



Fungi for Fido:

How the fungal kingdom helps our animal companions live longer and better lives with us

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Mushrooms for pets?

Mycoenthusiasts, like yourselves, appreciate the value of the Fungal Kingdom in its many expressions, and love to share their enthusiasm for fungi with friends, family, and even complete strangers! Whether it be as food, functional mushrooms, health care products, mycelial products, eco-environmental health, or mushroom foraging, fungi provide valuable resources and benefits.

But do you share your functional and edible mushrooms with your four-legged family members? I know they would appreciate that. A recent survey by *Forbes* magazine in 2025, of pet ownership in the USA, reports that the pet industry grew to \$152 billion in 2024, with 71% of all households having pets. This means that 184 million people share their home with an animal companion. Are you one of these fortunate ones?

To have a pet is to know the meaning of love without words. Scoresby et al. (2021) determined that having a pet in one's

life is associated with improved quality of life and reduced stress, as determined by a number of objective studies. But, how aware are you of the many ways you can benefit your four-legged family members by adding certain fungal species to their daily routine? The use of mushrooms in the human animal dates back to our early pre-history. In pets, however, the use of mushrooms is relatively recent, only having become significant in the past 10–15 years.

Many questions about the relationship of the fungal kingdom to our domesticated animals remain unanswered. This is because there is still a paucity of research and information about which mushrooms are best for which conditions in pets (dogs, cats, and horses, specifically). There's not much data about how safe mushroom use is in pets other than anecdotally. Mushroom safety is something that has been documented over many millennia of use. But what about mushroom safety in our pets? Maybe they react differently to fungi than people do?

As an integrative veterinarian with more than 40 years of clinical experience in herbal medicine, Traditional Chinese Veterinary Medicine, nutritional and nutraceutical therapy, and conventional Western practice, I combine traditional knowledge

of medicinal fungi with modern research to develop health and disease management protocols for companion animals.

This article contains the foundational information that will guide you in the effective and safe use of the same mushrooms you rely on for your own health, this time for the benefit of your pets. This information is derived from my professional experience practicing integrative veterinary medicine, and adopting and using emerging therapies such as functional mushrooms, cannabis, medical ozone, and microbiome restorative therapies in my four-legged patients.

Which mushrooms are safe to use for our dogs, cats, and horses?

A rule of thumb in this regard is that if a mushroom is safe to eat or use for health concerns in people, it can also be used safely and effectively in our four-legged companions, although a dosage adjustment will be needed. For both pets, and for ourselves, mushrooms need to be consumed after being cooked or hot-water extracted to allow for improved absorption of the beta glucan indigestible fiber and the other poorly absorbed active constituents of the whole fresh mushroom.

Mushrooms aren't 100% safe to eat when raw. Toth et al. (1986) found that button mushrooms contain toxic principles, such as agaritines. These are carcinogenic hydrazine compounds found in *Agaricus bisporus*. Fortunately, agaritines are denatured from the heat of cooking or by keeping in the refrigerator for over seven days. A report by the Montana Department of Public Health and Human Services in 2023

found that even tasty morels can pose a health risks when served raw or undercooked. A Brazilian case report by de Mendonca (2015) described the allergic dermatitis observed in humans to shiitake mushrooms. Animals are equally susceptible to allergic reactions from any mushroom.

Which mushroom(s) to consider for specific medical conditions?

Since the use of functional mushrooms in pets is so recent, we have only a few published objective studies to go by. Many of the conditions that affect our pets are similar in nature to human health conditions, thus allowing us to try a mushroom that has an established benefit in humans on a pet with a comparable condition, hopefully providing a certain degree of success.

In terms of what mushrooms have been studied in pets, we have a short list. However, this is a good place to start by detailing those mushrooms for which there are objective animal studies in the target species of dogs, cats, and horses. Studies that have been performed in laboratory animals have not been included in this short list.

Turkey Tail (*Trametes versicolor*) has the most published studies in dogs. Two studies have been published so far, exploring the potential benefit of this patented Turkey Tail extract when used to treat a very aggressive, and commonly fatal cancer of the spleen in the dog, known as hemangiosarcoma. Two mycelial extracts of Turkey Tail are patented pharmaceutical products, known by the names polysaccharopeptide (PSP) and polysaccharide krestin (PSK). These potent beta glucan-peptide molecules are derived from a



What do you know about dogs on mushrooms?



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Author of the #1 New York Times Bestseller
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specific strain of the Turkey Tail mycelium that has been grown in a special liquid culture and then pharmaceutically extracted and concentrated. These mycelial extracts have been subjected to a large number of studies in humans and laboratory animals since they were first patented in the mid-1980s in China and Japan, respectively.

Furthermore, PSP is in clinical use in China in human oncology patients, and PSK has been in use in Japan, also for human oncology patients. The Chinese company that owns the patent for PSP, in an attempt to gain USA FDA approval as a drug for use in human oncology patients, funded two studies conducted at the University of Pennsylvania College of Veterinary Medicine in dogs with naturally occurring hemangiosarcoma.

The first canine cancer PSP study (Brown and Reetz, 2012) was a Phase I study using 15 dogs. Its goal was to determine which dosage of the PSP extract had the best outcomes in canine patients who were not receiving chemotherapy. The results of this study were very impressive and found that dogs that were given the highest dosage of PSP (100 mg/kg per day) lived longer than dogs who had received chemotherapy. In other words, in this study, this mushroom extract outperformed chemotherapy!

The second study in this series (Gedney et al., 2022) took 10 years to complete. It used the highest and most successful dosage from the first study in a large sample of dogs with this aggressive splenic cancer. There were 100 dogs in total who were recruited and who had hemangiosarcoma. These dogs were then divided randomly into three treatment groups. One group of 50 dogs received the PSP alone. A second group of 25 dogs received the PSP with chemotherapy, and the third group of 25 dogs received chemotherapy with a placebo of the PSP. The results indicated a numerical trend toward increased median survival time in the dogs receiving both chemotherapy and PSP. Although this trend did not reach statistical significance, the best outcomes occurred in the dogs treated with both chemotherapy and the mushroom extract.

Konno et al. (2004) studied the value of the Maitake mushroom (*Grifola frondosa*) in treating canine cancer. This benchtop study found that the Maitake mushroom extract was able to kill canine lymphoma cell lines in vitro (this was a study in tissue culture, not in vivo, in a living animal). Results weren't as strong for breast cancer and connective tissue cancers in this test tube study. Griessmayr et al. (2007) followed the success of this first in vitro study using the canine lymphoma cell line, with a clinical trial of dogs who were diagnosed with end-stage lymphoma, but who had at least two weeks left to live. Maitake extract failed to slow down the fatal course of these dogs' malignant lymphoma in this clinical trial. The "fatal" flaw in this study was the selection of dogs whose disease had progressed beyond the point of rescue with natural therapies.

Switching to direct feeding studies, Cho et al. (2022) found that Lion's Mane (*Hericium erinaceus*), when added to the daily meals of older dogs, supports a healthy microbiome. Dogs in the study were fed either 400 mg/kg/day or 800 mg/kg/day of a powdered Lion's Mane top-dressed on their commercial kibble. Atuahene et al. (2024) found this microbiome benefit to also be true for Shiitake mushrooms when fed to healthy dogs. Shiitake mushroom antioxidant properties in dogs were measured by Kusaba and Arai (2024) in a recently published study.

Cognition, immunity, and allergies.

As our pet population ages, we are seeing in our older dogs and cats the onset of a form of geriatric dementia, known as canine or feline cognitive disorder. Pets who have this problem may forget where the dog door is, or where the food bowl is located. It's a form of "Sundowner's syndrome," and symptoms seem to worsen at night, accompanied by heavy panting and pacing, and sometimes associated with incessant barking without cause, perhaps also associated with some hearing loss. To date, there is not a single published study documenting the benefit of Lion's Mane for pets who have this problem. But anecdotally, I have been recommending Lion's Mane for pets with Sundowner's syndrome for years. In almost every case, these elderly dogs will respond and improve after several weeks taking a Lion's Mane mushroom extract. Mori et al. (2009) measured a similar benefit for Lion's Mane in humans, with cases of mild dementia.

Reishi mushroom (*Ganoderma lingzhi*) and Oyster mushroom (*Pleurotus ostreatus*) have both been found to improve immune function in dogs and to support a healthy and robust antibody response in dogs when vaccinated. Haladova (2011) found that a month's preconditioning of immune compromised puppies with functional mushroom beta glucans substantially improved their vaccine antibody levels indicating improved vaccine competence. Paris et al. (2020) measured this same benefit of improved vaccine competence in dogs using the Reishi mushroom extract. In this era of vaccine hesitancy, a simple blood test to measure the antibody levels stimulated by a vaccination (vaccine titer) can be used to reduce the frequency of revaccination. If there are sufficient antibodies present, then there is sufficient immune protection against that disease, and revaccination is not necessary at that point in time. This simple blood test is used instead of vaccinating until annual testing reveals that antibody levels no longer provide protection from that disease.

Allergies are one of the most difficult chronic conditions to improve in our dogs and cats. Functional fungi provide potential support for helping with allergies. They accomplish this by virtue of their beta glucan content which regulates the microbiome and immune system. These allergy fighting fungi can also help to control the symptoms of allergies by virtue of the activity of the triterpenes they contain in "calming down" the mast cells. These immune cells are responsible for the symptoms of allergies due to their release of histamine when activated by an allergy. Nguyen et al. (2020) found that inotodiol, one of the major triterpenes in the Chaga canker (*Inonotus obliquus*), exhibited this effect on mast cells. Chen (2015) determined that it is the triterpene fraction of *Ganoderma tsugae*, not the polysaccharide fraction that has this effect on mast cell histamine release.

Disorders of horses.

In an unpublished pilot study I conducted, I evaluated horses with Equine Pituitary Pars Intermedia Dysfunction (PPID), a form of Cushing's disease unique to horses. These horses are at increased risk for laminitis and other hoof disorders and often show signs such as long, shaggy coats, a pendulous abdomen, and features of metabolic syndrome. PPID is a progressive pituitary disorder that leads to excessive cortisol production.

Cordyceps militaris



I administered a daily tablespoon of an extract of the adaptogenic mushroom *Cordyceps militaris* for four months. Over the course of supplementation, the horses regrew healthy hair coats, and serum testing showed that their previously elevated insulin and ACTH levels declined to normal or nearnormal values.

Mushrooms for longevity.

Just as we are seeing increased interest in the human health community regarding health span and longevity, there is similar interest expressed in the animal health community to promote improved health span and quality of life. Our pets don't live long enough as-is, so for pet parents, any strategy that can increase the amount of time their four-legged family member is healthy is very welcome. The many powerful active constituents found in mushrooms have been explored for their benefits to health span and longevity in humans and in animal longevity models.

Mushrooms contain a multitude of longevity promoting ingredients: antioxidants such as ergothioneine, glutathione, and the phenolic compounds; triterpenes, like ganoderic acid, hericenones, and inotodiol; nucleosides like cordycepin and adenosine; fungal beta glucans that exert a direct effect on both the immune system and microbiome; and ergosterol and Vitamin D2 precursors. Shevchuk et al. (2023) describes the value, in detail, of each of these mushroom components as potential longevity medicines. These active mushrooms provide safe, natural, and effective options as longevity supplements for dogs, cats, horses, and, in fact, for all creatures, great and small.

How much to give to your pet?

Establishing an effective dosage is essential for delivering sufficient active compounds to support health, wellness, and disease treatment. Because the medical use of functional fungi in pets is still very new, only one publication—the 2012 PSP Phase One study described earlier—has compared multiple dosages to determine the most effective amount for treating hemangiosarcoma.

A practical approach to dosing our pets, in the absence of Phase One studies for each mushroom and for each condition being treated, is to borrow from Traditional Chinese Medicine's (TCM) approach to dosing functional mushrooms for humans and apply that lesson to dosing our pets. TCM looks at three tiers of disease severity to match a starting

dosage of dried mushroom to use for a given patient with a given disease.

For instance, with minor conditions or wellness, TCM recommends the lowest tier of dosing, suggesting to give 1–3 grams of dried mushrooms daily; for more serious conditions, say for allergies or cognitive function, we would then give the next highest tier, 3–6 grams of dried mushrooms. For the most aggressive of conditions, such as cancer, or nasty fungal or viral conditions, we can go even higher and use 6–9 grams of dried mushrooms daily for our human patients. Some human practitioners suggest even higher doses for cancer, as high as 30 grams daily!

To apply this ancient wisdom to dosing our pets, or our children, we can use Clark's Rule, which is from pharmaceutical science. Pharmacy Tech Study from 2023 explains that this approach takes the average weight of a human as being 150 pounds (70 kg). A fraction is calculated using the weight of the animal or child, in the numerator, divided by the average weight of a human in the denominator. We then use that fraction of the human dosage to determine the reduced pet or child's starting dosage.

For extracted mushroom products we would also factor in the degree of concentration of the solid extract or the degree of dilution for the liquid extract to find the dosage comparable to that TCM dosing tier. For 1:1 solid extracts, the amount of extracted powder would be the same as the dried unextracted mushroom powder. For a 4:1 extract, 4 grams of powder are reduced to 1 gram of concentrate. Thus, we would reduce the weight of the mushroom powder to 25% of its original weight when using the 4:1 concentrated mushroom extract powder. Similarly for an 8:1 extract we would reduce the amount of concentrated mushroom extract to 1/8 of the unextracted mushroom powder.

What format of mushroom product is best for pets?

As important as choosing the right mushroom for your pet's condition is choosing the right product format. You may have the most potent mushroom in the world for your pets' problem, but if you can't get it into them, it might as well be worthless.

Formats include soft and hard chews which are treat-like and usually well-accepted unless there are allergies to ingredients in the matrix of the chews. Capsules are an old time standby, but there are a few dogs out there that refuse to accept these hidden in their food, or in a treat. Probably the most popular product format these days are the scoopable powders, which are easy to administer as meal toppers and are easy to "scale up" if you are wanting to give more mushrooms to your pets.

Mushrooms added to your home prepared pet food.

Want to get started providing your family friend with the multitude of benefits from mushrooms, but aren't sure where to begin? If you are already home preparing food for your animals, you can start to include cooked mushrooms to every meal. Even such a small beginning will benefit your pets. Improvements in microbiome health, reductions in all-cause

mortality, and support for improved cognitive health, have all been objectively well documented from published human epidemiologic studies that were conducted in global cultures where mushrooms are a common part of the daily diet.

For instance, Cha et al. (2024) measured the relationship between mushroom intake and cognitive performance in over 5,000 adult humans over 18 years and found that even a single serving of mushrooms weekly had a measurable benefit on aging cognition.

But if you don't provide that kind of "meal service" for your pet(s), and won't be cooking any fresh mushrooms for them, you can still provide them with the benefits of mushrooms by sourcing from one of the many online mushroom companies. You can check out these companies' offerings, technologies, customer service, and prices, to find a potent mushroom supplement that you can start adding to your pets' food on a daily basis.



Which mushrooms are most palatable to pets?

Some mushrooms are more palatable and tasty to pets than others. I would not expect a pet to readily accept a Reishi mushroom extract powder, especially if it contained high amounts of bitter triterpenes. Other mushrooms, like Shiitake, Maitake, Oyster, Lion's Mane, *Cordyceps* and *Tremella* powders are fairly bland in their tastes, and therefore more likely to be accepted. Some animals will accept Turkey Tail readily, and others will turn their noses up and not touch it. Same for Chaga. Be sure to find a Chaga that has low soluble oxalates. Too high a level of soluble oxalates can be a problem with kidney function or can precipitate bladder crystals or cause bladder stones.

Cats are most likely to accept the blander tasting mushroom powders, as suggested above, but need to have their small dose of bland mushroom powder gradually introduced, starting with a very small amount, and gradually increasing it over time. Blending the mushroom powder with a very tasty wet food, tuna fish, etc. may help improve your success introducing mushroom supplements to cats. For instance, the *Cordyceps* mushroom, with its renal protective properties, and mildly sweet, warming taste, is usually accepted by many cats after a slow and gradual introduction.

Mushrooms can provide our pets with nourishment and health benefits when given on a regular basis. If you are using mushrooms in your life to support your own health, isn't it time you started sharing your mushrooms with your four-legged family members? Why wait? Start adding mushrooms to your pet's daily regimen today—just for the health of it!

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