

Use of the feline interdigital semiochemical (FIS) to redirect unwanted scratching behaviour in cats

A Knowledge Summary by

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PICO question

Can the use of a synthetic feline interdigital semiochemical (FIS), with the provision of a scratching post, redirect unwanted scratching behaviour in cats better than provision of a scratching post alone?

Clinical bottom line

Category of research question

Treatment

The number and type of study designs reviewed

Three studies were evaluated. One was a randomised blinded trial on a single group of subjects following a crossover repetition design (Cozzi et al., 2013), the second was an open, uncontrolled study (Beck et al., 2018), and the third was a randomised unblinded trial on a single group of subjects using a placebo (Zhang et al., 2019)

Strength of evidence

Weak

Outcomes reported

In two of the three studies where the FIS pheromone was applied to the scratching posts resulted in a statistically significant increase in the cats' scratching behaviour compared to the control. The third study showed a result approaching statistical significance ($p = 0.06$)

Conclusion

Based on the assessed studies there is weak evidence that FIS used in conjunction with the provision of a scratching post is more successful in redirecting unwanted scratching behaviour than provision of a scratching post alone. However, further studies using larger and more representative cohorts are needed in order to confirm the accuracy of these results

[How to apply this evidence in practice](#)

The application of evidence into practice should take into account multiple factors, not limited to: individual clinical expertise, patient's circumstances and owners' values, country, location or clinic where you work, the individual case in front of you, the availability of therapies and resources.

Knowledge Summaries are a resource to help reinforce or inform decision making. They do not override the responsibility or judgement of the practitioner to do what is best for the animal in their care.

The evidence

The evidence consists of three experimental case control studies which document changes in feline behaviour with regard to unwanted scratching with attempts to redirect using both FIS and placebo. Small sample sizes, potentially nonrepresentative study populations, and variable experimental methods made comparison between studies more difficult.

Summary of the evidence

Cozzi et al. (2013)	
Population:	Domestic cats of at least 1 year of age and of European breeds.
Sample size:	19 cats.
Intervention details:	<ul style="list-style-type: none"> • Each cat was exposed to both FIS and placebo for 5 minutes. • Treatments were attributed at random. • FIS and placebo treatments were unable to be distinguished based on their visual or olfactive features. • Each cat underwent a standardised protocol of habituation to the test area in order to avoid stress reactions. • Both FIS and placebo were applied to the scratching post 5 minutes before the cat's entry. • One cat was involved in each test. • The scratching post was changed for each test and the same type of scratching post was used for every test. • After each test, the test area was cleaned using a standardised protocol.
Study design:	Randomised blinded trial on a single group of subjects following a crossover repetition design.
Outcome studied:	<p>Two independent observers watched the videos in continuous sampling and the findings were then transferred to Excel. The parameters of the trial were:</p> <ul style="list-style-type: none"> • the latency of the appearance of the first scratching behaviour on the scratching post; • the total duration of the scratches in seconds on the scratching post; • the frequency of the scratches on the scratching post.
Main findings: (relevant to PICO question):	<p>The presence of FIS significantly influenced feline behaviour by increasing both of the following studied parameters:</p> <ul style="list-style-type: none"> • Mean duration of scratching (44.24 ± 66 seconds with treatment vs. 11.05 ± 17.02 seconds with placebo); • Mean frequency of scratching events (2.13 ± 3.14 interactions with treatment vs. 1.42 ± 2.10 interactions with placebo).
Limitations:	<ul style="list-style-type: none"> • Population not representative of the typical population presented for unwanted scratching (no past history of problem scratching behaviours). • Small sample size. • One of the authors of this study (Pageat) is a developer of Feliway® and holds the patent for Feliscratch™ (the commercial product using this pheromone).

Oakes (1994)	
Population:	Domestic cats of any sex, age, or breed, living in households of one or two healthy, non-declawed cats, without any lesions on the feet or pain in the limbs or back that could impair scratching behaviour.
Sample size:	166 cats (29 'recently adopted cats', 137 previously owned 'scratching cats').
Intervention details:	<ul style="list-style-type: none"> • In-home visits occurred for 'scratching cats' on day -14 for instructions and at day -1 for scratching post and treatment product placement. • In-home visits occurred for 'recently adopted cats' on day 1. • All owners were instructed how to record scratching marks on a daily log which was then shared with the researchers by phone. • A baseline of behaviour for 'scratching cats' was recorded from day -14 to day -1 in order to compare the treatment. • All cats were provisioned with the same type of scratching post and all previous scratching posts in the homes were removed. • FIS was applied to the scratching posts on 10 set days by all participants. • Participants were taken off any other medications that could influence behaviour starting at least 14 days prior to the start of the study. • Owners were asked not to try to attract their cats to the scratching posts in anyway. • Owners of participants who had shown no improvement by day 14 were also offered F3 Feline Facial Pheromone Fraction (Feliway® classic spray) as an additional treatment for use on unwanted scratching surfaces from day 19 to day 28.
Study design:	Open, uncontrolled study.
Outcome studied:	Outcomes were subjective, based upon asking owners to rate their cats' behaviour over the preceding block of time. Owners were asked to estimate scratching frequency, if they still scratched on unwanted locations, how often, and where they had stopped scratching on vertical and/or horizontal surfaces.
Main findings: (relevant to PICO question):	<ul style="list-style-type: none"> • FIS was found to be effective at redirecting and managing unwanted feline scratching behaviour on both vertical and horizontal surfaces. • Reduction or cessation of unwanted scratching was observed in 89% of the cats studied.
Limitations:	<ul style="list-style-type: none"> • No placebo. • Study funded by product manufacturer (Ceva Animal Health Ltd, UK).

Zhang & McGlone (2020)	
Population:	Domestic cats of varying ages and sexes.
Sample size:	20 cats (nine neutered males, 11 spayed females).
Intervention details:	<ul style="list-style-type: none"> • Each cat was exposed to all three treatments in a randomised order for 48 hours. • Two identical standing cardboard scratchers were provided for each cat, one control and one treated with one of three treatments, and presented for 48 hours. • Treatments included FIS, powdered silver vine fruit gall, and catnip. • Treatments were hung on each of the cat scratchers. • Night-vision cameras were set up to record each area where the scratchers were located.
Study design:	Randomised unblinded trial on a single group of subjects with use of a placebo.
Outcome studied:	Frequency and duration of daily scratching and interactions between both the treated and control scratchers were recorded.
Main findings: (relevant to PICO question):	<ul style="list-style-type: none"> • Use of FIS increased the frequency of daily interaction with a treated scratching post compared to placebo only to a degree approaching statistical significance ($p = 0.06$) (4.49 ± 89 interactions with treatment vs. 3.71 ± 0.89 with placebo). • No significant change was noted with regard to scratching duration and frequency or with the interaction duration with FIS.
Limitations:	<ul style="list-style-type: none"> • Small sample size. • FIS (sprayed on a sock) was hung on the scratching post rather than being sprayed on directly as per other studies and product instructions.

Appraisal, application and reflection

Destructive behaviour (e.g. scratching furniture or carpets) has been noted in numerous studies as an area of concern of cat owners with large implications for harming the human–animal bond (Golden & Hanlon, 2018; Horwitz, 2019; PDSA, 2018; Stelow, 2018; Wassink-van der Schot et al., 2016). Modern approaches to veterinary behaviour medicine with respect to this concern focus on the provision of, and redirection of behaviour towards, scratching posts, climbing towers, and other toys (Amat et al., 2016) as well as the use of pheromone therapy such as FIS (Atkinson, 2018).

The use of FIS in veterinary behaviour medicine is extremely new with very few studies focusing on its efficacy. While the studies have been limited by small sample sizes, and where Beck et al. (2018) did not use a placebo to measure effect, two-thirds of the studies examined did show that the use of FIS was effective at directing behaviour to an object to which the pheromone had been applied while the third produced a result that was approaching statistical significance. Additionally, only one study (Beck et al., 2018) utilised a population of cats that was known previously for destructive behaviour, ‘scratching cats’, in the study.

To validate the conclusions drawn by Beck et al. (2018) and Cozzi et al. (2013) and to determine if the trend found by Zhang & McGlone (2020) could have approached relevance, further research is needed with application of a standardised, clinically relevant assessment of FIS with populations of cats with a previous

history of destructive behaviour. The veterinary evidence reviewed does provide justification that FIS can be incorporated with other known remedies for destructive behaviour in feline practice. It is also important to note that Beck et al. (2018) was funded by CEVA, the company manufacturing Feliscratch™, and Cozzi et al. (2013) reported no commercial funding or conflicts of interest despite one of the authors having previously developed another pheromone product (Feliway®) for CEVA. This author also later obtained the US patent for Feliscratch™ in 2017.

Methodology Section

Search Strategy	
Databases searched and dates covered:	CAB Abstracts on CAB Direct: 1973–2020 PubMed: 2010–2020
Search terms:	<p>CAB Abstracts:</p> <ol style="list-style-type: none"> 1. feline interdigital semiochemical OR FIS OR Feliscratch OR pheromone 2. scratching 3. behaviour OR behavior OR behavioral OR behavioural 4. 1 AND 2 AND 3 <p>PubMed: (feline interdigital semiochemical OR FIS OR Feliscratch OR pheromone) AND (scratching) AND (behavior OR behaviour OR behavioral OR behavioural)</p>
Dates searches performed:	16 Dec 2020

Exclusion / Inclusion Criteria	
Exclusion:	<ul style="list-style-type: none"> • Articles with content irrelevant to PICO. • Studies that did not investigate a relationship between FIS and directing/redirecting scratching behaviour.
Inclusion:	Papers related to directing/redirecting scratching behaviour with the use of FIS.

Search Outcome			
Database	Number of results	Excluded – Irrelevant to PICO	Total relevant papers
CAB Abs	3	0	3
PubMed	6	5	1
Total relevant papers when duplicates removed			3

CONFLICT OF INTEREST

The author declares no conflicts of interest.

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