The role of L-tryptophan/alpha-casozepine

ONE starting point whenever dealing with an anxious pet is to remind ourselves (and the owner) that stress is a normal (and often understandable) reaction to an environment which is beyond the dog or cat’s control.

The long-term aim is firstly to appreciate normal animal behaviour, then relate this to the often complex milieu of how the pet’s experience and present circumstance have led to a chronic state of stress.

While stress can be protective in the short-term (think “fight or flight”), for extended periods the pet might be said to enter a state of negative apprehension.

We all appreciate that causes of stress and anxiety are complex. Altered living conditions (a new home, boarding kennels/cattery or a holiday), temporary environmental changes (unexpected noises such as fireworks, storms, jarring music or even solitude) or changes in routine (timing of walks or meals) is just the start of a long list.

Particularly for cats, triggers might include the presence of other cats, territorial changes, confined living conditions, veterinary treatment/hospitalisation or even owner stress.

This excessive chronic stress or “anxiogenic situation” leads first to the physiological changes we’re all familiar with (increased heart and respiratory rates, increased blood pressure, etc.) before more serious imbalances occur (shivering, alopecia, ptyalism, vomiting and diarrhoea, for example) and then chronic neuro-hormonal reactions lead to behavioural changes (such as vocalisation, altered sleeping and eating patterns or abnormal toileting habits).

While conventional treatments – such as behavioural therapy and medical agents like benzodiazepines and phenornes – can be beneficial in tackling these symptoms, nutritional solutions should also be considered. The right ingredients fed in the right manner can play a very valuable role in supporting a distressed animal.

Alpha-casozepine

One nutraceutical of great interest is alpha-casozepine, a milk-derived bioactive peptide. The first human studies on the anxiolytic effects of milk originated in the 1930s, based on the observation that “drinking milk at bedtime makes one sleep better”.

The post-prandial calming properties of milk are well known in the infant and young animals (i.e. the sleeping phase after ingestion of maternal milk).

Remember, however, that the enzymatic digestive process changes in the growing animal. Trypsin is already active at the time of birth, while peptic activity only becomes evident when a puppy is 21 days old (Buddington, et al 2003) for example.

We need to take this into account when considering using alpha-casozepine as a nutraceutical. Research relating to these bioactive peptides tells us that increased bioavailability can be achieved via tryptic hydrolysis. This means that the casozepine parent protein requires technological processing before it can be integrated into a diet, to become useful to the pet.

In humans, alpha-casozepine reduces the neuro-vegetative signs linked to stress and the intensity of extreme emotion; it also regulates sleep and reduces fear reactions (Kim, et al, 2006). In the cat, alpha-casozepine has been proven to improve reactions when interacting with strangers, signs linked to fear (including aggression), as well as organo-vegetative signs, often linked to anxiety.

The anxiolytic effects tend to be observed by cat owners from the eighth day of administration and in practical applications (such as moving house, the arrival of a new pet or the advent of show season) considerable safety of use is demonstrated, with no signs of side-effects (Beata, et al 2007).

Studies also show that the anxiolytic effect of alpha-casozepine is comparable to that of diazepam (Voile et al, 2006) but without the latter’s side-effects. The compound renders a benzodiazepine-like reaction, but as a nutraceutical there is no dependence, habituation or even rebound effect upon changes in intake.

L-tryptophan

Another nutrient of interest is the amino acid L-tryptophan, the metabolic precursor of the neurotransmitter serotonin. Early, largely anecdotal reports linking diet with behaviour focused on the influence of protein (and the misconception that it causes hyperactivity). Many studies have since shown that the proportional presence of L-tryptophan over other amino acid groups leads to an increased release of serotonin.

Tryptophan must pass from the bloodstream into the brain to be used as a precursor in the synthesis of serotonin. In order to traverse the blood-brain barrier, tryptophan competes with other amino acids for a carrier. Therefore, uptake depends on the relative presence of tryptophan, phenylalanine, valine, leucine and isoleucine.

By increasing the tryptophan/danger neutral amino acid ratio, the availability of tryptophan increases, producing greater concentrations of serotonin. As we know, serotonin then plays an essential role in the regulation of mood, anxiety, appetite and sleep, thus L-tryptophan has the properties of a natural anti-depressant.

Studies show that dietary supplementation of tryptophan has promising effects on dog behaviour. DeNapoli (in 2000) reported behavioural-modulating effects (with improvements in anxiety-related signs) of a diet with an increased ratio of L-tryptophan/large neutral amino acids.

We all know that anxiety causes a pet, and often its owner, genuine discomfort. As our understanding of natural and pathological behaviour has evolved, so have our behavioural therapies.

Just the same as environmental modifications and neuro-active medications can provide solutions that improve the animal’s coping abilities and increase its resistance to stressful stimuli, so can what we put in our pets’ bowls. The door to new understandings in how best to feed in stressful situations is now, thankfully, very much open.

• For further reading visit veterinary.royalcanin.co.uk or vetportal.royalcanin.ie for Ireland.

References and further reading


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Lack of written guidance on antibiotic use

MOST vets think pet owners are unaware of antibiotic resistance but more than half say they do not actually talk to clients about it, according to the findings of a survey of about 120 veterinary surgeons conducted jointly by the Bella Moss Foundation and the RVC.

The survey also found that while 92% of vets are aware of the myriad of existing guidelines on the responsible use of antibiotics, 55% do not have written guidance in practice.

In addition, 30% do not have written protocols on infection control.

Professor David Lloyd of the RVC said the survey indicated that small animal veterinarians were interested in responsible antimicrobial use but evidence of comprehensive decision-making processes for antimicrobial therapy was lacking and more effective measures for promoting the implementation of responsible antimicrobial use were urgently needed.