



# ALLEVIATING ANXIETY ANXIETY

A ROUNDTABLE DISCUSSION ON BEHAVIOR  
MANAGEMENT WITH A FOCUS ON SUPPLEMENTS

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# Roundtable Participants

## Moderator



**Gary Landsberg, BSc, DVM, DACVB, DECAWBM (CA)**  
Veterinary Behaviorist, North Toronto Veterinary Behaviour Specialty Clinic,  
Thornhill, ON, Canada

Dr. Landsberg is a board-certified veterinary behaviorist, offering behavior consultations in the Toronto area. He is Vice President of Veterinary Affairs for CanCog Technologies and a VIN consultant, and he serves on the executive committees of the Fear Free<sup>SM</sup> initiative and the European College of Animal Welfare and Behavioural Medicine. He has authored more than 100 research papers, articles, and book chapters including *Behavior Problems of the Dog and Cat*, 3rd edition (Elsevier, 2013).

## Panelists



**Theresa L. DePorter, DVM, MRCVS, DECAWBM, DACVB**  
Veterinary Behaviorist, Oakland Veterinary Referral Services, Bloomfield Hills, MI

A board-certified behaviorist, Dr. DePorter has been offering behavior consultations in metropolitan Detroit since 2004. She is the author or co-author of several book chapters on the topics of feline aggression, use of pheromones in feline practice, psychopharmacology and nutrition, and prevention and management of stress in pet cats in the home environment.



**Lynn Honeckman, DVM**  
Owner, Veterinary Behavior Solutions, Orlando, FL

Dr. Honeckman has been in small animal and exotic animal medicine practice for 23 years. In 2011, she opened Veterinary Behavior Solutions. She is on the Special Council of the Pet Professional Guild and helped create the Central Florida Force-Free Behavior and Trainers Network, working with other professionals to reduce and treat fear, anxiety, and aggression in pets. She is the Committee Chairperson for AVSAB Position Statements and is on the Advisory Board for Dr. Marty Becker's Fear Free<sup>SM</sup> initiative.



**Kelly Moffat, DVM, DACVB**  
Veterinary Behaviorist, Medical Director, VCA Mesa Animal Hospital, Mesa, AZ

Dr. Moffat joined the staff of Mesa Veterinary Hospital in 1994. She later completed a behavior residency and became board certified. Dr. Moffat now serves as the Medical Director at the VCA Mesa Animal Hospital. Because of her interest in the human-animal bond and internal medicine, she remains active in general practice in addition to providing behavior consultations. She is also an adjunct faculty member of Midwestern University, lecturing at the College of Veterinary Medicine.



**Sherrie Yuschak, RVT, VTS-Behavior, KPACTP, CPDT**  
Veterinary Behavior Technician, North Carolina State University, College of Veterinary  
Medicine, Raleigh, NC

Ms. Yuschak is a behavior technician with NCSU's Behavioral Medicine Service. She collaborates on behavioral research and teaches staff and students low-stress handling techniques. A past board member of the Society of Veterinary Behavior Technicians and an Examination Committee member for the Academy of Veterinary Behavior Technicians, Ms. Yuschak is also a faculty member of the Karen Pryor Academy for Professional Dog Trainers and a module contributor for the Fear Free<sup>SM</sup> initiative.



# ALLEVIATING ANXIETY ANXIETY

## Introduction

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Few conditions are more vexing for both veterinarians and pet owners than those related to behavior. Behavioral issues can drain an owner's patience and can lead to the development of various medical conditions, which can significantly reduce a pet's quality of life. Unmanaged or untreated behavioral issues are a leading cause of pet abandonment, relinquishment, or euthanasia. Fear, stress, or anxiety-related conditions are common in pets, and identifying these issues and intervening early to address them not only enhances the human-animal bond, but improves quality of life for pets and families. Addressing

these issues takes a multimodal approach. Advances in calming supplements designed to help support normal behavior in dogs and cats are giving veterinarians new options to assist in managing these cases.

A group of animal behavior experts recently took time to discuss this complex issue, taking a closer look at how to identify and comprehensively manage some of the most common behavioral issues encountered in general practice and discussing the role the veterinary team can play in spotting at-risk pets.

## A roundtable discussion on behavior management with a focus on supplements

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**Dr. Gary Landsberg (moderator):** We know that behavioral problems are not always brought to a veterinarian's attention until the situation has become severe, or when an associated medical condition arises. Clearly, our goal is to identify these cases and initiate intervention earlier in the process. To begin, how important are anxiety issues in pets?

**Dr. Kelly Moffat:** From a medical perspective, anxiety can be a factor in disease. Stress colitis and cystitis are near the top of the list. We've always known about stress colitis associated with boarding, but now we understand that even some of our day-to-day diarrhea cases have a stress component. For example, a pet may develop stress-related diarrhea when the owners are out of town or when guests visit. In cats, inappropriate urination due to cystitis is often stress related.

**Dr. Theresa DePorter:** The development of colitis in boarding facilities is almost considered "normal," rather than an indication of stress. In fact, the association is so well accepted, that some owners anticipate that their pets will have diarrhea and may lose weight during their stay away. Until we acknowledge that those colitis cases are really anxiety issues, we cannot help.

**Dr. Lynn Honeckman:** For allergic pets, anxiety can lead to a vicious cycle. Chronic pruritus in allergic pets tends to make them more anxious and more stressed.

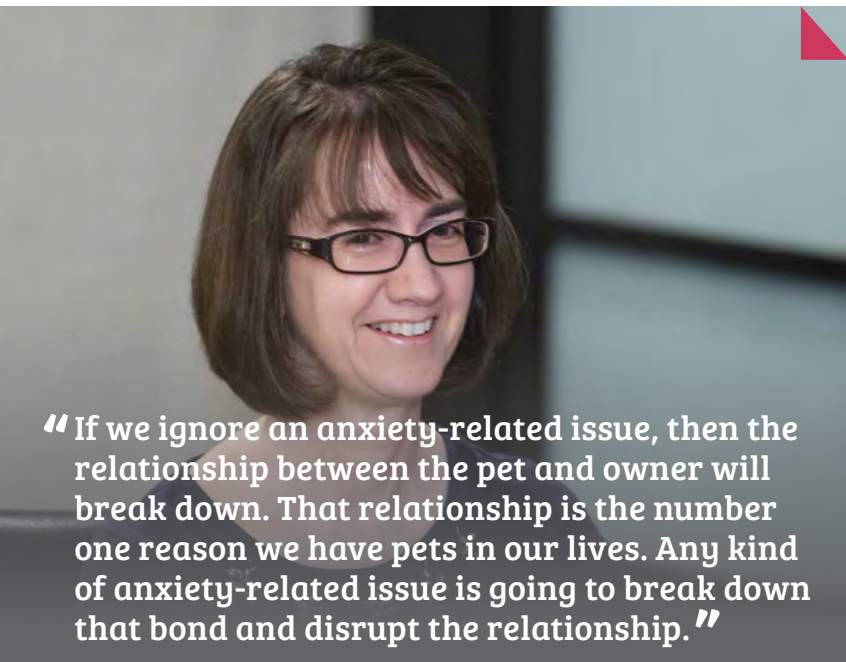
**Ms. Sherrie Yuschak:** Other dermatologic conditions such as excessive grooming can also result from stress or anxiety. In addition, patients with chronic stress conditions have decreased immune function and are at higher risk for nosocomial infections. This should be taken into consideration, especially with surgical patients.

**Dr. Honeckman:** Medical conditions frequently cause anxiety. Chronic pain, chronic arthritis, and others make pets guarded, anxious, and stressed. That affects their interactions with their environment including family members and other pets.

**Dr. DePorter:** Any medical condition can lower the threshold for anxiety, apprehension, and discomfort and influence how the pet makes decisions. The first sign of virtually every medical condition is some change in behavior. And, on the other hand, good emotional well-being appears to be associated with improved health. According to a paper by Dr. N.A. Dreschel, the stress of living with a fear or anxiety disorder can have negative effects on health and the lifespan of dogs.<sup>1</sup>

**Dr. Landsberg:** Clearly a lot of medicine is involved in behavior and a lot of behavior is involved in medicine. Are there other, non-medical reasons to be concerned about identifying and treating anxiety in pets?





**“If we ignore an anxiety-related issue, then the relationship between the pet and owner will break down. That relationship is the number one reason we have pets in our lives. Any kind of anxiety-related issue is going to break down that bond and disrupt the relationship.”**

— **Lynn Honeckman, DVM**

**Dr. Honeckman:** If we ignore an anxiety-related issue, then the relationship between the pet and owner will break down. That relationship is the number one reason we have pets in our lives. Any kind of anxiety-related issue is going to break down that bond and disrupt the relationship. We cannot afford to ignore behavior problems in pets.

**Ms. Yuschak:** If the human-animal bond is weakened or broken, what kind of care is that owner likely to provide for his pet? An owner dealing with pet behavior problems is more likely to say “no” to many of our recommendations. And, we know that behavior problems lead to an increased risk of pet relinquishment or euthanasia.

**Dr. Landsberg:** Many owners may not seek help because they do not know where to go or who to ask. Why don't pet owners discuss these problems with their veterinarian?

**Dr. DePorter:** As a specialist, I often see patients after owners have sought help for the problem at many levels without success. But, I also see owners who are unconvinced that the problem is related to anxiety. Helping them to see the root cause is important.

**Dr. Moffat:** They may not consider behavioral problems as a health issue, so never think to relate it to their veterinarian. Owners often see a pet's aggressive behavior as something innate or requiring punishment. It is our job to educate owners on the relationship between fear and anxiety and aggressive behaviors.

**Dr. Landsberg:** How often are pets relinquished or euthanized for behavior problems?

**Dr. Honeckman:** Per 2016 Humane Society data, it is estimated that 30% to 40% of relinquished pets were given up due to behavior problems.<sup>2</sup>

**Dr. Moffat:** A 2015 study by Dr. Emily Weiss explored the re-homing of dogs and cats in the United States. Her study found that 6% of all dogs and cats were re-homed within the past five years, with 36% of these pets ending up at the shelter. Dogs and cats with medical or behavioral issues were the ones most likely to be re-homed to an animal shelter, as opposed to with friends or family members.<sup>3</sup>

**Dr. Landsberg:** In general practice, how often are fear and anxiety components of what needs to be addressed during a visit?

**Dr. Moffat:** Probably every pet owner deals with behavior problems at some point in a pet's life. Problems may not occur every day, but most pet owners experience problem situations. We should look to identify behavior problems at every opportunity.

**Dr. Landsberg:** Earlier this year a study was presented in which owners were asked about their pets' behavior problems. A large percentage reported issues. Of the 499 owners who completed questionnaires, 450 reported behavior problems.<sup>4</sup>

**Dr. DePorter:** In another study, 41% of dog owners reported they had owned a dog with anxiety issues at some time, and 29% currently owned dogs being affected.<sup>5</sup>

## Anxiety triggers

**Dr. Landsberg:** What are common triggers of anxiety or situations in which anxiety arises in dogs and cats?

**Dr. DePorter:** Fear of novel situations or unfamiliar people is not uncommon. Separation anxiety is a big one. Probably 20% of pets have some level of separation anxiety. And, since the anxiety often occurs when no one is around, there are probably many more cases that go undetected.

**Ms. Yuschak:** Another trigger of anxiety can be living with another species in the household. These pets can be under constant stress, trying to navigate that relationship.

**Dr. Honeckman:** Dog-to-dog reactivity and aggression is one of the major triggers of anxiety, especially in suburban environments. That may be a product of the modern lifestyle. Often, dogs are not exposed to new experiences with other dogs at an early age, and this trend continues as pets are left at home during the day in many situations. Then, because of the embarrassment or frustration associated with dog-to-dog

behavior problems, owners reduce their time outside more and more and spend less and less time doing fun activities with their dog. The result is a breakdown in the relationship between the dog and owner.

**Dr. Moffat:** For cats, it is probably a lack of enrichment or the addition of another cat to the household. Cats are very subtle about their stressors and aggressions. Housesoiling and fighting are signs of this stress. A lot of cats hide, and owners often think they are shy, but really they are stressed.

**Dr. Landsberg:** For a cat, any change in their environment can be a stressor. Are there any other triggers we should mention?

**Ms. Yuschak:** Many. Thunderstorms, smoke detectors, low battery alerts, doorbells—any loud and unpredictable sound.

**Dr. DePorter:** Cats are particularly sensitive to the odor of another cat outside the home. And, taking cats to the veterinary clinic is one of the biggest stressors we impose upon them.

**Dr. Landsberg:** Unfortunately, confrontation- or punishment-related dog training is still being advocated and used all too often. This has been shown to cause fear, anxiety, stress, avoidance behaviors, and less playful dogs.

**Dr. DePorter:** True. There is not enough anxiolytic, either at the supplement or medication level, to offset the stress of living with someone who punishes on a regular basis. The foundation for treatment of behavioral problems has to be built on positive-reinforcement-based training and interactions. Pets trained using methods that rely on imposing anxiety or a threat really should not be given anxiolytics. They may be subjected to more intimidation since it is harder to startle an animal that has been protected with medication. I believe we can alleviate undesirable behaviors *and* treat animals with kindness, gentleness, and respect. We can and should do both. A good relationship between the pets and their owners is fundamental to success.

## General practitioners and identifying behavior problems

**Dr. Landsberg:** Why aren't more veterinarians adequately addressing behavior problems? And, how can we better identify pets with behavior problems in the general practice setting?

**Dr. Moffat:** General practitioners have so much to deal with during an appointment that it is difficult to include a behavior assessment. But, over the past several years, the recognition of behavior problems has definitely improved. Although practitioners realize behavior problems are a concern, some may not feel well equipped to successfully treat or manage the issue.



**“The foundation for treatment of behavioral problems has to be built on positive-reinforcement-based training and interactions.”**

**— Theresa DePorter, DVM, MRCVS, DECAWBM, DACVB**

**Dr. Honeckman:** General practitioners who do not have enough of a knowledge base to address these concerns themselves are often open to referral.

**Ms. Yuschak:** Unfortunately, in some cases, if an owner has not initiated a conversation, the veterinarian may avoid discussing concerns about behavior problems for fear of offending the owner.

**Dr. DePorter:** There is a stigma associated with having a pet with a behavior problem. So, not unlike having to broach the subject of obesity with owners, veterinarians need to take a tactful approach, and they should make behavior assessment part of their routine evaluation. Veterinarians should always include a comment in the medical record on the pet's behavior during even routine veterinary visits.

**Dr. Honeckman:** Absolutely. A behavior assessment that is noted in the record should become a standard of care for each and every visit. In general, veterinarians are data driven, so it is easy to talk to an owner about laboratory results but difficult to talk about more subjective things like obesity or behavior problems.

**Ms. Yuschak:** A standardized checklist at every wellness visit is a great way to normalize discussions about a patient's behavior. (See “Behavior Screening Questionnaire” on page 7.)

**Dr. Honeckman:** The checklist should be filled out before the veterinarian performs an examination. Then, even if a problem cannot be addressed at that visit, it has been



documented, and it is much easier to say, “Let’s make an appointment to discuss that.”

**Dr. DePorter:** Even for pet owners that are not experiencing behavior problems, going through the checklist regularly would be beneficial. If they do that every year, when a behavior problem occurs, visiting their veterinarian will seem like the most logical step. And we can catch problems in the early stages.

**Dr. Moffat:** I like to ask owners open-ended questions, such as, “How is houstraining going?” If the owner says, “Not so well,” we have a discussion, which helps me determine if the problem is behavioral or medical. If there are suspected behavior problems, veterinarians may need to address them in a separate appointment or refer the client to a specialist.

## The role of the team

**Dr. Landsberg:** Which members of the veterinary team are helpful in identifying behavior problems and discussing these issues with owners?

**Dr. DePorter:** Some issues the receptionist may encounter first. For example, if an owner calls to say that she may not make an appointment because she has difficulty getting her 10-lb dog in the car by herself, the receptionist should ask about possible behavior issues. Team members in the front office have the unique opportunity to identify anxiety in pets as they arrive at the clinic or are waiting in the lobby. It’s important to identify those issues and point them out to the client, and show them how we handle this. In just a few seconds, we can help that pet overcome its anxiety at that moment. In doing so, we also model for the client the way to deal with a pet when it’s anxious.

**Ms. Yuschak:** It is great for owners to hear the message from the whole team. It starts with the receptionist handing out the behavior questionnaire. Then, a technician who gathers the patient history can scan the questionnaire for any red flags. If the owner identified a behavior problem that will not be addressed that day, the technician can give basic tips on how to manage the problem until the next appointment.

**Dr. Moffat:** At my practice, each technician studied a particular behavioral issue—housesoiling in cats, jumping up in dogs, play biting. Each of them researched his or her topic and presented it at a staff meeting. It made them more comfortable with these issues. Technicians can counsel owners on mild behavior issues, but a veterinarian needs to be informed of all behavioral concerns and deal with the brunt of them because there are often medical components.

**Dr. Honeckman:** Yes, team members can address

housesoiling and jumping up and nuisance barking. If it is a more serious behavior problem, such as separation anxiety, thunderstorm phobia, or aggression, then that is a conversation for the veterinarian.

## Client education resources

**Dr. Landsberg:** What resources do you suggest to owners for help in treating undesirable behaviors? And, how do you integrate them into the advice that team members and veterinarians give to pet owners?

**Dr. Moffat:** As a behaviorist, I am able to suggest a lot of resources for owners to educate themselves. I particularly like the Ohio State University website for cats ([indoorpet.osu.edu/cats](http://indoorpet.osu.edu/cats)). Sometimes I just email owners a list of resources, but I prefer that owners go home with something in their hands. It reinforces the idea that their pet has a true problem and we are going to address it.

**Dr. Honeckman:** It is important that the handouts and the references that we give to owners come from science-based, reputable sources. A good way to provide the best information is to use materials provided by the American College of Veterinary Behaviorists and the CATalyst Council.

**Dr. DePorter:** In one study, pet owners were found to seek free sources of assistance for pet behavior problems, such as the Internet, rather than pay a fee for a behavior consultation.<sup>6</sup>

**Dr. Landsberg:** I often recommend that a veterinary clinic’s website be populated with the sites that we want owners to go to for information. If we do not provide specific resources to pet owners, then they are likely to find misinformation on their own.

**Dr. DePorter:** I have a YouTube page where I put all of my favorite behavior videos, so I can send owners there for safe advice. **(Dr. DePorter posts all of her favorite training, learning theory, and behavior modification videos on her YouTube channel. Browse her playlists at [youtube.com/user/drtheresadeporter](https://youtube.com/user/drtheresadeporter))**

**Ms. Yuschak:** If you are going to be referring clients to a trainer, you need to understand the methods that the trainer is using and know that a client’s experience will reflect back on you. When you refer your clients—whether it is to a groomer, a boarding facility, or a dog trainer—you must have confidence in their methods and abilities. Your list of recommended resources should be prepared ahead of time and updated regularly.

## Consultations and referrals

**Dr. Landsberg:** For what type of behavioral issues do owners need a separate consultation?

# Behavior Screening Questionnaire

Date: \_\_\_\_\_

Client's Name: \_\_\_\_\_ Pet's Name: \_\_\_\_\_

	Yes	No	Notes
Is your pet behaving in any way that worries you or about which you would like more information?			
Are there any changes in your pet's elimination habits that are of concern to you (such as housesoiling, frequent urination or bowel movements, etc.)?			
Does your pet cause any destruction to your home or environment that you see as a problem or as abnormal (such as chewing or scratching furniture, rugs, doors, or windows, digging, etc.)?			
Does your pet seem fearful or anxious in the car or when going to new places?			
Does your pet seem fearful or anxious when boarding, grooming, or visiting the veterinarian?			
Does your pet seem to be afraid of or affected by certain sounds or noises, such as fireworks or thunderstorms?			
Does your pet exhibit any aggressive behaviors that you consider abnormal or that are a concern to you (barking, snarling, lunging, snapping, or biting for a dog; hissing, growling, swatting, or biting for a cat)?			
Has your pet displayed any signs of aggression toward people or other animals?			
Does your dog chase or show aggression toward moving objects?			
Has your pet ever bitten anyone, regardless of circumstance?			
Have your pet's sleeping or activity habits changed lately?			
Have your pet's eating habits changed?			
Does your pet show fear, anxiety, or avoidance of visitors to the home?			
Does your pet vocalize excessively?			
Do you have a change in lifestyle planned in the near future (such as a move, a vacation, a houseguest, a pregnancy, a pet addition, etc.)?			

**Veterinarian's assessment of the pet's stress level today on a scale of 1-5**

(1 = Very calm; 5 = Very stressed): 1  2  3  4  5

**Notes:**

## Common Signs of Anxiety or Fear in Dogs and Cats

Anxious or fearful pets may exhibit one or more of these signs.

### Tucked tail



Photo Credit: Dr. Theresa DePorter

### Freezing/Refusal to move

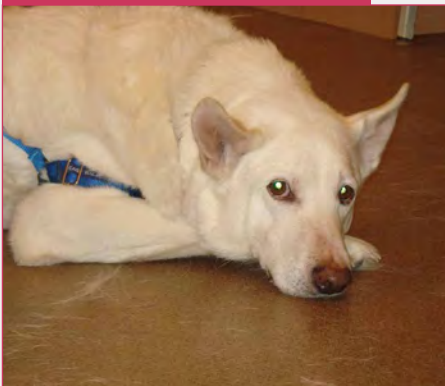


Photo Credit: Dr. Theresa DePorter

### Flattened ears



Photo Credit: Dr. Kelly Moffat

## Cats

### Vocalization:

- Hissing
- Growling

### Body Language/Posture:

- Dilated pupils
- Flattened ears
- Hiding or cowering
- Nails extended
- Crouching low
- Trembling

### Other Signs:

- Passive escape behaviors
- Fleeing
- Piloerection (hair standing on end)
- Excessive self-grooming, scratching, or licking
- Inappropriate elimination
- Diarrhea
- Inter-cat aggression
- Loss of appetite

### Dilated pupils/Crouching low



Photo Credit: Dr. Theresa DePorter

## Dogs

### Vocalization:

- Excessive barking
- Whining
- Growling

### Body Language/Posture:

- Ears lowered or flattened, or highly erect ears
- Avoiding eye contact or staring
- Tight lips/grimace
- Tucked tail
- Hiding or cowering
- Trembling
- Lifting one front paw
- Hyperactivity
- Freezing or refusal to move
- Aggression—biting, nipping, snapping
- Leaning on or clinging to owner
- Jumping or startling easily
- Disinterested in play activities

### Other signs:

- Yawning
- Hypersalivation
- Panting (not related to exercise)
- Inappropriate elimination
- Hypervigilance
- Failing to follow basic commands that have been learned
- Lack of interest in food/treats or snatching treats



**Dr. Honeckman:** Definitely situations of more extreme fears and phobias, such as separation anxiety, aggression with biting, or any aggression if children are in the household. These are issues that are going to take more time to get into, and a separate visit is necessary.

**Dr. DePorter:** To help determine the severity of the problem, I ask “For how much of each day is your pet anxious?” If they are describing separation anxiety and the pet is almost never alone, that may not be a severe problem. Whereas with a noise-related anxiety, the dog may be anxious, worried, and distressed 80% of the day. That is a more severe health and welfare issue that we triage. Occasionally running around the room may be only a nuisance behavior in a border collie. But if it is spending three to six hours a day doing that, then it may be a compulsive pattern that needs to be addressed by a behaviorist.

**Ms. Yuschak:** Listen to the way that owners describe problem behaviors. If they say, “I am at my wit’s end,” or “My husband is ready to take this dog back to the shelter,” they are describing a bond that is breaking down because of behavior problems. It might not be a severe problem, but it is urgent.

**Dr. Landsberg:** Are there ever behaviors that you observe but owners have not reported that need to be addressed?

**Dr. Moffat:** Sometimes it is an owner’s behavior. I often see owners punish pets. In those cases, I immediately discuss why punishment can be detrimental and why it often fails. I then explain that we should be looking at the underlying emotion of that pet. A lot of people really do not understand, and they are honestly embarrassed about their pet’s behavior.

**Dr. DePorter:** Growling at the veterinarian is a behavior that often gets reprimanded and apologized for by owners. We can help owners understand that their dog is fearful, and there is no reason to reprimand it for growling. That becomes a springboard into a deeper conversation. Does this dog growl in other contexts? Does it seem worried in other situations?

Hissing, crouching low, dilated pupils, attempts to get away—these are signs that a cat is distressed. (See sidebar “Common Signs of Anxiety or Fear in Dogs and Cats” on page 8.) And we want to help clients understand that we, as veterinary practitioners, are empathetic to the distress the cat is experiencing. The labels we put on the cat are also important. If we identify them on the medical record as being “a bad cat” or “a mean cat,” that suggests it is okay for people to be mean. It is not okay. Instead, if we foster empathy for a cat that is worried or terrified, that sets us up to help the cat feel safe and comfortable. If the cat is showing signs of distress at home, then we can address these concerns. We must first show the family that their pet’s anxiety and distress is a concern and a priority.

**Ms. Yuschak:** In a dog, signs that we might see include ears pulled back, panting, lowered body posture, tucked tail, attempts to move away, whining, vocalizing, and hypersalivation. (See sidebar on page 8.) Again, we want to be cautious about how we label that dog. We can describe its appearance, and we can understand that the pet is stressed, worried, fearful, or terrified. Those are the kinds of words that we want to use as opposed to “evil,” “bad,” or “asserting dominance.” We want to set the stage for empathy and show that we care about that pet’s emotional and physiologic state.

We sometimes see puppies or kittens that are not acting appropriately for their developmental stage. For example, an owner might describe a trembling, hypervigilant 8-week-old puppy as “shy,” but we recognize it as fearful. And so we discuss the concern and what may need to be done to avoid a lifelong problem. At the other end of the age spectrum, a dog more than 8 years old or a cat over 10 that is staring into a corner or exhibiting other despondent behaviors may be exhibiting a behavior problem, and the owner may have assumed the behavior was a normal part of aging.

**Dr. Honeckman:** I definitely see patients with inappropriate social skills exhibited in the hospital toward other animals or staff that the owner may not be aware of. Certainly these behaviors can be exaggerated in the hospital setting but should be brought to the attention of the owner.

**Dr. Landsberg:** When and where should practitioners send owners for additional advice about behavioral problems?

**Dr. Honeckman:** If practitioners are comfortable addressing the concern, they should certainly schedule another appointment to focus on the problem. If they feel unable to address the problem, they should consult with a behavior specialist and discuss referral with the owner.

**Dr. Moffat:** It is important to look at the urgency of the situation. Specialists may be booking appointments months in advance, which is a real problem if there is a biting dog in a home with a child. General practitioners can call to get advice, but should be able to counsel owners on ways to make the household safer and begin to repair the human-animal bond.

**Dr. Landsberg:** How receptive are pet owners to behavior counseling in a private practice setting?

**Dr. Honeckman:** Pet owners are very receptive to behavior information from their general practitioner. Usually, they would rather not be referred if they do not have to be. So the more general practitioners can educate themselves about behavior issues, the more they can offer to receptive pet owners.

**Ms. Yuschak:** Offering tips to prevent problems before they develop is helpful too. Owners are most receptive to





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**— Gary Landsberg, BSc, DVM, DACVB, DECAWBM (CA)**

quick and easy fixes, which is one reason we need to identify problems early, so that small amounts of information and advice can be really helpful. This approach also helps to establish the practitioner as the person to talk to if a problem develops or worsens.

**Dr. Landsberg:** Owners are likely to be receptive to receiving behavior information from practitioners that ask about behavior problems and offer information. But, how receptive are owners to referral to a specialist for cases that are beyond the comfort level of the general practitioner?

**Dr. Honeckman:** It is no different than a neurology or orthopedic consultation. As long as owners trust that the practitioner is giving them the best recommendation, they will likely be receptive.

**Dr. Moffat:** The willingness to see a specialist can vary by owner. Some are not receptive for socioeconomic reasons. Some may not perceive the behavior issue as a true problem. And some are not that bonded to their pets and are more likely to relinquish them than pursue behavior management.

**Ms. Yuschak:** There are owners that feel a stigma about taking their pet in for a behavioral consultation. It is a big financial commitment, and if they are getting feedback from friends or family that it is silly, they may be hesitant. It is a practitioner's responsibility to mitigate this apprehension and communicate that there is a medical and a welfare component to the problem. And, that the pet can only get better if they get help.

## Low-stress veterinary visits

**Dr. Landsberg:** Over the past few years, veterinarians have

been increasing their efforts to reduce pets' fear of veterinary visits. Why is this important and what can be done?

**Dr. DePorter:** The fear that some pets experience at the veterinary clinic can become a barrier to providing good veterinary care, either by reduced veterinary visits or by making it difficult to perform a thorough examination or to complete diagnostic tests.

**Dr. Honeckman:** Owners feel embarrassed when they think their pets behaved badly, and that may keep them away in the future. If owners have positive experiences at the veterinary clinic, they will not delay bringing their pets in, and medical issues will be addressed sooner.

**Dr. Moffat:** All veterinary team members love animals and want to have fun with them and make their visits as stress free as possible. With these new recommendations, the receptionists are encouraged to come out from behind the desk, greet the animals, and give them toys or treats. It just gets to be a fun environment for all. No one wants the pet's experience to be one of fear and anxiety.

**Dr. Landsberg:** Completing a physical examination and obtaining accurate information can be compromised when dealing with anxious or fearful pets. Blood pressure, heart rate, temperature, and respiratory rate can all be abnormal in a stressed pet. What are some of the things veterinarians can do to reduce this behavioral problem in their exam rooms?

**Ms. Yuschak:** Veterinarians and their teams need to be sure that they identify fearful body language, especially the early signs. They also need to be taught how to use low-stress handling techniques and to have many different tools in their toolbox, such as pheromones, treats, toys, supplements, and medications.

**Dr. Moffat:** Educating and empowering owners is really helpful. Owners need to understand why their dog growled at me, instead of feeling embarrassed. And then give owners tools. I encourage owners to bring their pet's favorite toys and treats and to not feed the pet right before coming in. I have a lot of dogs that squeak a little toy in their mouths during the whole visit. That is their stress reliever. And, I will load tongue depressors with peanut butter, and as I administer vaccines, I have the owner put that in front of their dog. It is a distraction, and right there in the office, we are showing owners a way to desensitize their dog. And it's also surprising how many cats will eat treats in the exam room.

To keep cats as comfortable as possible, I will often examine them in the carrier, taking the top off and placing towels on the cat. We have no-slip mats on all the examination room tables and lots of towels, so the cat can be examined and treated either in the carrier or scooped out with the towels.

**Dr. DePorter:** For many pets, the anxiety starts at the home, when the owner gets out the cat carrier or the leash. Knowing this, we can utilize different methods the night before or a week before that will help lower the level of anxiety all the way through the appointment. It may require the use of various medications, pheromones, and/or supplements, along with behavior modification strategies.

**Dr. Landsberg:** Veterinarians can get more information about the Fear Free<sup>SM</sup> initiative at [FearFreePets.com](https://FearFreePets.com). There are also some excellent resource materials at [dvm360.com/fear-free-veterinary-visits](https://dvm360.com/fear-free-veterinary-visits) and at [CatVets.com](https://CatVets.com).

### The role of calming supplements in behavior management

**Dr. Landsberg:** As a brief summary, Dr. Honeckman, can you explain the components in the management of a behavior case?

**Dr. Honeckman:** There are the three Ms of behavior treatment—management, behavior modification, and medication (whether that takes the form of neurochemicals or adjunctive supplements). Management means making and keeping that pet feeling safe. Once the pet feels safe and is no longer threatened, and the triggers are avoided as much as feasible, you're going to see improved behavior. This helps keep all family members safe. Behavior modification comes with reward-based training, stopping all punishment and using calm or relaxation protocols. Of course, we will want to use desensitization and counter-conditioning to whatever triggers there are. As veterinarians, we will want to associate ourselves with high-quality, certified, force-free trainers. We will also want to caution clients to avoid punishment- or dominance-based training that they might see on television programs. I would refer my colleagues to the American Veterinary Society of Animal Behavior's position statement on "How to choose a trainer." (Available at [avsabonline.org/uploads/position-statements/How\\_to\\_Choose\\_a\\_Trainer\\_\(AVSAB\).pdf](https://avsabonline.org/uploads/position-statements/How_to_Choose_a_Trainer_(AVSAB).pdf)).

**Dr. Landsberg:** What role do supplements play in behavior management?

**Ms. Yuschak:** The role of supplements is to decrease overall anxiety so that the pet is able to learn a new response to a situation that previously elicited undesirable or unwanted behavior.

**Dr. Honeckman:** Supplements are used in combination with medications and in transition, waiting for a long-term neurochemical to take effect. They play a critical role in multimodal therapy. In early stages of behavioral issues, supplements alone may help.

**Dr. Moffat:** Supplements are often considered for the milder cases of anxiety and behavior problems. For patients that



— Kelly Moffat, DVM, DACVB

are very ill and are already receiving a lot of medications, supplements can be a better option than adding additional medications to their regimen. And, some owners shy away from pharmaceuticals and want to go with a supplement, at least initially.

**Dr. DePorter:** There are cases where owners would prefer to go the supplement route, but the severity of the behavior problem requires or would be best addressed by a medication. I let owners know that down the road, as the pet's anxiety is reduced, I may be able to transfer their pet from a medication to a supplement. Having an exit strategy helps some clients become more comfortable with the use of a medication.

**Dr. Landsberg:** Supplements are generally safe with few side effects or contraindications, so I use them in the early stages of behavioral problems and preventively when a situation is likely to be stressful for a pet.

**Dr. DePorter:** Prevention is important. It is much easier to prevent a behavior problem than it is to treat it down the road.

**Dr. Landsberg:** In what specific types of behavior cases do you recommend the use of supplements?

**Dr. DePorter:** There are many indications: car ride anxiety, thunderstorm phobias, separation anxiety—anxieties that are predictable. Supplements have a broad safety range that allows an owner to make dose adjustments based on the pet's level of distress. I want owners to feel empowered to reduce their pet's anxiety in a variety of stressful situations. Not all anxiety events are the same; for example, some storms are more severe than others. Thus, owners may need to adjust the amount given.



**Dr. Honeckman:** Supplements are useful for dogs that have anxiety triggers in their environment, such as cars, trucks, or neighborhood cats.

**Ms. Yuschak:** Any predictable environmental or lifestyle change that can be stressful for people can be stressful for pets, such as moving or the birth of a child or even going back to school. It can be really helpful to provide a supplement during these changes.

**Dr. DePorter:** Holidays are often stressful for pets. Supplements used preventively may reduce a pet's holiday stress and anxiety and avoid undesirable behaviors.

**Dr. Landsberg:** Is there a role for supplements in reducing fear of the veterinary clinic?

**Dr. DePorter:** For anxious pets, there is a benefit to giving a supplement before the veterinary clinic visit or even upon admission. Many of the supplements have some quick-onset benefits, but the effects may vary between pets. I often have owners give some test doses to their pet and note how long it takes the supplement to have an impact. They may report they notice a time of onset at 30, 60, or 90 minutes. The pet should be given the supplement ahead of time so that the effect is felt at the onset of the anxiety. The onset is not necessarily the 10 o'clock appointment. It might start an hour earlier. I have also adopted a protocol in which the owner gives their pet an anxiolytic the night before and then re-doses in the morning before the appointment.

**Ms. Yuschak:** Also, another benefit is that these supplements have a reduced potential for interaction with medications that we might be giving at a veterinary visit, such as additional sedation.

**Dr. Honeckman:** Owners want to see the fear and anxiety reduced in their pet, but many do not want to turn the pet into a zombie. By giving a supplement before a veterinary visit, the dog will be walking and alert, but also calm and comfortable. I think many pet owners are receptive to that approach.

## Supplement recommendations

**Dr. Landsberg:** Which supplements have you given and why did you choose them?

**Dr. Moffat:** Anxitane® (Virbac) has been out for years but we've had availability issues. We have been transitioning patients over to Solliquin® (Nutramax Laboratories Veterinary Sciences, Inc.), and they are doing really well. I give it mostly to cats. They receive a Calm food (Royal Canin Veterinary Diet) and the supplement.

**Dr. Honeckman:** I have used Anxitane, Zylkene® (Vétoquinol), Solliquin, and pheromones. I always reach for a veterinary-labeled supplement when I can. I would much rather give a product from a company that I trust and can speak with about any adverse effects or problems. (See "Active Ingredients in Behavioral Calming Supplements" on page 15.)

**Ms. Yuschak:** I, too, prefer giving a veterinary-labeled product. You know that what the label states is in that product is actually what the pet will get.

**Dr. DePorter:** At pet stores, there are so many products, and the labels are confusing. We need to teach and convince owners that we are knowledgeable in this area, so that they come to us for recommendations. Products that have been specifically formulated for pets from companies that are doing research on those products are preferred. I have used Zylkene, Anxitane, Solliquin, Harmonease® (Veterinary Product Laboratories), and Composure™ (VetriScience Laboratories).

**Dr. Landsberg:** When choosing a product, it is important to look at the ingredients, the company and the manufacturer. Herbal products are not standardized between companies and unfortunately, with some manufacturers, sometimes not even between batches.

What evidence of efficacy do you expect from behavioral supplements?

**Dr. Honeckman:** I like to see data on anything that I recommend to owners. I want them to know that if I am recommending a product, there is clear evidence that it is effective. So, I prefer, if possible, that there be results available from placebo-controlled studies and studies, when possible, conducted using large sample sizes and that are peer-reviewed and independent.

**Dr. DePorter:** There have been studies conducted on supplements at CanCog Technologies (Toronto, Ontario). One of them, a placebo-controlled crossover study, was done with a combination of *Magnolia* and *Phellodendron* extracts (Harmonease). Dogs were exposed to noises and their responses were used to gauge their level of fear and anxiety. In that study, 60% of those dogs improved when treated with the supplement.<sup>7</sup> Specifically, 12 of 20 dogs (60%) improved from baseline when treated with Harmonease, whereas only 5 of 20 (25%) improved on the placebo.<sup>7</sup>

There was also a placebo-controlled study involving L-theanine that revealed that dogs known to be fearful of unfamiliar people that were given L-theanine were more willing to spend time near people in a room in a controlled setting.<sup>8</sup>

**Dr. Moffat:** It is difficult to control all the variables when it comes to behavior, so we do give products that do not

have a lot of clinical research studies to back them up. But I definitely prefer to see efficacy evidence that is independent of the company.

**Dr. Landsberg:** In general, supplements are not on the market unless their safety has been established. I want to see supplement efficacy research conducted involving large cohorts and meta-analysis of species-specific studies. But let's start with one quality, placebo-controlled study, and then hope that more and more studies can be done. Most of the products that we have mentioned have some level of evidence of efficacy in pets.

**Dr. DePorter:** I had the opportunity to do some of the early work looking at Solliquin. Nutramax did a safety study in a laboratory-controlled setting involving 24 dogs and 24 cats given one, three, or five times the recommended dose or given a placebo. There was a very low incidence of adverse events. There were just a small number of cases of vomiting in both cats and dogs, with most of those at the higher dose range.<sup>9</sup>

I also conducted a prospective Solliquin clinical trial. All subjects displayed signs of fear or anxiety and those signs had previously been favorably ameliorated by administration of a nutraceutical that contained theanine. All 21 subjects (19 dogs, 2 cats) were given Solliquin once daily according to weight, and the owners were advised to administer an additional dose before predictable stressful events. Daily diaries documented doses administered and the benefits or side effects observed. Diaries were reviewed weekly, and five phone interviews were conducted by a research assistant. Participants were encouraged to administer pre-event doses if diary review revealed a pattern of untreated, unresolved, and predictable stress-related events. The product was well tolerated at initial dosing; however, upon dose increase, one dog was reported to be nauseated (eating grass excessively) and another dog experienced a rash. Dose increases were recommended at the discretion of the investigator following diary review. The outcome: 14 of 16 owners (87.5%) reported Solliquin provided a better or equal response to the previously used theanine supplement. When asked to consider their pet's overall response to the supplement, 87.5% (14 of 16) reported they would continue using Solliquin to reduce their pet's fear and anxiety.<sup>10</sup>

### Short-term and long-term supplement use

**Dr. Landsberg:** What has been your experience with short-term pre-event administration of supplements for the management of stress and anxiety in dogs and cats?

**Dr. Honeckman:** The only short-term events I have recommended supplements for are visits to the veterinarian. I suggest that owners of pets with mild or moderate fear give



**“We need to identify problems early, so that small amounts of information and advice can be really helpful. This approach also helps to establish the practitioner as the person to talk to if a problem develops or worsens.”**

**— Sherrie Yuschak, RVT, VTS-Behavior, KPACTP, CPDT**

Solliquin to their pets 72 hours before the veterinary visit and continue giving it daily until the visit.

**Dr. DePorter:** In the Solliquin study, we tracked the animals every day and asked about what stressful events had occurred.<sup>10</sup> There were a number of events that owners did not initially anticipate as stressful events, such as taking the dog for a walk, going to class, riding in a car, but that did cause the dog distress. As we tracked the events, the owners became more aware of the frequency and predictability of their pets' distress. Families also noticed when a pet's anxiety was reduced with ongoing administration. These anxiety-based problems occurred more often and were more predictable than the owners realized. Giving a pet something that reduces its anxiety in advance of that walk or car ride or class can be beneficial.

**Dr. Landsberg:** Are supplements safe for long-term use?

**Dr. DePorter:** Yes, available evidence supports the fact that these supplements are not detrimental with long-term use. On the other hand, long-term anxiety likely does have adverse effects on health. Many of the products are intended to be given long term or even lifelong.

**Dr. Landsberg:** How long do you usually use a product before you decide if it is effective or not?

**Dr. Moffat:** If we have not seen a positive effect at the end of two months, we move on.



**Dr. Honeckman:** I like to see small changes within the first two weeks and a big improvement at the end of the first month. If I do not see a big improvement at the end of that first month, then I will make a change.

**Dr. DePorter:** Many of the products are designed for long-term or potentially lifelong use if needed. Effects may be noticeable immediately after a dose but I look for a reduction in overall anxiety in about two, four, or six weeks. If the pet's anxiety is extreme I don't wait that long. We can use other modalities. But the optimal period for seeing a global change in the pet's overall anxiety and demeanor is at about four weeks.

**Dr. Landsberg:** Do you have different or specific recommendations for the use of these supplements in cats?

**Dr. Honeckman:** Make sure the supplement is palatable and that the cat gets the whole dose. A lot of cat households have a communal food bowl. It is important that owners make sure that the cat that needs the supplement is the one that is ingesting it.

**Dr. DePorter:** Sometimes we cannot control the communal activity of cats. I once treated a multi-cat household that included two cats that hid under the bed. I recommended that the owner put the supplement with food and place it under the bed. Sometimes one cat got it; sometimes they each got a dose. They both stood to benefit and using a natural product with a wide safety range provided a better solution than pulling the cat out to make sure it received the supplement. The high safety profile of these supplements makes that an option.

## Success stories

**Dr. Landsberg:** Since you all have extensive experience treating and managing behavior problems in dogs and cats, can you describe some cases where the use of a supplement was effective?

**Dr. Honeckman:** Just recently, I had success treating a 10-lb poodle mix that was adopted from a rescue group. The dog was reluctant to be picked up, was fearful of hands reaching toward it, and displayed reactive barking to environmental stimuli. We started giving him Solliquin and performing a lot of behavior modification. The owner sends me a daily report, and in two weeks' time, the dog has made dramatic improvements. There is less barking and less fear, and both the dog and owner are happy.

**Dr. Moffat:** Most of my patients are cats, and I usually use a combination therapy, so it is hard to tease out the

difference between the effects of the supplement and the drugs. But I have seen inter-cat aggression issues improve quite a bit with just the addition of supplements and a change in diet.

**Dr. Landsberg:** I have had a few patients with a reported decrease in car-ride anxiety after receiving theanine or an alpha-casozepine product. For me, although anecdotal, good evidence that a product is working is when an owner stops giving the product and there is a relapse of the behavior.

**Dr. DePorter:** Betty is a 4-year-old Labrador mix that was included in the study I did with Solliquin. Betty was described as being scared in her own skin. On walks, she would come to a complete stop, flatten herself like a pancake, and not go forward. She would tuck her tail. The owner reported that virtually every time they got into the car and Betty was put into the crate, the dog would defecate. Betty had previously been receiving an L-theanine product and her anxiety had improved, but she still showed a lot of fear. Within the first week of the study—of receiving Solliquin—Betty was no longer defecating in the car. And the owner felt that Betty was more comfortable in her own skin. Betty improved more with Solliquin than she had with the previous L-theanine supplement she had been given.

## How to introduce the use of behavioral supplements into your practice

**Dr. Landsberg:** What advice can you give to practitioners looking to add supplements to the management of behavior cases?

**Dr. DePorter:** Practitioners need to have confidence in the products they suggest and have them available in the clinic so that they can send them home with the client right away. It's better to have the product than to try to send an owner out to navigate all of the products available at the pet store or on the Internet.

**Dr. Landsberg:** Initially, I would suggest just a few products be chosen, including supplements, pheromones, and dietary products. The practitioner should have confidence in the evidence behind the products he or she recommends and have a good knowledge about each product available in their clinic. And, always keep in mind that these are adjuncts to behavioral management and behavior therapies.

**Dr. Moffat:** Practitioners cannot expect that giving a supplement will fix severe behavior problems. All components of a behavior issue need to be addressed.

## Active Ingredients in Behavioral Calming Supplements

**L-theanine** is found in black, green, and white tea and is a structural analogue of glutamate, the nervous system's major excitatory neurotransmitter.

Calming benefits appear to be via several mechanisms:

- 1) Binding and blocking glutamate receptors, which decreases both excitatory impulses and glutamate's stimulatory effects.<sup>11</sup>
- 2) Increasing levels of serotonin, dopamine, and GABA, the stabilizing neurotransmitters.<sup>11</sup>
- 3) Stimulating production of alpha brain waves. These brain waves cause deep relaxation with mental alertness.<sup>12</sup>

Research in dogs and cats demonstrated calming effects in noise phobia,<sup>13</sup> travel anxiety,<sup>13</sup> urine marking,<sup>14</sup> and fear of people.<sup>8</sup>

**Magnolia officinalis extract** provides the actives honokiol and magnolol. They enhance the activity of synaptic and extra-synaptic receptors in the brain<sup>15</sup> and are believed to do so via selectively binding to certain GABA receptors.<sup>16</sup> They cause calmness without sedation.

**Phellodendron amurense extract** contains berberine, which inhibits glutamate release by pre-synaptic neurons into the synaptic cleft.<sup>17</sup>

**Magnolia officinalis extract and Phellodendron amurense extract** together act synergistically in lowering stress and anxiety.<sup>18</sup> The combination improved noise-induced anxiety in beagles in a placebo-controlled study.<sup>7</sup>

**Milk protein-derived alpha-casozepine (alpha-S1 tryptic casein)** is similar to GABA and has an affinity for GABA-A receptors.<sup>19</sup> Blinded, controlled studies showed that alpha-casozepine reduced anxiety in both dogs and cats.<sup>20,21</sup>

**Whey protein concentrate containing alpha-lactalbumin.** Alpha-lactalbumin provides essential amino acids in dogs and cats, except for taurine (cats). Of importance to the nervous system, those amino acids include tryptophan, a precursor to serotonin, and cysteine, a precursor to the antioxidant glutathione.<sup>22</sup> A study in "stress-vulnerable" humans found that ingestion of whey protein increased the ratio of plasma



Photo Credit: Getty Images

tryptophan to the sum of the other large neutral amino acids. This is believed to help tryptophan cross the blood-brain barrier preferentially over the other large neutral amino acids, which then increases brain serotonin levels. The study found improved cognitive performance in the whey protein group versus the control diet group.<sup>23</sup> Other research showed that L-tryptophan supplementation in dogs and cats decreased anxious behaviors.<sup>24,25</sup> ■

See References on page 16.

However, if practitioners start giving supplements to patients with mild behavior problems, they will likely be pleased.

**Dr. Honeckman:** For practitioners who are not completely comfortable with behavior cases, supplements are a good place to start when treating pets with mild anxiety or fear. Successfully reducing anxiety or fear at this level can build a practitioner's confidence, and owners will likely see the veterinarian as a resource for more information and advice on behavior issues.

**Ms. Yuschak:** Anxious, fearful pets need all the support they can get, so practitioners should encourage owners to give supplements before veterinary visits or car rides or during lifestyle changes. Many pet owners take some sort of supplement themselves, so they are generally comfortable with the idea. Of course, in some

cases, especially moderate to severe cases, a multimodal approach, involving pharmaceuticals and behavior modification or avoidance techniques, is necessary.

### The future is bright

**Dr. Landsberg:** What does the future hold for the alleviation of anxiety issues in pets?

**Ms. Yuschak:** It is bright. Over the past 10 years, as new products have come onto the market, there has been more awareness of behavior issues in pets and education about it. Of course, I wish we were doing more, but we are getting there. I am excited about the Fear Free<sup>SM</sup> initiative and how that is going to educate owners and show them that we really care. We are working toward making veterinary visits better for pets, and we want to involve owners in the process.

**Dr. Honeckman:** I am excited that pet owners are



becoming aware that many behavior issues are anxiety-based, not just bad behavior. The more awareness there is the more we are going to be able to manage these issues and rebuild the relationships between owners and pets. Fewer pets will be relinquished, and they will have a better quality of life.

**Dr. Moffat:** The changes that have developed in the 25 years since I graduated are amazing. The Fear Free<sup>SM</sup> initiative is pushing veterinarians and their teams to catch up. I think it is good for everybody. Veterinary teams that have made the switch note that it is not really that hard. Actually, most of them enjoy it.

**Dr. DePorter:** I am excited to watch veterinary practitioners, receptionists, and technicians all get involved in recognizing the anxiety of pets early on and asking the question, “How do we help this pet?” They may not have all the tools yet, but the first part is seeing the anxiety and then looking for ways to help. I agree that there is a promising and bright future for pets and veterinarians.

**Dr. Landsberg:** I agree. I see positive changes. But we must continue to talk about behavior problems and solutions. We have to educate owners to let them know that it is fear, anxiety, uncertainty, conflict, and stress that are causing a lot of the behavior issues—they do not have bad pets. ■

## REFERENCES

1. Dreschel NA. The effects of fear and anxiety on health and lifespan in pet dogs. *App Anim Behav Sci* 2010;125:157-162.
2. Miller DD, Staats SR, Partlo C, et al. Factors associated with the decision to surrender a pet to an animal shelter. *J Amer Vet Med Assoc* 1996;209:738-742.
3. Weiss E, Gramann S, Spain CV, et al. Goodbye to a good friend: An exploration of the re-homing of cats and dogs in the U.S. *Open J Anim Sci* 2015;5:435-456.
4. Talamonti Z, Commana M, Cannas S, et al. Assessment of the presence of behavioural problems in dogs; a case study of 499 cases, in *Proceedings AWSELVA, ECAWBM, ESVCE Congress 2015*; 64-65.
5. Denenberg S, Landsberg G, Blizzard B. Prevalence of fearful and anxious behaviors in dogs in the United States, in *Proceedings ACVB/AVSAB Veterinary Behavior Symp* 2013; 50-51.
6. Shore ER, Burdsal C, Douglas DK. Pet owners' views of pet behavior problems and willingness to consult experts for assistance. *J App Anim Welfare Sci* 2008;1:63-73.
7. DePorter TL, Landsberg GM, Araujo JA, et al. HarmonEase™ Chewable Tablets reduces noise induced fear and anxiety in a laboratory canine thunderstorm simulation: A blinded and placebo-controlled study. *J Vet Behav: Clin App Res* 2012;7:225-232. DOI: <http://dx.doi.org/10.1016/j.jvbeh.2011.05.024>
8. Araujo JA, de Rivera C, Ethier JL, et al. ANXITANE tablets reduce fear of human beings in a laboratory model of anxiety-related disorders. *J Vet Behav* 2010;5:268-275. DOI: <http://dx.doi.org/10.1016/j.jvbeh.2010.02.003>
9. Data on file at Nutramax Laboratories Veterinary Sciences, Inc., 2015.
10. DePorter TL, Bledsoe DL, Conley JR, et al. Case report series of clinical effectiveness and safety of Solliquin™ for behavioral support in dogs and cats, in *Proceedings ACVB Veterinary Behavior Symposium, 2016*. Accepted; presentation pending.
11. Nathan PJ, Lu K, Gray M, et al. The neuropharmacology of L-theanine(N-ethyl-L-glutamine): a possible neuroprotective and cognitive enhancing agent. *J Herbal Pharmacother* 2006;6:21-30.
12. Mason R. 200 mg of Zen: L-theanine boosts alpha waves, promotes alert relaxation. *Altern Complement Ther* 2001;April 2001:91-95.
13. Berteselli GV, Michelazzi M. Use of L-theanine tablets (Anxitane™) and behavior modification for treatment of phobias in dogs: a preliminary study. *IVBM. Riccione, IT, 2007*.
14. Dramard V, Kern L, Hofmans J. Clinical efficacy of L-theanine tablets to reduce anxiety-related emotional disorders in cats. *IVBM/ECVBM-CA, Brescia, IT, 2007*.
15. Alexeev M, Grosenbaugh DK, Mott DD, et al. The natural products magnolol and honokiol are positive allosteric modulators of both synaptic and extra-synaptic GABA(A) receptors. *Neuropharmacology* 2012;62:2507-2514.
16. Ai J, Wang X, Nielsen M. Honokiol and magnolol selectively interact with GABAA receptor subtypes in vitro. *Pharmacology* 2001;63(1):34-41.
17. Lin T-Y, Lin Y-W, Lu C-W, et al. Berberine inhibits the release of glutamate in nerve terminals from rat cerebral cortex. *PLoS ONE* 2013;8:e67215.
18. Li JM, Kong LD, Wang YM, et al. Behavioral and biochemical studies on chronic mild stress models in rats treated with a Chinese traditional prescription of banxia-houpu decoction. *Life Sci* 2003;74:55-73.
19. Lecouvey M, Frochet C, Miclo L, et al. Two-dimensional 1H-NMR and CD structural analysis in a micellar medium of a bovine αS1-casein fragment having benzodiazepine-like properties. *Eur J Biochem* 1997;248:872-878.
20. Beata C, Beaumont-Graff E, Coll C, et al. Effect of alpha-casozepine (Zylkene) on anxiety in cats. *J Vet Behav: Clin App Res* 2007;2(2):40-46.
21. Beata C, Beaumont-Graff E, Diaz C, et al. Effect of alpha-casozepine (Zylkene) versus selegiline hydrochloride (Selgian, Anipryl) on anxiety disorders in dogs. *J Vet Behav: Clin App Res* 2007;2(5):175-183.
22. Yalcin AS. Emerging therapeutic potential of whey proteins and peptides. *Curr Pharm Design* 2006;12:1637-1643.
23. Markus CR, Olivier B, de Haan EH. Whey protein rich in alpha-lactalbumin increases the ratio of plasma tryptophan to the sum of the other large neutral amino acids and improves cognitive performance in stress-vulnerable subjects. *Amer J Clin Nutr* 2002;75:1051-1056.
24. Da Graca Pereira G, Fragoso S, Pires E. Effect of dietary intake of L-tryptophan supplementation on working dogs demonstrating stress related behaviours, in *Proceedings. BSAVA Conference 2010*.
25. Da Graca Pereira G, Fragoso S, Pires E. Effect of dietary intake of L-tryptophan supplementation on multi-housed cats presenting stress related behaviours, in *Proceedings. BSAVA Conference 2010*.