

CLINICAL KNOWLEDGE INSIGHTS

ALLERGIC DERMATOSES

FLEA ALLERGY DERMATITIS (FAD)

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AT A GLANCE

- The most common pruritic skin disease of dogs and cats
- Flea saliva contains amino acids, aromatic compounds, fluorescent materials, polypeptides, and phosphorus
- When fleas feed, proteins in flea saliva are released into the skin of the pet
- Numerous immunologic responses, including immediate and delayed hypersensitivity to the flea saliva, are responsible for the clinical signs; therefore just having fleas present does not mean hypersensitivity exists
- Dogs with atopic dermatitis seem to be predisposed to FAD; otherwise no breed, sex, or age predilection exists

WHAT DOES IT LOOK LIKE?

- Tail-head pruritus extending to the lumbo-sacral area, ventral abdomen, caudal and medial thighs with erythema, evidence of self-trauma, hyperpigmentation, lichenification
- Papules and crusts may be evident
- Common manifestations in cats include miliary dermatitis, indolent ulcers, eosinophilic plaques, linear granulomas and symmetrical alopecia
- Disease can be seasonal or non-seasonal, depending on the pet's geographic location and housing
- Secondary superficial and sometimes deep pyoderma can result from self-trauma

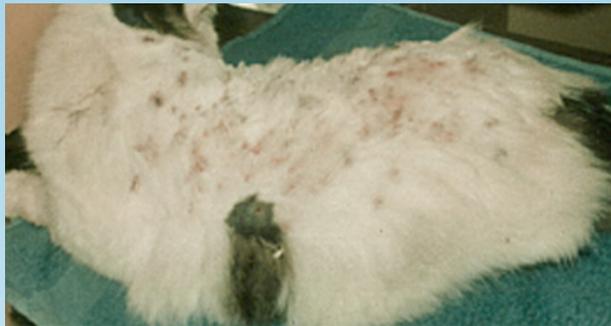
PATHOLOGIC IMAGE LIBRARY : FLEA ALLERGY DERMATITIS



Dorsal lumbosacral region of a dog with acute FAD and resultant moist dermatitis.v



Fox terrier with matted hair and signs of chronic FAD on the cauo-dorsal trunk.



Feline miliary dermatitis in a flea allergic cat. Crusted papules are present on the dorsum.



Eosinophilic plaques on the ventral abdomen of a flea allergic cat secondary to excessive licking from flea allergy



Chronic FAD. Note the alopecia and signs of chronic dermatitis are concentrated on the caudal half of the dog

PATHOLOGIC IMAGE LIBRARY : FLEA ALLERGY DERMATITIS



Positive intradermal test to flea allergen, lower row - compare to negative and positive control reactions on the top row.



Flea feces dissolve in water producing a red-tinge from the dissolved blood; this distinguishes "flea dirt" from environmental dirt

WHAT ELSE LOOKS LIKE THIS?

- Food allergy
- Atopic dermatitis
- *Cheyletiella* infestation
- Bacterial folliculitis and pyoderma
- *Malassezia* dermatitis
- Sarcoptic mange
- Pediculosis (lice)
- Endocrinopathies (hyperadrenocorticism, hypothyroidism)

HOW DO I DIAGNOSE IT?

- Demonstration of fleas (sometimes difficult in pets that ingest the fleas) and flea dirt (feces/digested blood).
- Resolution of clinical signs with successful flea control program.
- Intradermal test with flea extract can show immediate (within 20 minutes) or delayed (48 hrs) reaction of a wheal - positive reactions can occur in clinically normal dogs, however false positives are possible, and delayed reactions may be subtle and hard to recognize (biopsy may be required).

INTRADERMAL TESTING VIDEOS: [ExcellenceInDermatology.com](https://www.excellenceindermatology.com) → [Education Library](#) → [Videos](#)

INTRADERMAL TESTING SECTION: [ExcellenceInDermatology.com](https://www.excellenceindermatology.com) → [Diagnostic Techniques](#)

HOW DO I MANAGE IT?

- Controlling pruritus with a short course of oral glucocorticoids
- Treating secondary infections
- Flea control – the most important consideration is to treat all pets in the home (indoor and outdoor animals) AND the environment, both indoors and out.

FLEA PRODUCT COMPARISON

CHEMICAL	MECHANISM OF ACTION	TYPE	AVAILABLE	USE
Deltamethrin	Synthetic pyrethroid: causes paralysis of an flea by keeping the sodium channels open in the neuronal membranes	Adulticide	Collar	Pet (Not for cats)
Dinotefuran	Inhibits nicotinic acetylcholine (ACh) receptors	Adulticide	Topical	Pet
Fipronil	GABA -chloride blocking	Adulticide	Topical	Pet
Flumethrin	A pyrethroid that is combined with imidacloprid in a slow-release polymer	Adulticide	Collar	Pet
Imidicloprid	Nicotinic Ach-receptor antagonis t	Adulticide	Topical, Collar	Pet
Indoxacarb	An oxadine pesticide, activity occurs via blockage of the sodium channels in the insect nervous system, it uses enzymes inside the flea to become activated	Adulticide	Topical	Pet
Lufenuron	Inhibits chitin synthesis	Growth regulator	Oral, Injectable	Pet
(S)-Methoprene	Juvenile hormone analog	Growth regulator	Topical, Collar	Pet
Nitenpyram	Nicotinic Ach receptor antagonist	Adulticide	Oral	Pet

TABLE CONTINUED ON NEXT PAGE

CONTINUED: FLEA PRODUCT COMPARISON

CHEMICAL	MECHANISM OF ACTION	TYPE	AVAILABLE	USE
Permethrin	Pyrethroid – sodium channel modulator	Adulticide	Topical	Pet (Not for cats), Environment
Pyriproxyfen	Juvenile hormone analog	Growth regulator	Topical	Environment
Selamectin	Avermectin derivative – chloride channel activator	Adulticide, Growth regulator	Topical, Systemic	Pet
Sodium Polyborate	Desiccant and toxic when ingested by flea larvae	Growth regulator		Environment
Spinosad	Nicotinic Ach receptor agonist	Adulticide	Oral	Pet
Tyriproxifin	Juvenile hormone analog	Growth receptor	Topical	Pet

ENVIRONMENTAL CONTROL

- Adulticide/IGR/IDIs – sprays most effective
- Vacuuming, including the vehicle if the pet is transported
- Washing pet's bedding
- Removing organic debris (old leaves) and limiting pet access to areas that promote flea growth (temperature 23°C/73°F and relative humidity of 78%)
- *Steinereima carpocapsae* – nematodes that kill flea larvae in grass and soil

COMMENTS

- Many dogs and cats that are flea allergic have very few fleas on them—dogs and cats ingest fleas and also remove them by incessant scratching
- The most common flea infesting dogs and cats is *Ctenocephalides felis felis*
- Fleas are highly prolific—females begin egg production 24 hours after consuming a blood meal and may produce 20-50 eggs per day for over 100 days; a single mated pair can produce over 20,000 adult fleas and 160,000 pre-adult forms in two months
- Flea infested dogs and cats often acquire tapeworms (*Diplydium caninum*) through ingestion of fleas
- Fleas are also vectors of *Rickettsia felis*, *Rickettsia typhi*, *Bartonella hensalae*, *Bartonella clarridgeiae* and other organisms

- Female fleas consume blood at a rate of 10-15 times their body weight each day
- Warn clients that permethrin-containing products may kill cats and fipronil is toxic to rabbits

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