Eastern philosophies of healing are based upon the concept that living beings are based upon energy which flows in the body. When the energy level is low or there is a blockage of energy flow, disease develops. Healing touch, by providing life-force energy above or below this blockage, can re-establish the natural flow of energy, allowing healing to take place.

While healing touch has a spiritual aspect, it is not a religious practice nor does it require any particular belief by the giver or recipient. What is required is a recognition by the giver that this process can occur and for the giver to practice the technique to establish pathways for energy flow from them to the recipient. Distant healing touch can also be beneficial to patients. In this form of healing touch, the giver establishes a "psychic" connection with the recipient and mentally visualizes offering the life-force to the patient. Many double blind studies have shown that prayers directed at patients in human intensive care units reduce the complication rates of those patients and their ultimate length of stay in the intensive care unit. Distant healing touch and prayer seem to work through similar mechanisms, in their benefits to patients. On the other hand, belief in any specific religion is unnecessary to practice healing touch. Any person can learn and practice healing touch. In fact, most people perform healing touch without knowledge of doing so. For information about the practice of healing touch see [Dr. Weil's web pages](#) and search for "healing touch". For a discussion of healing touch, see <http://neuro.vetmed.ufl.edu/neuro/courses/vem5208/centering.html>

Healing touch may be helpful to maintain normal health in dogs who might develop cancer. It also will assist in slowing progression and maximizing recovery once cancer has developed. Since this can be done without risk of injury, it will do no harm; yet healing touch may increase the chances of full recovery. It also helps develop the human-animal bond. The outcome of healing touch is non-judgmental. It is a gift which is shared between the patient and healer.