THE ITCHY CAT!

JASON B. PIEPER, DVM, MS, DACVD®

ASSOCIATE PROFESSOR

IOWA STATE UNIVERSITY

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OUTLINE

- DIFFERENTIALS FOR PRURITIC CAT
- DIAGNOSIS AND MANAGEMENT OF DISEASES CAUSING PRURITUS IN CATS
  - PARASITES
  - DERMATOPHYTES
  - PEMPHIGUS FOLIACEUS
  - PSYCHOGENIC
  - ALLERGIC DERMATITIS

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PRIMARY CAUSES OF PRURITUS

- PARASITIC
  - SARCOPTES/NOTOEDRES
  - CHEYLETIELLA
  - LICE
  - DEMODICOSIS
  - OTODECTES
- INFECTIOUS
  - DERMATOPHYTOSIS
- ALLERGIC DERMATITIS
  - FELINE ATOPIC SKIN SYNDROME/FELINE ATOPIC SYNDROME
  - ADVERSE FOOD REACTION
  - FLEA ALLERGY DERMATITIS
- AUTOIMMUNE/IMMUNE MEDIATED
  - PEMPHIGUS FOLIACEUS
- OTHER
  - PSYCHOGENIC DISORDER

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FELINE SPECIFIC MANIFESTATIONS

- MILIARY DERMATITIS
- SELF-INFLICTED NON-INFLAMMATORY ALOPECIA
- EOSINOPHILIC GRANULOMA COMPLEX
- FACE, HEAD AND NECK PRURITUS
- SCALING AND EXFOLIATION

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MILIARY DERMATITIS

- CRUSTED PAPULES
- CAUSES
  - FLEA BITE ALLERGY
  - ENVIRONMENTAL ALLERGIES
  - ADVERSE FOOD REACTION
  - MOSQUITO BITE HYPERSENSITIVITY
  - CHEYLETIELLA
  - PEDICULOSIS
  - DERMATOPHYTOSIS

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SELF-INFLICTED NON-INFLAMMATORY ALOPECIA

- SYMMETRICAL ALOPECIA OF VENTRAL ABDOMEN, GROIN, LATERAL TRUNK, AND LEGS
- CAUSE
  - ALLERGIES
    - ABDOMEN – NON-FLEA ALLERGIC SKIN DISEASE
    - DORSUM – FLEA BITE ALLERGY
  - DEMODEX GATOI
  - PSYCHOGENIC DISORDERS

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EOSINOPHILIC GRANULOMA COMPLEX

- EOSINOPHILIC PLAQUES
  - ERODED TO ULCERATED, ERYTHEMATOUS PLAQUES
  - VENTRAL ABDOMEN AND MEDIAL THIGHS TYPICALLY
- EOSINOPHILIC LINEAR GRANULOMAS
  - FIRM, RED TO YELLOWISH, RAISED AND OFTEN LINEAR TO NODULAR LESIONS
  - CAUDAL ASPECTS OF THE HIND LIMBS TYPICALLY
- INDOLENT ULCER
  - ERYTHEMATOUS ULCER WITH RAISED BORDERS
  - TYPICALLY ON UPPER LIP

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EOSINOPHILIC GRANULOMA COMPLEX

- CAUSES
  - FOOD ALLERGY
  - ENVIRONMENTAL ALLERGIES
  - FLEA ALLERGY DERMATITIS
  - IDIOPATHIC

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FACE, HEAD, AND NECK PRURITUS

- EXCORIATIONS, SELF INDUCED ALOPECIA, ERYTHEMA, CRUSTS, EROSIONS, AND/OR ULCERATIONS
- VARIABLE IN SEVERITY OF PRURITUS
- CAUSES
  - HYPERSENSITIVITIES (FOOD, ENVIRONMENTAL, MOSQUITO)
  - PARASITES (OTODECTES, NOTOEDRES)
  - INFECTIOUS (DERMATOPHYTES, HERPES)

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SCALING AND EXFOLIATION

- CAUSES
  - CHEYLETIELLA – DORSUM
  - LICE – DORSUM
  - THYMOMA/NON-THYMOMA ASSOCIATED EXFOLIATIVE DERMATITIS
  - CUTANEOUS LYMPHOMA
  - ALLERGIC DERMATITIS

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DEMODEX GATOI

- NOT YOUR TYPICAL DEMODICOSIS
- EPIDERMIS INSTEAD OF HAIR FOLLICLES
- ALOPECIA INSTEAD OF PAPULES, PUSTULES, CRUSTS
- PRURITIC
- SHORT BODIED MITE
- CONTAGIOUS

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DEMODEX GATOI

- PRESENTATION
  - MODERATE PRURITUS
  - ABDOMEN MOST COMMONLY
- DIAGNOSIS
  - SUPERFICIAL SKIN SCRAPING
  - VERY DIFFICULT TO FIND

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DEMODEX GATOI

- TREATMENT
  - LIME SULFUR DIPS WEEKLY
  - ADVANTAGE MULTI WEEKLY TO EVERY OTHER WEEK
  - ISOXAZOLINES AS LABELED
  - NOT REVOLUTION OR FRONTLINE!
- CONTAGIOUS

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NOTOEDRES CATI

- ALOPECIA AND EXCORIATIONS
  - FACE, EARS
- SUPERFICIAL SKIN SCRAPES
  - USUALLY EASILY FOUND
    - CONTRAST TO *SARCOPTES*!

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NOTOEDRES CATI TREATMENT

- TREATMENT
  - ADVANTAGE MULTI
  - LIME SULFUR
  - ISOXAZOLINES

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MOSQUITO BITE HYPERSENSITIVITY

- TYPE I HYPERSENSITIVITY
  - PRURITIC
- DARKER COLORED CATS POTENTIALLY PREDISPOSED
- SEASONALITY
- OUTDOOR EXPOSURE
- POTENTIALLY PERIPHERAL EOSINOPHILIA

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MOSQUITO BITE HYPERSENSITIVITY

- CRUSTED PAPULES AND WIDESPREAD ULCERATIONS
- LESIONS COMMONLY FOUND ON SHORT-HAIRED REGIONS – BRIDGE OF NOSE, PINNAE, PREAURICULAR REGION, JUNCTION OF FOOTPAD AND HAIRED SKIN

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MOSQUITO BITE HYPERSENSITIVITY

- ANTIPRURITIC
- AVOIDANCE
- ESSENTIAL OIL OF CATNIP
- AVON SKIN SO SOFT BUG GUARD PLUS PICARIDIN

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DERMATOPHYTOSIS

- CAN CLINICALLY LOOK LIKE ANYTHING
- DIAGNOSIS
  - WOOD'S LAMP
  - TRICHOGRAM
  - FUNGAL CULTURE
  - PCR

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DERMATOPHYTOSIS

- TREATMENT
  - TOPICAL
  - SYSTEMIC
- IDENTIFY THE SOURCE AND RESOLVE IT
- ENVIRONMENTAL DECONTAMINATION

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PEMPHIGUS FOLIACEUS

- MOST COMMON AUTOIMMUNE DISEASE IN DOGS AND CATS
- DRUG INDUCED – AMITRAZ, CEPHALOSPORINS AND SULFONAMIDES
- ATOPIC DERMATITIS INCREASES RISK

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PEMPHIGUS FOLIACEUS

- HEAD, FACE, AND EARS → > 80% CASES
  - GENERALIZED, NASAL PLANUM, PAW PADS
  - CLAW FOLDS IN ABOUT 30% OF CASES
  - AROUND NIPPLES AS WELL
- PUSTULES SPANNING MULTIPLE FOLLICULAR UNITS OR INTERFOLLICULAR
  - CHRONICALLY → CRUSTS, ULCERATIONS
- ONSET IS RAPID AND MAY BE GENERALIZED WITHIN 1-2 MONTHS

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PEMPHIGUS FOLIACEUS

- PRURITUS IS VARIABLE
  - HIGH IN CATS - UP TO 80%
- SYSTEMICALLY ILL
  - DEPRESSED, LETHARGIC, ANORECTIC, AND FEBRILE
- GENERALIZED LYMPHADENOPATHY

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PEMPHIGUS FOLIACEUS - DIAGNOSIS

- CYTOLOGY CAN BE VERY SUGGESTIVE, BUT NOT DIAGNOSTIC!
- BIOPSY OF A PUSTULE IS NECESSARY FOR DIAGNOSIS.
- IF NO PUSTULE, THEN THICKENED CRUST.

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PEMPHIGUS FOLIACEUS - TREATMENT

- IMMUNOSUPPRESSION
  - PREDNISONE
  - CYCLOSPORINE
  - CHLORAMBUCIL
- TROUBLE SPOT
  - TOPICAL TACROLIMUS
  - TOPICAL GLUCOCORTICOIDS
- AVOID SUNLIGHT AT PEAK TIMES!

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PEMPHIGUS FOLIACEUS

- REGULAR MONITORING
  - APPROPRIATE RESPONSE
  - BLOODWORK
  - SECONDARY INFECTIONS

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PSYCHOGENIC DISORDERS

- COMMONLY OVERDIAGNOSED
  - 16/21 HAD A DIFFERENT MEDICAL CONDITION
    - 12/21 HAD FOOD ALLERGIES
  - 5/21 HAD PSYCHOGENIC
    - 3/5 HAD CONCURRENT MEDICAL CONDITION
- ORIENTAL BREEDS PREDISPOSED

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PSYCHOGENIC DISORDERS

- MANIFESTATIONS
  - VIGOROUSLY LICKING AT FOCAL AREA
  - GENTLE LICK AND CHEWING
  - CHEWING AND PULLING HAIR OUT
- PRESENTATION
  - BARBERED ALOPECIA
  - ERYTHEMATOUS, ELONGATED, OVAL PLAQUE OR RED STREAK
  - EOSINOPHILIC PLAQUES MAY DEVELOP
  - HAIR REGROWTH MAY BE DARKER

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PSYCHOGENIC DISORDERS

- LESION LOCATION
  - CAUDAL ABDOMEN (MOST COMMON)
  - MEDIAL THIGHS
  - GROIN
  - INGUINAL REGION
  - MEDIAL FORELEGS
  - LESS COMMONLY
    - LATERAL LEGS, DORSAL LUMBAR, SACRAL OR TAIL REGIONS
      - SHOULD BE IN ADDITION TO ABDOMEN TO DIFFERENTIATE FROM FLEA ALLERGY DERMATITIS

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PSYCHOGENIC DISORDERS

- DIAGNOSIS
  - RULE OUT EVERYTHING ELSE!
  - TRICHOGRAM
    - TOUGH TO EPILATE HAIRS AND BROKEN EDGES
  - BIOPSY

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PSYCHOGENIC DISORDERS

- TREATMENT
  - IDENTIFY AND REMOVE STRESSORS
  - CLOMIPRAMINE
  - NALOXONE
  - HALOPERIDOL
  - FLUOXETINE
  - AMITRIPTYLINE
  - DOXEPIN
  - BUSPIRONE

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LESION DISTRIBUTION - ALLERGIES

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FLEA ALLERGIC DERMATITIS

- MILIARY DERMATITIS COMMON
- CAUDAL DORSUM, TAIL, ABDOMEN

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FLEA ALLERGIC DERMATITIS DIAGNOSIS

- CLINICAL DISTRIBUTION
- OBSERVANCE OF FLEAS OR FLEA DIRT
- LACK OF PREVENTATIVE
- FECAL

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FLEA ALLERGIC DERMATITIS TREATMENT

- ANIMAL
- OTHER ANIMALS
- ANTI-PRURITIC
- +/- ANTIMICROBIALS
- ENVIRONMENT (INSIDE AND OUTSIDE)

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ADVERSE FOOD REACTION

- LOWEST PREVALENCE OF ALL FELINE ALLERGIES
  - ONLY 0.2% OF FELINE POPULATION
- PRURITIC CATS
  - 12-21%
- ALLERGIC SKIN DISEASE
  - 5-13%

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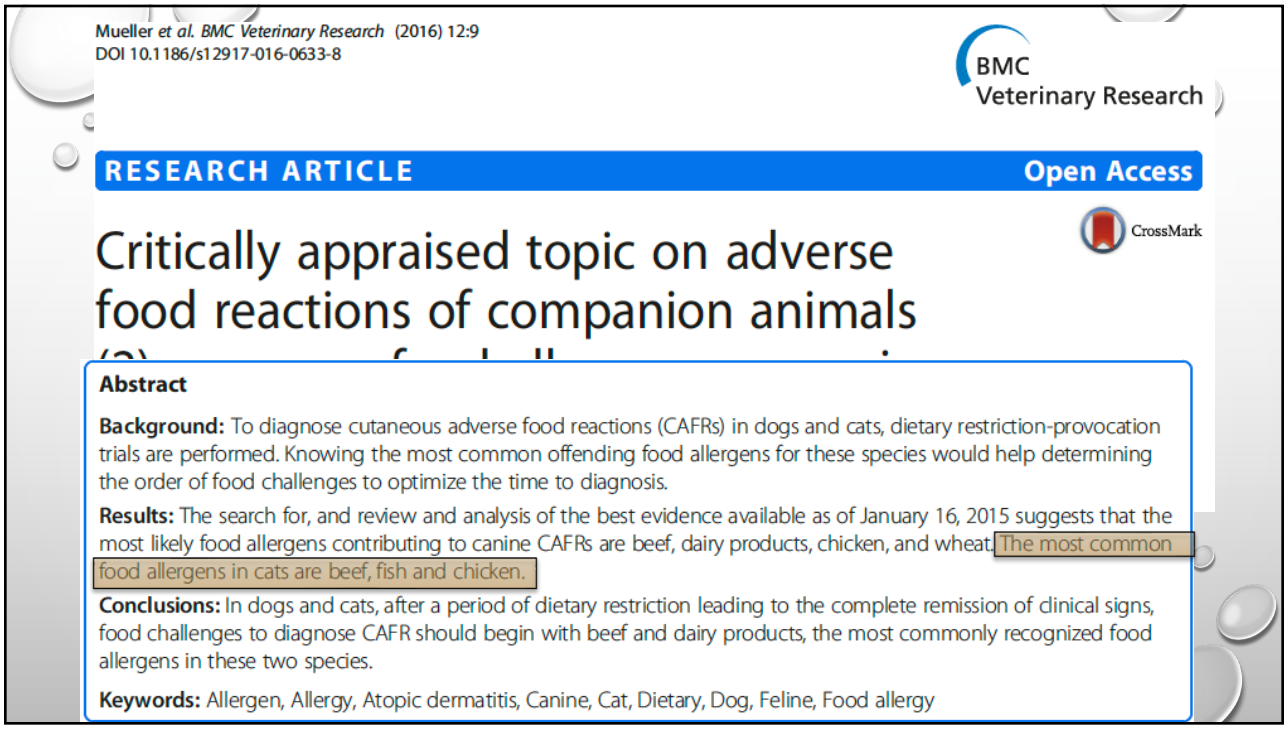

Mueller *et al. BMC Veterinary Research* (2016) 12:9
DOI 10.1186/s12917-016-0633-8

BMC Veterinary Research

RESEARCH ARTICLE Open Access

Critically appraised topic on adverse food reactions of companion animals

Abstract

Background: To diagnose cutaneous adverse food reactions (CAFRs) in dogs and cats, dietary restriction-provocation trials are performed. Knowing the most common offending food allergens for these species would help determining the order of food challenges to optimize the time to diagnosis.

Results: The search for, and review and analysis of the best evidence available as of January 16, 2015 suggests that the most likely food allergens contributing to canine CAFRs are beef, dairy products, chicken, and wheat. The most common food allergens in cats are beef, fish and chicken.

Conclusions: In dogs and cats, after a period of dietary restriction leading to the complete remission of clinical signs, food challenges to diagnose CAFR should begin with beef and dairy products, the most commonly recognized food allergens in these two species.

Keywords: Allergen, Allergy, Atopic dermatitis, Canine, Cat, Dietary, Dog, Feline, Food allergy

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FELINE ADVERSE FOOD REACTION

- OFFENDING FOOD ALLERGEN SOURCE (78 CATS)
  - BEEF (14 CATS; 18%)
  - FISH (13 CATS; 17%)
  - CHICKEN (4 CATS; 5%)
  - WHEAT (3 CATS; 4%)
  - CORN (3 CATS; 4%)
  - DAIRY (3 CATS; 4%)
  - LAMB (2 CATS; 3%)
  - EGG, BARLEY, AND RABBIT (1 CAT EACH)

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ADVERSE FOOD REACTION

- GOOD FOOD HISTORY IS BENEFICIAL
- CUTANEOUS CLINICAL SIGNS
- CONCURRENT GASTROINTESTINAL SIGNS

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Mueller and Olivry *BMC Veterinary Research* (2018) 14:341
https://doi.org/10.1186/s12917-018-1656-0

BMC Veterinary Research

RESEARCH ARTICLE Open Access

Critically appraised topic on adverse food

Table 2 Non-cutaneous clinical signs of AFR in cats

Clinical sign	Number of animals (% of all reported non-cutaneous AFR)	Strength of evidence
Diarrhoea [5, 7, 20, 21, 27–31, 51]	25–49[a] (28–55%)	Strong in 11–16 [20, 21] Moderate in 14–33 [5, 7, 27–31] Weak in 1 [51]
Vomiting [4, 5, 7, 20, 21, 27–29, 31]	26–46[a] (29–52%)	Strong in 15–20 [20, 21] Moderate in 8–27 [4, 5, 7, 28, 29, 31, 51]
Conjunctivitis [4, 7, 46]	3–20[a] (3–22%)	Strong in 1 [7] Moderate in 1 [4] Weak in 1–18 [46]
Salivating [46]	1–18 (1–20%)	Weak
Respiratory signs [7]	4 (4%)	Moderate
Flatulence [5]	3 (3%)	Moderate
Hyperactive behaviour [6]	1 (1%)	Strong

[a] Minimal and maximal number of cats, as in some studies, the specific number of cats showing some of the individual clinical signs was not reported

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AFR DIAGNOSTICS

- ORAL SALIVA TEST
- BLOOD TESTING
- PATCH TESTING
- ADVANCED BENCHTOP DIAGNOSTICS

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Mueller and Olivry *BMC Veterinary Research* (2017) 13:275
DOI 10.1186/s12917-017-1142-0

BMC Veterinary Research

Abstract

Background: The gold standard to diagnose adverse food reactions (AFRs) in the dog and cat is currently an elimination diet with subsequent provocation trials. However, those trials are inconvenient and client compliance can be low. Our objective was to systematically review the literature to evaluate in vivo and in vitro tests used to diagnose AFR in small animals.

Results: We searched three databases (CAB Abstracts, MEDLINE and Web of Science) for pertinent references on September 16, 2016. Among 71, 544 and 41 articles found in the CAB Abstract, MEDLINE and Web of Science databases, respectively, we selected 22 artides and abstracts from conference proceedings that reported data usable for evaluation of tests for AFR. Serum tests for food-specific IgE and IgG, intradermal testing with food antigens, lymphocyte proliferation tests, fecal food-specific IgE, patch, gastroscopic, and colonoscopic testing were evaluated.

Conclusions: Testing for serum food-specific IgE and IgG showed low repeatability and, in dogs, a highly variable accuracy. In cats, the accuracy of testing for food-specific IgE was low. Lymphocyte proliferation tests were more frequently positive and more accurate in animals with AFR, but, as they are more difficult to perform, they remain currently a research tool. All other reported tests were only evaluated by individual studies with small numbers of animals. Negative patch test reactions have a very high negative predictability in dogs and could enable a choice of ingredients for the elimination diet in selected patients. Gastroscopic and colonoscopic testing as well as food-specific fecal IgE or food-specific serum IgG measurements appear less useful. Currently, the best diagnostic procedure to identify AFRs in small animals remains an elimination diet with subsequent provocation trials.

Keywords: Atopic, Canine, Feline, Food allergy, Gastroenteritis, In vitro, Serum test, IgE

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AFR TREATMENT

- 8 WEEK DIET TRIAL WITH A CHALLENGE
  - NOVEL PROTEIN, HYDROLYZED PROTEIN, HOMECOOKED DIET
- PRESCRIPTION DIET

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Olivry *et al. BMC Veterinary Research* (2015) 11:225
DOI 10.1186/s12917-015-0541-3

BMC Veterinary Research

RESEARCH ARTICLE Open Access

Critically appraised topic on adverse food

Abstract

Background: Restrictive (i.e. elimination)-provocation dietary trials remain the standard of care to diagnose cutaneous adverse food reactions (CAFRs) in dogs and cats. There is currently no consensus on the duration of elimination diet trials that would permit the highest sensitivity of diagnosis of CAFR in companion animals.

Results: The search for, and review and analysis of the best evidence available as of December 14, 2014 suggests that, by 5 weeks in dogs and 6 weeks in cats after starting an elimination diet, more than 80 % of patients had achieved a remission of clinical signs of CAFR. Increasing the diet trial duration to 8 weeks leads to a complete remission in more than 90 % of dogs and cats with CAFR.

Conclusions: For diagnosing CAFRs in more than 90 % of dogs and cats, elimination diet trials should last at least 8 weeks.

Keywords: Allergy, Atopic dermatitis, Canine, Cat, Dog, Elimination diet, Feline, Food allergy, Itch, Pruritus

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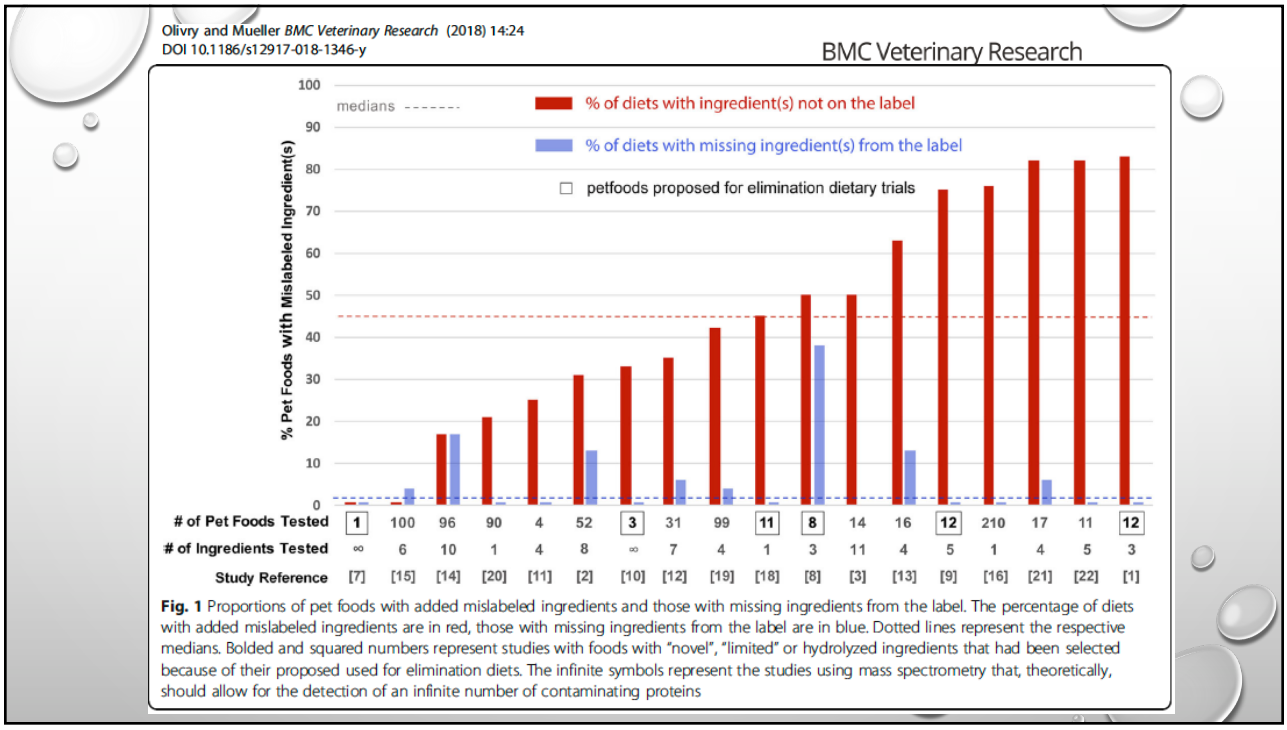

Fig. 1 Proportions of pet foods with added mislabeled ingredients and those with missing ingredients from the label. The percentage of diets with added mislabeled ingredients are in red, those with missing ingredients from the label are in blue. Dotted lines represent the respective medians. Bolded and squared numbers represent studies with foods with "novel", "limited" or hydrolyzed ingredients that had been selected because of their proposed used for elimination diets. The infinite symbols represent the studies using mass spectrometry that, theoretically, should allow for the detection of an infinite number of contaminating proteins

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AFR TREATMENT

- GASTROINTESTINAL SIGNS RESOLVE FIRST
- CHALLENGE OLD DIET
- INDIVIDUAL FOOD INGREDIENT CHALLENGES

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Olivry and Mueller *BMC Veterinary Research* (2020) 16:158
https://doi.org/10.1186/s12917-020-02379-3

BMC Veterinary Research

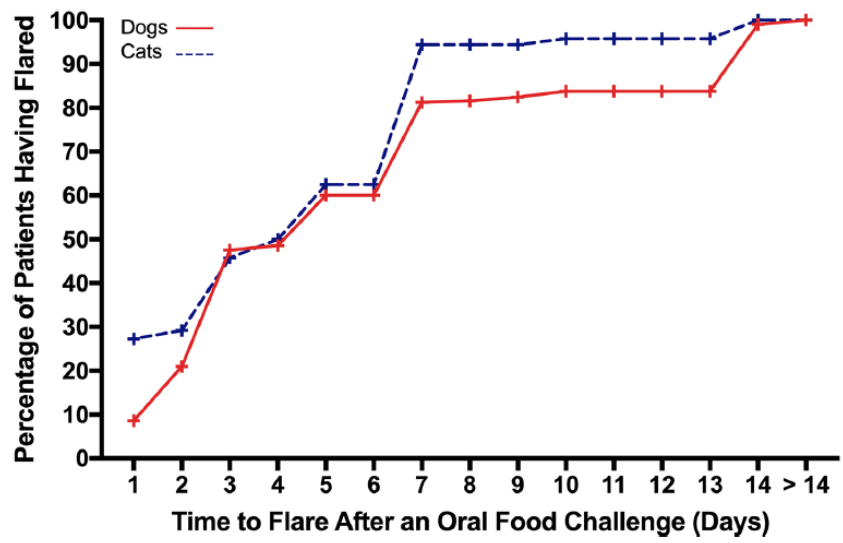

Fig. 1 Cumulative daily probabilities of flares after an oral food challenge in dogs and cats with food allergies

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FELINE ENVIRONMENTAL ALLERGIES

- PREVIOUSLY CALLED FELINE NON-FOOD, NON-FLEA HYPERSENSITIVITY DISORDER
- NEW TERMS
  - FELINE ATOPIC SKIN SYNDROME
  - FELINE ATOPIC SYNDROME
- DIAGNOSIS OF EXCLUSION STILL

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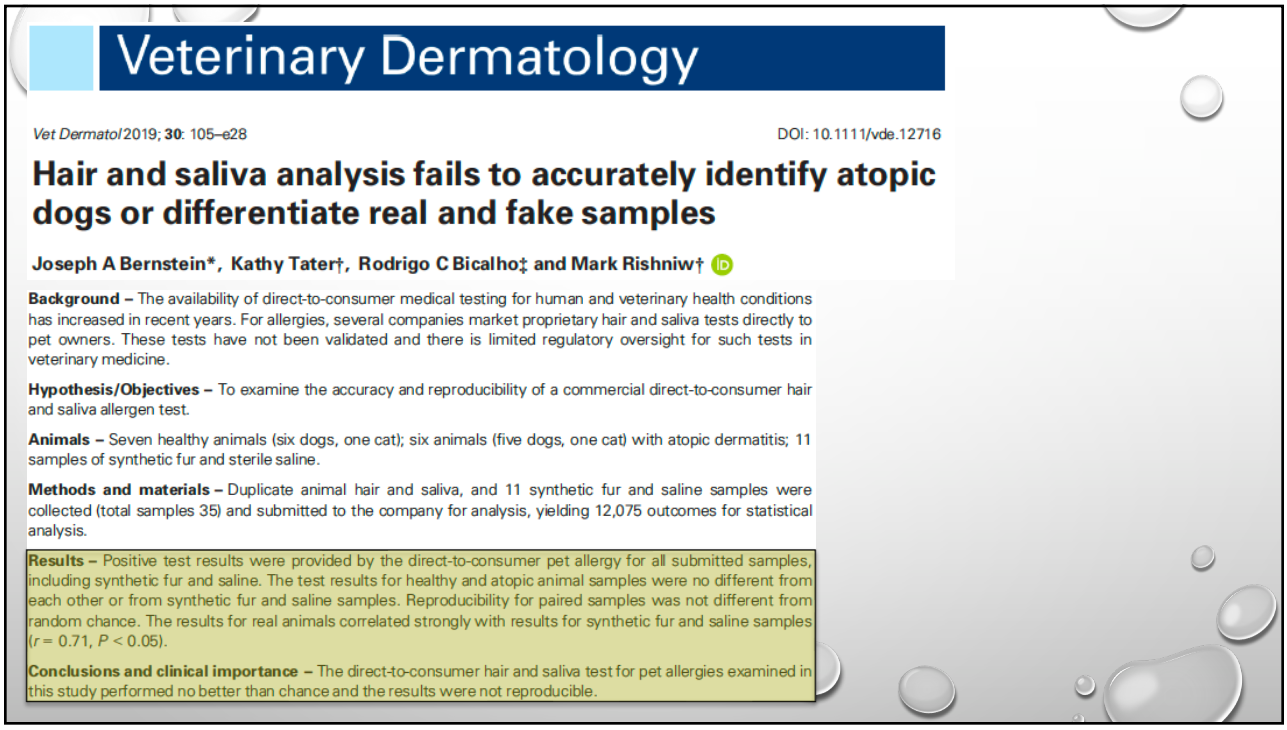

Veterinary Dermatology

Vet Dermatol 2019; **30**: 105–e28 DOI: 10.1111/vde.12716

Hair and saliva analysis fails to accurately identify atopic dogs or differentiate real and fake samples

Joseph A Bernstein*, Kathy Tater†, Rodrigo C Bicalho‡ and Mark Rishniw†

Background – The availability of direct-to-consumer medical testing for human and veterinary health conditions has increased in recent years. For allergies, several companies market proprietary hair and saliva tests directly to pet owners. These tests have not been validated and there is limited regulatory oversight for such tests in veterinary medicine.

Hypothesis/Objectives – To examine the accuracy and reproducibility of a commercial direct-to-consumer hair and saliva allergen test.

Animals – Seven healthy animals (six dogs, one cat); six animals (five dogs, one cat) with atopic dermatitis; 11 samples of synthetic fur and sterile saline.

Methods and materials – Duplicate animal hair and saliva, and 11 synthetic fur and saline samples were collected (total samples 35) and submitted to the company for analysis, yielding 12,075 outcomes for statistical analysis.

Results – Positive test results were provided by the direct-to-consumer pet allergy for all submitted samples, including synthetic fur and saline. The test results for healthy and atopic animal samples were no different from each other or from synthetic fur and saline samples. Reproducibility for paired samples was not different from random chance. The results for real animals correlated strongly with results for synthetic fur and saline samples ($r = 0.71$, $P < 0.05$).

Conclusions and clinical importance – The direct-to-consumer hair and saliva test for pet allergies examined in this study performed no better than chance and the results were not reproducible.

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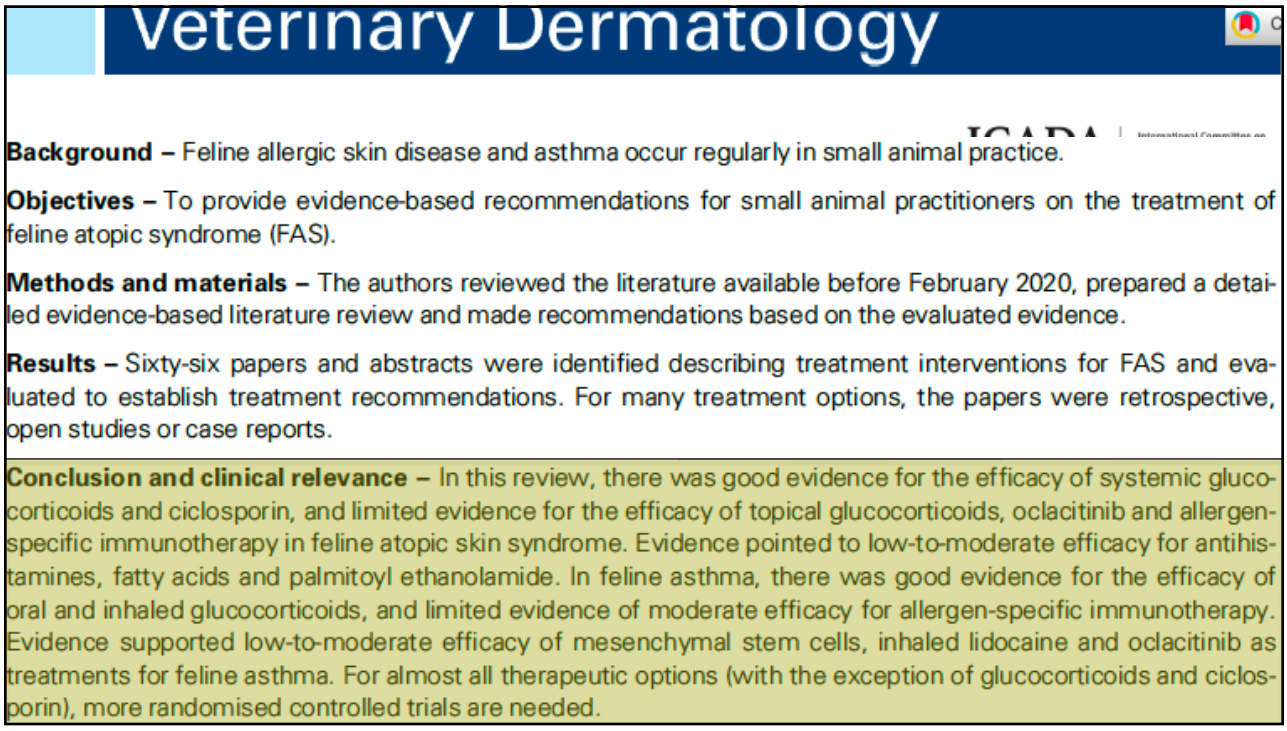

Veterinary Dermatology

Background – Feline allergic skin disease and asthma occur regularly in small animal practice.

Objectives – To provide evidence-based recommendations for small animal practitioners on the treatment of feline atopic syndrome (FAS).

Methods and materials – The authors reviewed the literature available before February 2020, prepared a detailed evidence-based literature review and made recommendations based on the evaluated evidence.

Results – Sixty-six papers and abstracts were identified describing treatment interventions for FAS and evaluated to establish treatment recommendations. For many treatment options, the papers were retrospective, open studies or case reports.

Conclusion and clinical relevance – In this review, there was good evidence for the efficacy of systemic glucocorticoids and ciclosporin, and limited evidence for the efficacy of topical glucocorticoids, oclacitinib and allergen-specific immunotherapy in feline atopic skin syndrome. Evidence pointed to low-to-moderate efficacy for antihistamines, fatty acids and palmitoyl ethanolamide. In feline asthma, there was good evidence for the efficacy of oral and inhaled glucocorticoids, and limited evidence of moderate efficacy for allergen-specific immunotherapy. Evidence supported low-to-moderate efficacy of mesenchymal stem cells, inhaled lidocaine and oclacitinib as treatments for feline asthma. For almost all therapeutic options (with the exception of glucocorticoids and ciclosporin), more randomised controlled trials are needed.

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FELINE ATOPIC SKIN SYNDROME

- SYSTEMIC TREATMENT OPTIONS
  - SHORT COURSE SYSTEMIC GLUCOCORTICOIDS
  - ALLERGY TESTING WITH IMMUNOTHERAPY
  - MODIFIED CYCLOSPORINE – NOT COMPOUNDED
- IF ABOVE FAILS
  - STEROID MAINTENANCE
  - APOQUEL – OFF LABEL?
  - ZENRELIA – OFF LABEL?

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QUESTIONS?

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