

Pheromonotherapy – an integral part of modern companion animal practice

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Pheromones are chemicals released from the external surfaces of the body, from where they diffuse into the surrounding environment and affect the behaviour of other individuals (normally of the same species). In mammals they are normally detected in a specialised structure called the vomero-nasal organ in the rostral end of the hard palate within the nasal cavity. Connection with the oral cavity varies between species. The receptors in this organ are neurologically linked to the limbic system of the brain so the pheromone molecules can rapidly moderate emotional behaviour without necessarily invoking any conscious awareness of this. The term “Pheromone” is derived from the two Greek words “pherein” meaning “to carry” and “horman” meaning “to stimulate” and was first coined by Karlson and Luscher¹ to describe these important chemicals. They may also be referred to as ectohormones or social odours, in some situations, but regardless of this the term pheromonotherapy is now widely accepted for the use of these chemicals in a clinical context to manage the behaviour of mammals. A mixture of relatively simple chemicals in a particular combination often forms the specific message, but in some situations a single chemical may be sufficient in triggering a response.

Patrick Pageat, a French veterinary surgeon and behaviour specialist, has been at the forefront of the initial isolation of these products in cats and other species, but many other scientists have examined their application. In the cat 5 functional fractions (F1-F5) have

been isolated from the facial secretions, each with a distinct role. Two of these can now be synthesised artificially and used to help manage a variety of stressful situations in the cat. More recently, one pheromone has been identified from the inter-mammary sulcus of the lactating bitch (Dog Appeasing Pheromone) which appears to have a calming affect on this species.

Initial work focussed on the use of the F3 fraction in the cat² and showed that both sexual urine spraying and reactive (non-sexual) urine spraying could be reduced when it was applied to the surrounding environment. Since then several papers have examined the effects of F3 and its commercial formulation “Feliway” (Ceva Animal Health) further and looked at other applications of the substance. It has been found consistently that urine spraying, regardless of cause, reduces in over 70% of cases and in some instances as many as 97% of cases following treatment with F3. This compares very favourably with psychopharmacological interventions which also carry associated risks not present with F3. The long-term findings are also encouraging, with a reported 77% of cases still under adequate control 10 months after treatment³. Careful investigation of those cases which respond and those which do not, has helped us to understand the probable mechanism of action of these chemicals. The efficacy of F3 for the control of urine marking has been found to be lower in cases where there is also intercat aggression within the household⁴. This is consistent with the idea that urine spraying may be a form of passive aggression and that F3 may function in the natural setting to control low level threat situations and thereby prevent overt aggression in a social context. It then follows, that once the problem has escalated to include overt aggression, additional methods may be required to help resolve the conflict. In a domestic setting, this might include behaviour therapy to

address the relationship between the cats involved and possibly the use of psychoactive drugs (especially clomipramine, Clomicalm, Novartis Animal Health) to control the situation. Other scientifically demonstrated effects of F3 include a reduction in transport stress and a reduction in overnight roaming from new accommodation. It has also been found in numerous case reports that cats tend to avoid scratching where F3 is applied and so it can be used to help redirect problem scratching away from furniture and train them to use more acceptable areas like scratching posts. F3 also has an important role in the veterinary surgery. Treatment of cages has been shown to bring a number of significant benefits including easier preoperative intravenous catheterisation and an improvement in the appetite and general demeanour of hospitalised cats. These animals also appear to be better able to cope with mild stress⁵. These effects may not only help speed convalescence but have the potential to make the difference between life and death in critical cases. A further recent innovation will make treatment even easier, since it has now been found that this pheromone can be delivered effectively via a plug-in diffuser, similar to that used as a room freshener. A recent study⁶ has found this method of delivery, which requires a single device which lasts 4 weeks for a whole building, to be comparable to the spray in its efficacy with 90% of spraying cats improving following treatment and a reduction of 49% within 4 weeks. No behaviour therapy was required to achieve this effect and animals with crystalluria or haematuria in the absence of any other clinical signs all responded.

The other feline facial fraction which has been used in a clinical context is F4 (Felifriend, Ceva Animal Health). This is only available as a spray and is similarly applied to the environment or the potential handler. It has been found that treatment encourages animals

to approach unfamiliar people and reduces the risk of aggression due to handling in the veterinary clinic⁷. One other study has also found that this chemical helps cats adapt more readily to being moved to a shelter environment⁸ and so it may have an important role to play in the rescue sector. Whilst in the vast majority of cases, F4 dramatically reduces the risk of aggression whilst being handled, we have reports of a few cases of increased aggression. In the small number of cases that we have seen with this reaction, the aggression was directed towards someone that the cat already tended to avoid and had shown aggression to in the past. We hypothesise that in these cases the cat was receiving conflicting signals (chemical signal encouraging it to approach and visual one to run away). It then froze and panicked when touched as a result. Thus F4, like F3, may be most effective in mild threat situations or those involving uncertainty rather than strong aversion.

The discovery of a dog pheromone with a calming affect presents a further exciting opportunity, although data on its efficacy are limited. The product is already produced in France for the treatment of the signs of separation anxiety and preliminary studies in this country have also been very encouraging. It is likely that it too will help animals adjust to situations involving novelty or uncertainty and so its final range of applications may be much greater.

Pheromonotherapy already offers a safe, scientific and effective first line of treatment for a range of behaviour problems, and it is likely that the indications will expand in the next few years. It is therefore important that veterinary surgeons having at least a working knowledge of the subject, so they can not only optimise the welfare of their patients, but

also potentially reduce the risk of injury to themselves and their colleagues from anxious or stressed patients.

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