

## CORRELATION BETWEEN NEUROTRANSMITTER LEVELS AND ANXIETY-RELATED BEHAVIOURS IN CATS

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### Introduction:

The present study aims to evaluate the existing correlations between neurotransmitter levels and anxiety-related aggressive behaviour.

### Materials and methods:

22 adult cats (age > 6months; no pharmacological therapy for behaviour problems) were grouped according to three different levels of aggressive behaviour: Group 1 (N=11): rare aggressive attacks, anxiety and aggressive-related behaviour problems reported by the owner; Group 2 (N=4): frequent aggressive attacks (n attacks > 12/year); Group 3 (N=7): control, no aggressive attacks reported by the owners. An accurate questionnaire focusing on anxiety and aggressive behaviour was filled in for every subject and evaluated by a DVM certified Specialist in Veterinary Behavioural Medicine. Blood samples were collected in EDTA for all the subjects for neurotransmitters analysis (standard blood processing procedures for HPLC neurotransmitter analysis were applied). HPLC analysis was carried out for the following neurotransmitters: Dopamine precursor LDOPA, dopamine DA, noradrenalin NA, adrenalin A, serotonin SE levels in plasma and platelets; 5-hidrossiindolacetic acid HIAA (serotonin metabolite) and Homovanillic acid (dopamine metabolite) in platelets. SAS ® statistic package was applied to data analysis: FREQ, MEAN and NPAR1WAY procedures were applied; the analysis of variance was carried out using a Kruscal-Wallis one-way ANOVA.

### Results:

The results indicate that during the history taking session, the origin of the cat, age at weaning and human family structure are very helpful in aggressive behaviour evaluation, furthermore nervousness, shyness and fearfulness related information are closely linked to anxiety related problems. Higher levels of NA (pg/ml), DA (pg/ml), LDOPA plasma (pg/ml), LDOPA platelet (pg/ml) were found in Control group ( $P \leq 0.05$ ). A correlation between neurotransmitter concentrations and anxiety related behavioural problems has been calculated.

### Discussion:

The obtained results suggest, in particular, that the reduction in platelet DA levels could be related to aggressive behaviour towards animals and human beings. Further analysis is needed to improve the knowledge of the complex relations between nervous system and behaviour. In addition the investigation of the genetic basis of behaviour could supply powerful tools in the understanding of anxiety and aggressiveness in companion animals.

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