PRACTICAL GUIDE TO SUPPLEMENTS IN CANCER CARE AND BEYOND 2026

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As veterinarians, we are seeing an increasing trend: more pet owners are turning to nutritional supplements to support their pets, especially after a cancer diagnosis. In fact, 80% of surveyed owners believed a dietary change was necessary once their pet was diagnosed with cancer, and over half expressed mistrust in traditional dry or canned pet food. Cancer pet owners are also significantly more likely to use supplements, often giving more types and in higher quantities than healthy-pet owners (Bainco). As clinicians, we must guide these decisions, bridging the gap between evidence-based veterinary medicine and the emotional urgency that clients often bring to these conversations.

Unfortunately, supplement regulation in the United States is limited. Veterinary supplements are not regulated by the FDA or AAFCO in the same way that medications or even pet food are. While the National Animal Supplement Council (NASC) offers voluntary oversight and a quality seal, not all high-quality products carry this label, and the seal is not a guarantee. This lack of regulation leaves a confusing landscape for clients and clinicians alike. Without stringent oversight, the safety, consistency, and efficacy of many products remains uncertain. That's why I focus on evidence-based recommendations and prioritize supplements with peer-reviewed data, proven bioavailability, and trusted manufacturing practices.

This session focuses on four key supplement categories that I frequently recommend and use in oncology patients and beyond: probiotics and synbiotics, sulforaphane, SAMe, and omega-3 fatty acids. I'll share what the evidence tells us, how these supplements can be used practically in daily veterinary medicine, and when they might help support your cancer patients.

PROBIOTICS & SYNBIOTICS

Probiotics are defined as live beneficial microorganisms that, when administered in appropriate amounts, offer health benefits to the host. Common veterinary applications include acute diarrhea, antibiotic-associated GI signs (AAGS), IBD, and chronic enteropathies. They work by restoring gut microbial balance and competitively inhibiting pathogenic organisms. Commonly used strains in veterinary probiotics include Lactobacillus, Bifidobacterium, and Enterococcus species, and yeast-based probiotics like Saccharomyces boulardii are particularly beneficial when administered alongside antibiotics, as they are unaffected by antimicrobial drugs. Veterinary-specific probiotic products such as original FortiFlora®, and Visbiome Vet® are available.

Synbiotics, which combine probiotics with prebiotics (non-digestible fibers that fuel beneficial bacteria), offer enhanced support for the microbiome. These combinations have shown improved colonization, longer-lasting effects, and better outcomes in reducing antibiotic-induced dysbiosis. For example, in a controlled crossover trial, cats receiving a synbiotic during clindamycin treatment had higher food intake, reduced vomiting, and fewer disruptions to their antibiotic regimen (Strokes). The benefits persisted for over a month after the supplement was stopped, indicating a prolonged impact on gut balance. Synbiotics like Proviable®-DC, Proviable®-Forte and Fortiflora® Pro are widely used.

When selecting a probiotic or synbiotic, it's important to consider several factors: the specific strain(s) used, the total colony-forming units (CFUs) per dose, product stability, and whether the strains have been studied in veterinary species. Refrigeration may or may not be required depending on formulation, and CFU counts can degrade over time. Avoid recommending human probiotic supplements unless you are confident in their quality and strain appropriateness for pets.

The microbiome plays a critical role in immune system regulation, inflammation, and overall health. Cancer therapies such as chemotherapy and radiation can significantly disrupt the gut microbiome, and probiotics may help mitigate these effects. In oncology patients, probiotics and synbiotics are commonly used to support gastrointestinal health, promote microbiome balance, and may help modulate systemic inflammation.

Clinically, I often use probiotics or synbiotics during chemotherapy, antibiotic therapy, after dietary indiscretion, and in patients with food sensitivities, stress colitis, or chronic GI disease—including low- and high-grade GI lymphoma. For antibiotic courses, I also recommend considering the addition of a yeast-based probiotic to ensure protection.

Beyond digestion, probiotics influence systemic health. Through the gut-brain axis, certain strains like Bifidobacterium longum may reduce anxiety. Probiotic supplementation has been studied in chronic kidney disease, atopic dermatitis, and immune modulation. Choosing a product with multi-strain coverage, peer-reviewed evidence, and verified CFU counts is essential, as many over-the-counter options fail to meet label claims.

SULFORAPHANE

Sulforaphane (SFN) is a powerful phytochemical found in cruciferous vegetables, particularly broccoli sprouts. It is best known for its antioxidant, anti-inflammatory, and potential anti-cancer properties. In veterinary oncology, SFN has gained interest as a nutraceutical that may help support cellular detoxification, modulate inflammation, and exert anti-neoplastic effects through various molecular pathways. One of SFN's key mechanisms is activation of the Nrf2 (nuclear factor erythroid 2–related factor 2) pathway. Nrf2 regulates the expression of detoxifying and antioxidant enzymes, helping protect cells from oxidative stress and inflammation. SFN also impacts histone deacetylase (HDAC) activity and modulates gene expression, which may influence tumor suppression. In some studies, SFN has been shown to reduce cell proliferation and increase apoptosis in cancer cells.

Comment [ST1]: This doesn't make sense - "derived from found in " .. would you prefer it to just say derived from?

SFN's benefits are multifaceted. It enhances the body's detoxification of environmental and dietary toxins, reduces oxidative stress, and supports DNA stability. Over 150 human clinical trials have evaluated SFN's role in conditions ranging from cancer prevention to inflammatory disorders and neurologic health. In smokers, clinical trials have shown that Avmacol® supplementation leads to increased excretion of tobacco carcinogens like benzene and acrolein (Bauman). These detox effects are quantifiable and meaningful.

Avmaquin® is a veterinary sulforaphane-producing supplement designed to deliver stabilized sulforaphane precursors that become active in the body. It contains broccoli seed and sprout extracts, active myrosinase, maitake mushroom extract, and beta-glucan. It is formulated for bioavailability and contains broccoli seed extract rich in glucoraphanin, the SFN precursor. When combined with the enzyme myrosinase—also included in Avmaquin®—glucoraphanin is converted into active sulforaphane in the gastrointestinal tract.

In dogs, SFN has been found to be bioavailable achieving peak plasma concentrations one hour after ingestion. In addition, Avmaquin® appears to concentrate in the urine with higher urine levels 4 hours after ingestion than was achieved in the plasma (Gillette). This detox enzyme plays a vital role in reducing free radical load and aiding elimination of both endogenous and environmental toxins. The formulation's additional components provide synergistic antioxidant and immune support.

One particularly exciting application is bladder cancer (TCC/UC), which disproportionately affects certain breeds like Scottish Terriers, Shelties, Beagles, and Westies. Epidemiological data from humans show a 50% risk reduction in bladder cancer with high cruciferous vegetable intake, and SFN suppresses tumor growth via mechanisms such as Nrf2 activation and FAT1 protein downregulation. Given the

strong environmental component of TCC/UC (e.g., exposure to cigarette smoke), Avmaquin® can be considered as part of a chemopreventive strategy in high-risk or exposed dogs.

In practice, I recommend Avmaquin® daily for its antioxidant, detoxification, and anti-inflammatory properties. It's a once-daily chewable tablet that is well-tolerated. Because SFN is metabolized and cleared within 24 hours, consistent daily use is necessary for ongoing protection. I consider it in cancer patients, in dogs with inflammatory diseases, or for those living in environments with higher toxin exposure.

S-Adenosylmethionine (SAMe)
S-Adenosylmethionine, commonly referred to as SAMe, is a naturally occurring compound found in nearly every tissue of the body. It plays a key role in methylation reactions, liver detoxification, and synthesis of neurotransmitters and antioxidants, including glutathione. In veterinary medicine, SAMe is primarily used as a hepatoprotective agent to support liver function in dogs and cats with liver disease or those on potentially hepatotoxic medications.

SAMe has both antioxidant and anti-inflammatory properties. In the context of oncology, its use is most common in patients receiving chemotherapy or other drugs that may affect liver health. Many chemotherapy agents, such as lomustine (CCNU), are metabolized by the liver, and concurrent use of SAMe may help protect hepatic cells and preserve function. I routinely recommend SAMe in patients on CCNU or steroids to support liver health.

SAMe is often combined with silybin (a bioavailable form of milk thistle) in veterinary liver support products such as Denamarin®. This combination has been shown to improve liver enzyme profiles and antioxidant status in dogs with liver disease. Silybin works synergistically with SAMe by enhancing glutathione levels and protecting against oxidative stress.

I routinely recommend SAMe for dogs receiving corticosteroids such as prednisone, particularly with long-term use. Corticosteroids are known to increase oxidative stress and can induce vacuolar hepatopathy, leading to liver enzyme elevations. The Center et al. (2005) study demonstrated that SAMe supplementation helped maintain hepatic glutathione levels and reduced oxidative damage in dogs on prednisolone. For me, this supports using SAMe proactively when I anticipate chronic steroid therapy—especially in cancer patients with preexisting liver concerns or concurrent medications.

I also consistently use SAMe in dogs treated with lomustine (CCNU), an agent well known for its risk of cumulative hepatotoxicity. In the prospective study by Skorupski et al. (2011), dogs receiving Denamarin® alongside lomustine had significantly smaller increases in ALT compared to placebo controls. Based on this data and my clinical experience, I start SAMe when initiating lomustine and continue throughout treatment. My goal is to protect liver function, reduce the risk of hepatotoxicity, and allow patients to remain on schedule with their chemotherapy protocol.

When recommending SAMe-containing supplements, it's important to choose veterinary-specific formulations with documented bioavailability. Dosing should be based on the dog's weight and the product's label instructions. SAMe should ideally be administered on an empty stomach to maximize absorption, usually 30 to 60 minutes before a meal.

OMEGA-3 FATTY ACIDS
Omega-3 fatty acids, particularly EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), are key components of veterinary supportive care due to their systemic anti-inflammatory, metabolic, and immunomodulatory effects. In dogs, omega-3s are commonly used for chronic inflammatory diseases such as osteoarthritis, dermatologic conditions, chronic kidney disease, cardiovascular disease, and cancer

cachexia. In cats, omega-3s are established in the management of arthritis and chronic kidney disease, with emerging areas of interest including cardiovascular support, cognitive health, cancer-associated inflammation, and dermatologic disease.

Species differences are clinically important. Dogs can partially convert alpha-linolenic acid (ALA) to EPA and DHA, but marine-derived EPA/DHA is preferred for therapeutic use. Cats have a limited capacity to convert ALA and require preformed EPA/DHA for clinical benefit. Furthermore, cats may be more prone to side effects such as steatitis if dosed inappropriately or given rancid oils. Palatability and acceptance are common issues in feline patients, necessitating careful product selection and dose titration.

ETA (eicosatetraenoic acid), included in veterinary formulations like Welactin® 3TA, offers additional anti-inflammatory effects by inhibiting cyclooxygenase enzymes, reducing inflammatory eicosanoid production. Its inclusion may enhance clinical efficacy in patients with significant inflammatory burden, making it a valuable addition in both canine and feline supportive care plans.

In dogs, omega-3s are dosed based on metabolic body weight ($kg^{0.75}$), typically targeting 50–125 $mg/kg^{0.75}$ of combined EPA+DHA daily for inflammatory support, and up to 310 $mg/kg^{0.75}$ for osteoarthritis. In cats, dosing is based on metabolic body weight ($kg^{0.67}$), with a target of 75 $mg/kg^{0.67}$ EPA+DHA daily for inflammatory support. I always titrate the dose gradually over several days to minimize gastrointestinal side effects, especially in sensitive patients like cats.

In dogs, omega-3s are generally well tolerated. Potential adverse effects include gastrointestinal upset (soft stools, vomiting), delayed epithelial wound healing at high doses, and increased oxidative stress, which underscores the importance of concurrent antioxidant supplementation, such as vitamin E. There is also a risk of hypervitaminosis A and D with certain fish oil products, though toxin risk is relatively low with high-quality sources. Additionally, the caloric density of omega-3 supplements can contribute to weight gain if not monitored.

In cats, omega-3s offer significant benefits but require careful administration. Palatability can be a challenge, and cats may be more prone to gastrointestinal upset at higher doses. Steatitis is a serious concern when feeding oxidized or rancid fish oils, highlighting the need for antioxidant-protected formulations. Cats are also more sensitive to mercury and environmental toxins found in some fish-based oils, making third-party purity testing critical. Reduced platelet aggregation may occur in some cases, potentially leading to prolonged bleeding times—a greater concern in cats compared to dogs. Additionally, the risk of exposure to environmental toxins, such as heavy metals or persistent organic pollutants, underscores the importance of third-party tested, purified fish oil products.

Omega-3 fatty acid supplementation remains a cornerstone of supportive care for both dogs and cats, offering broad systemic benefits that extend beyond oncology into chronic disease management. When used thoughtfully with attention to species-specific considerations, dosing, and monitoring, omega-3s can enhance quality of life and contribute meaningfully to multimodal treatment plans.

In my practice, I integrate omega-3s in many cancer patients, particularly those with weight loss, inflammation, or concurrent arthritis. Clients often view omega-3s as a foundational supplement and are highly receptive to adding them when provided with clear guidance.

CONCLUSION

The integration of nutritional supplements into veterinary cancer care continues to grow, as more than 80% of owners report making dietary changes after a cancer diagnosis. As clinicians, we must recognize the power of this trend while anchoring our guidance in science. Data support the use of probiotics and synbiotics to reduce chemotherapy-associated GI toxicity, omega-3 fatty acids to mitigate inflammation

and cachexia, SAMe to support hepatic function during chemotherapy, and sulforaphane to activate key cytoprotective pathways such as Nrf2. While supplements are not curative, their strategic use can improve quality of life, reduce treatment-related adverse effects, and strengthen the therapeutic alliance with pet owners. Leveraging available evidence allows us to confidently incorporate these tools into personalized, multimodal cancer care plans.

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