TMs, Anxiety, and Dog Appeasing Pheromones (DAP)

Our 12 year old TM, Jessie, spent the first 9 years of her life in the hills of Northern California. During that time we would see her experiencing a high level of anxiety with Fourth of July fireworks and the day before an earthquake. When we moved to the southeastern U.S., things changed. We traded Forth of July fireworks and earthquakes for hunting season and summer thunderstorms. Jessie's anxiety transitioned to panic whenever thunderstorms were near.

The level of panic Jessie experienced was demonstrated hours before her first southeast thunderstorm hit. Jessie chose to ignore the option to use the doggie door and weather out the storm in the inside kennel with the rest of the pack; instead, she tore through the 8' chain link fence perimeter around our 2 acre dog zone so that she could move just 40 feet to the back door of the house. Aside from reinforcing our belief that only brick walls and steel bars can stop a TM on a mission, we realized some action had to be taken to ease Jessie's anxiety.

Moving to a new home in north Georgia where the thunder comes booming down the mountains only worsened the problem. We consider drugs a last resort and looked at alternative methods to help Jessie get through future storms. The first thing we tried was to close all of the pack in the kennel room with the lights on and a fan running. The idea was to try and neutralize the sound of thunder with the fan and tone down the intensity of any lighting flashes. We also tried bringing her inside with us, but she seemed to do better in the kennel room, possibly because it was basement and somewhat insulated from the sounds of the thunder; when necessary we sat or laid in the kennel room with her until the storms passed.

These actions met with some success. Jessie went from having a panic attack to having a high to moderate level of anxiety. On those occasions when she was having a particularly difficult time, we gave her a homeopathic anxiety pill which seemed to help. At this point you maybe be thinking, bring the dog inside, surround her with her people and canine companions, keep the lights on, make noise, and medicate with a natural calming aid sounds like a plan. However, sometimes storms would pop up unexpectedly and we weren't always home when they started (although we had become accustomed to dropping whatever we were doing and heading straight home if we heard thunder!), and we wanted to find an alternative to pills, natural or not. In addition, we did not want to pre-emptively medicate her when the weather started to look bad; sometimes the storms changed course and missed us.

Our veterinarian suggested something call DAP (dog appeasing pheromone) for another one of our TMs that was having some behavioral issues. As a chemist who had some direct experience with synthesizing a type of human pheromone in graduate school, his suggestion caught my interest. I started to research DAP and found that it is relatively inexpensive and you can purchase it in three forms: A spray, electric diffuser, or incorporated into a time release collar. We choose the collar because it was available at a local pet supply store and could be kept on all the time, even when we weren't home.

The first opportunity to use the DAP came when a storm system that was severe enough to make all the dogs a bit anxious hit our state. Within the first hour of putting the collar on Jessie, all the dogs calmed down. Within a few hours, they were all sleeping soundly. The amount of DAP given off by the collar seemed to be enough to signal all the dogs in the room that they were in a safe place and could relax. It verified to us that the DAP did work. The DAP was the final component we needed so Jessie could weather the storms.

I wanted to find out more about what DAP was and what work had been done in this area. There were a

number of well carried out studies that looked at the efficacy of DAP to reduce the anxiety of dogs in veterinarian clinics and shelters. The researchers looked at a myriad of behavioral markers to evaluate the participant's relative anxiety levels. Breathing rate, eating habits, barking, and activity level were just a few of the behaviors that were monitored. In all of the studies, it was concluded that the animals exposed to the DAP did exhibit a calmer disposition than the control group.

So what was this magic compound that could calm the wild beast and what was its source? The pheromones associated with what are commonly referred to as dog appeasing pheromones (DAP) consist of mixtures of fatty acids and fatty acid esters emitted by mammalian mammary glands. An example of a patented DAP formulation consists of a mixture of oleic acid, palmitic acid, linoleic acid, myristic acid, and lauric acid. Look at the ingredient list for any number of shampoos, hair conditioners, body lotions and aging creams and you will usually find at least one of these compounds or their ester listed. These are very common substances found in plants and animals that we come in contact with on a daily basis and yet are unaware of how the proper concentrations and proportions of these simple substances can impact an animal. What is not known for sure is if these pheromones work because they trigger an instinctive response or if the animal's exposure to pheromones during feeding imprints the feeling of a nurturing atmosphere that calms the animal and elicits a learned response. Other pheromones that are associated with aggression or are sex attractants trigger instinctive responses so it seems likely that DAP work in the same way.

The concentration of DAP required to create a response is quite small and levels well below the detectability of human smell are all that is needed to calm an animal. The volatilities of the fatty acids that make up the pheromones are quite low and as such take a fairly long time to evaporate. As an interesting note the esters of these fatty acids are quite a bit more volatile and as it turns out are not produced directly by mammalian mammary glands. They are formed as byproducts of bacteria on the mother's skin as the bacteria digest the fatty acids. This is a truly symbiotic relationship where the bacteria convert a percentage of the fatty acids into a form that increases the range of the calming effect by forming a more volatile form of the pheromone.

Are you still skeptical? Then consider that studies have shown that a similar DAP formulation will lower the separation anxiety level of kindergarteners on their first day in a classroom. Did I mention that Las Vegas casinos use pheromones to help their customers feel safe and secure as they gamble their life saving away? If you are having anxiety issues with your TM from fireworks, thunderstorms, crating, driving in a car, or introducing a new puppy or adult dog into your troop, consider using a DAP product.

Deborah Mayer

Noble Legacy Tibetan Mastiffs