

# L-Tryptophan supplementation and its effect on multi-housed cats and working dogs

**DOMESTIC** animals, because of the changing life-styles of their owners, are forced to adapt to conditions that greatly differ from the ones usually encountered in their natural habitats.

Cats are living in more enclosed spaces with none or almost no access to the outside environment. In cats living in confinement, the lack of physical space, absence of activity and stimulation are the major causes of stress. This situation can be worse for those cats living in multi-housed environments.

Expression of anxiety in dogs includes changes in the grooming behaviour, increase of agonistic behaviours, lower/higher food intake, increased vocalisation and increase of marking behaviours. Usually, these behaviours are associated with the animals' reaction to the environment that they can't control.

These environmental factors contributing to the demonstration of stress include confinement, lack of physical space and no environmental stimulus.

Anxiety is the emotional response to a stimulus that predicts a potentially harmful or unpredictable environment. There is a common stress response resulting from either fear or anxiety. The stress response is an adaptive mechanism that enables an animal to react rapidly to an event that changes its homeostatic status.

In everyday use, the term "stress" is used to refer both to the physiological response described by Selye (1956) and, particularly within the human context, to an event or situation that causes a

chronic negative impact on behaviour, health and welfare (Casey, 2002).

Suppression of the stress response and associated stereotyped behaviours

may be beneficial in terms of animal welfare. These behaviours when properly measured, by a specific classification system, can lead to an evaluation of the animal's welfare and response to stress.

## Aims of the study

The aim of the current study is to evaluate the effect of L-Tryptophan (L-Trp) on the general behaviour of cats and dogs, and also to

assess the therapeutic efficacy of short-term supplementation of L-Trp on behavioural responses associated with anxiety and stress-related disorders.

## Serotonin

When excess L-Trp is supplied to the diet and not used for the purpose of protein synthesis, it may be used as a therapeutic supplement. Currently used in domestic animals, L-Trp is the primary precursor of serotonin that has a sedative effect such as in pain sensitivity and aggressive behaviours.

The rationale for the therapeutic use of L-Trp is based on the fact that alterations in the brain L-Trp levels can influence the synthesis of serotonin, an inhibitory neurotransmitter in the central nervous system.

Serotonin has an extremely important physiological function in the body, especially in controlling anxiety. However, serotonin cannot pass the hemato-brain barrier. Therefore, to increase serotonin levels we use serotonin re-uptake inhibitors (selective or non selective), such as fluoxetine, or we can use supplementation of one of its two precursors, for example L-Tryptophan.

The use of L-Trp amino acid could be a useful aid in reducing the anxiety symptoms in animals as its supplementation can be used without any damage to the animal's health. We hypothesised that the supplementation of L-Trp would be associated with less anxiety and stress behaviours, reducing excitability and reactivity.

## Study design

A total of 25 multi-housed cats (10

males and 15 females) and 30 working dogs from the National Guard housed in kennels (25 males and five females) were observed. All animals went through a health check-up at the beginning and at the end of the study.

Animals were tested for thyroid hormone levels (T4 or T3), a complete haemogram, kidney functions (urea and creatinine), liver functions (ALT, AST, FA) and urinalysis. There were no differences in the results of these complementary exams.

Each animal was observed during 3.5 months (two weeks for habituation, four weeks without supplementation and eight weeks with supplementation), five days per week. Each data recording session took 10 minutes of detailed observation by a trained observer providing a continuous focal sample.

This was a double-blinded controlled study, where animals were randomly assigned to dietary supplementation of L-Trp starting at the 7th week (half of the animals took L-Trp supplementation, while the others took a placebo supplementation). Only the study co-ordinator knew which animal was being supplemented. L-Trp daily dose was 12.5mg/kg administered with daily meals.

## Results

In cats, after L-Trp supplementation all the stereotypies ( $p < 0.01$ ), vocalisation

( $p > 0.05$ ), agonistic behaviour ( $p < 0.01$ ), exploring ( $p < 0.01$ ) and sustaining ( $p < 0.01$ ) behaviours decreased. In the same way house soiling, scratching and agonistic interactions inside the group significantly decreased ( $p < 0.05$ ).

In dogs, all the stereotypies ( $p > 0.05$ ), bark ( $p < 0.05$ ) and stare ( $p < 0.01$ ) behaviours decreased.

## Conclusion

Our results suggest that L-Trp supplementation had an effect in changing the frequency of the stress-related behaviours, decreasing anxiety signals. Consequently, L-Trp supplementation can be an efficient tool to help treat some behavioural disorders in cats and dogs as part of behavioural therapy.

As the L-Trp supplementation reduces some of the animal's anxiety signs, we conclude that this effect leads to an improvement in the animal's welfare.

These findings may help to improve the knowledge about stress-related disorders in cats and dogs, and also provide a framework for further research.

Future research must include the measurement of cortisol levels, before and after the L-Trp intake. Another investigation should be developed to see the influence of the L-Trp in the learning procedure and concentration of dogs.



Dr GONÇALO DA GRAÇA PEREIRA and S. FRAGOSO report on a recent study in Portugal on behavioural responses

## 250,000 vets in FVE member countries

A SURVEY carried out by the FVE (Federation of Veterinarians in Europe) has revealed that there are more than 250,000 veterinarians in member countries, of whom well over half (130,000) are in general practice.

The gap between numbers of female and male veterinarians is closing; women currently make up an average 48% of the veterinary workforce and outnumber their male colleagues in Latvia (73% female veterinarians), Bulgaria (70%), Finland and Sweden (66%), Denmark (58%), Portugal (53%) and Estonia (52%). In other countries, it is still very much a male profession, in particular in Malta and Serbia (both 73% male vets), Montenegro (72%), Ireland (70%) and Italy (63%). Overall, 70% of veterinary students are female.

Some countries have a relatively high percentage of foreign nationals working within their borders, including the UK (25%), Ireland (21%), France (13%) and Croatia (12%). However, in some cases these nationals are still registered even though they have moved back home.

In Lithuania there are six times as many large animal practitioners as companion animal vets while in Latvia there are nearly twice as many companion animal vets as large animal vets.

■ EU Veterinary Week 2010, to be held across Europe this month, has "Identification and traceability" as its theme. An opening address will be given in Brussels on 14th June by John Dalli, the EU commissioner for Health and Consumer Policy.

During a two-day conference there will be presentations outlining the importance and benefits of identification and traceability, the identification of live animals and germinal products; traceability and labelling in the food and feed chain; and traceability in international movements. The full programme is available online at <http://ec.europa.eu/food/dyna/conference/>.

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