



**Transforming Lives**

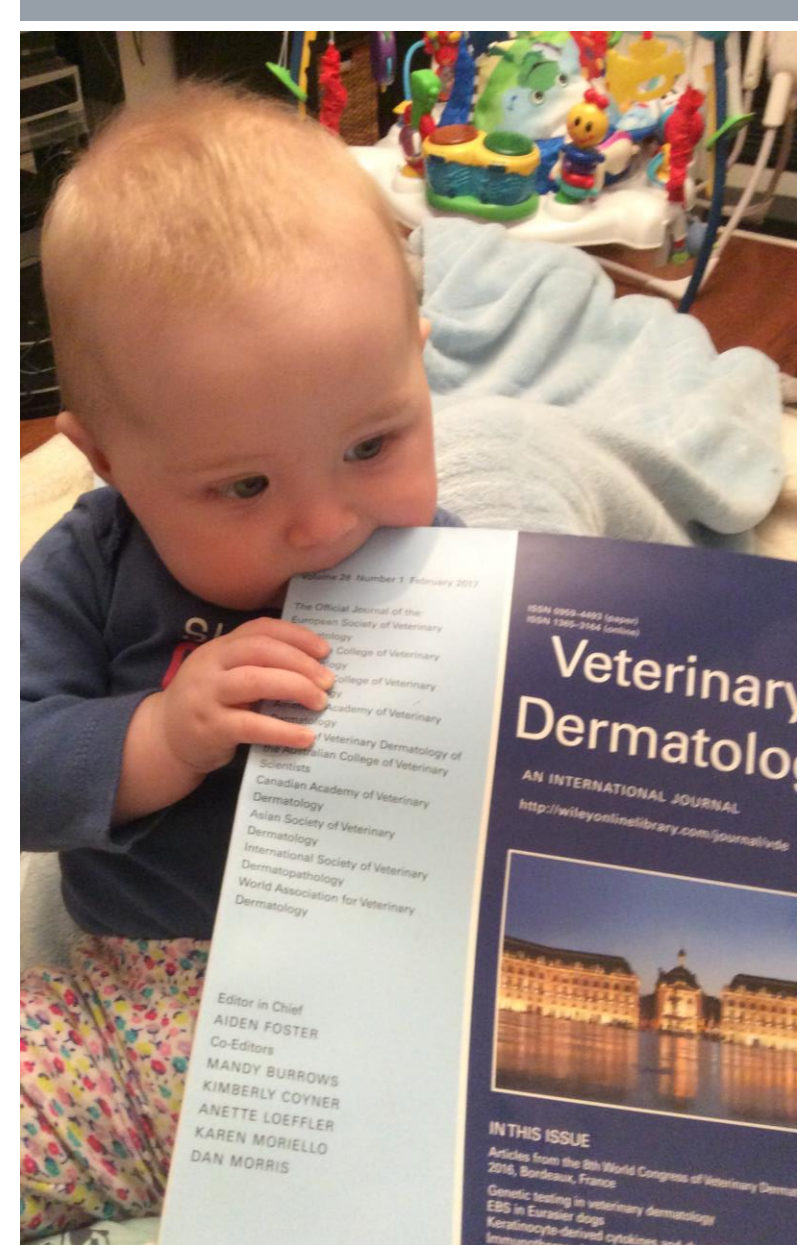
# DON'T LET ALLERGIES GET THE BEST OF YOU

CHARLIE PYE BSC, DVM, DVSC, DACVD  
ASSISTANT PROFESSOR DERMATOLOGY,  
ATLANTIC VETERINARY COLLEGE



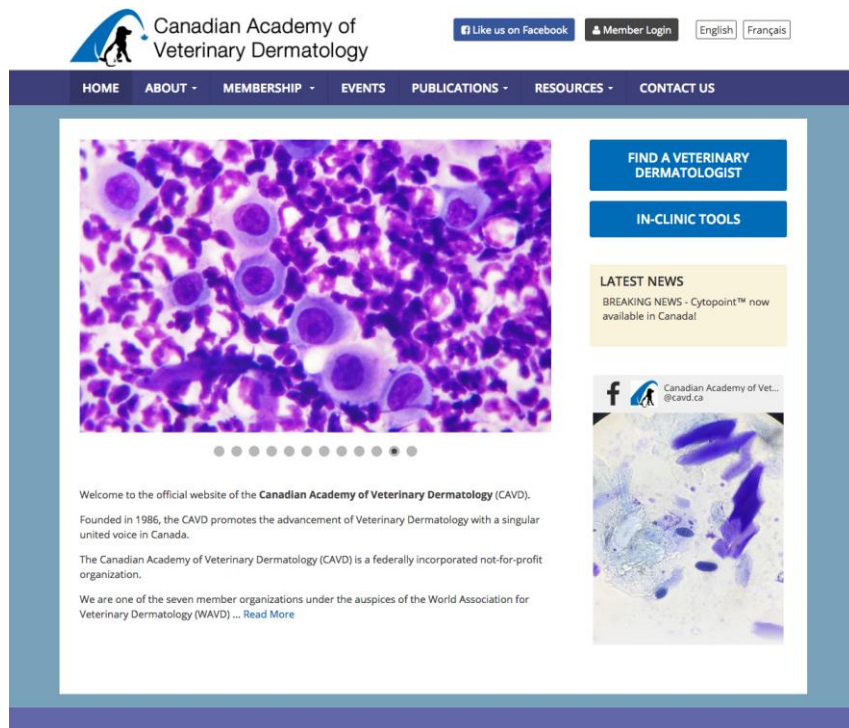
# OVERVIEW

- Allergies
- Cutaneous adverse food reaction
- Atopic Dermatitis
- Tips for practice






# CANADIAN ACADEMY OF VETERINARY DERMATOLOGY



Canadian Academy of  
Veterinary Dermatology

Académie Canadienne de  
Dermatologie Vétérinaire

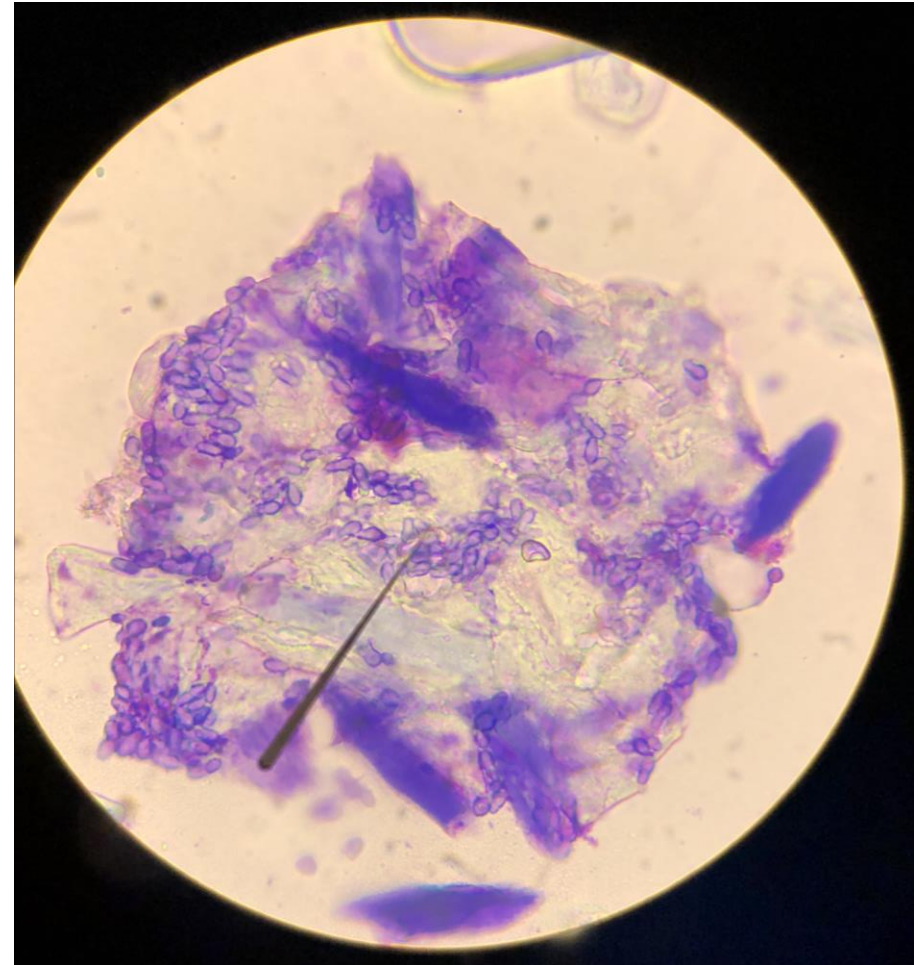
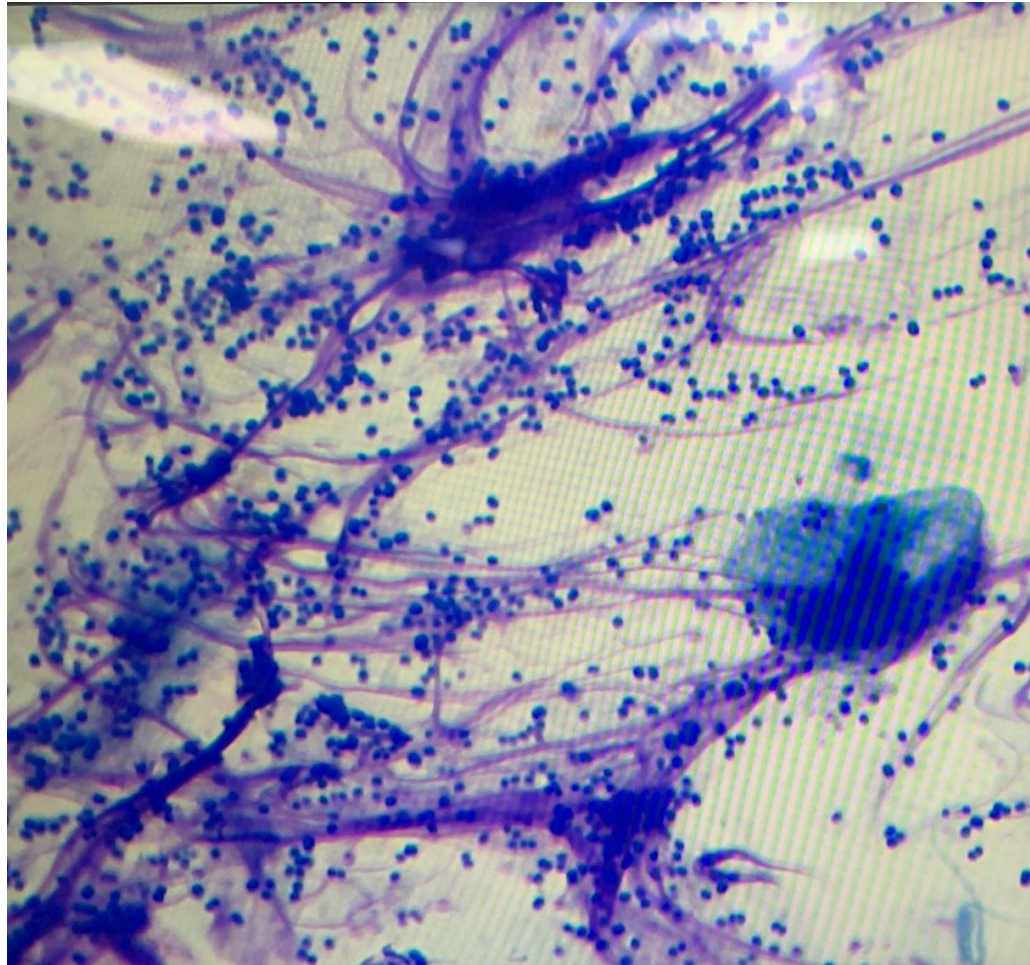
- Dedicated to advancing and disseminating knowledge and information about veterinary dermatology
- Keep up to date with developments in this field
  - Bulletin
  - E-newsletter
  - Dermatology CE
- In-clinic tools – topical products, resistance, allergies
- Join us at [www.cavd.ca](http://www.cavd.ca)
- Membership \$50/year, free for students
- Follow us on 

AND MAX IS BACK.....





# CYTOLOGY EVERYTHING



# YEAR ROUND PRURITIC PATIENT

ALLERGIC?  
RULE OUT CAFR FIRST



# 2023 AAHA Management of Allergic Skin Diseases in Dogs and Cats Guidelines

Julia Miller, DVM, DACVD,<sup>†</sup> Andrew Simpson, DVM, MS, DACVD,<sup>†</sup>  
Paul Bloom, DVM, DACVD, DABVP (Canine and Feline), Alison Diesel, DVM, DACVD,  
Amanda Friedeck, BS, LVT, VTS (Dermatology), Tara Paterson, DVM, MS, Michelle Wisecup, DVM,  
Chih-Ming Yu, DVM, MPH, ECFVG



Research article | [Open Access](#) | Published: 09 May 2019

## Critically appraised topic on adverse food reactions of companion animals (7): signalment and cutaneous manifestations of dogs and cats with adverse food reactions

[Thierry Olivry](#)  & [Ralf S. Mueller](#)

[BMC Veterinary Research](#) **15**, Article number: 140 (2019) | [Cite this article](#)

**2772** Accesses | **2** Citations | **4** Altmetric | [Metrics](#)

Research article | [Open Access](#) | Published: 30 August 2017

## Critically appraised topic on adverse food reactions of companion animals (4): can we diagnose adverse food reactions in dogs and cats with in vivo or in vitro tests?

[Ralf S. Mueller](#)  & [Thierry Olivry](#)

[BMC Veterinary Research](#) **13**, Article number: 275 (2017) | [Cite this article](#)

**4249** Accesses | **15** Citations | **11** Altmetric | [Metrics](#)

Research article | [Open Access](#) | Published: 12 January 2016

## Critically appraised topic on adverse food reactions of companion animals (2): common food allergen sources in dogs and cats

[Ralf S. Mueller](#), [Thierry Olivry](#)  & [Pascal Prélaud](#)

[BMC Veterinary Research](#) **12**, Article number: 9 (2016) | [Cite this article](#)

**15k** Accesses | **24** Citations | **81** Altmetric | [Metrics](#)

Research Article | [Open Access](#) | Published: 28 August 2015

## Critically appraised topic on adverse food reactions of companion animals (1): duration of elimination diets

[Thierry Olivry](#) , [Ralf S. Mueller](#) & [Pascal Prélaud](#)

[BMC Veterinary Research](#) **11**, Article number: 225 (2015) | [Cite this article](#)

**7120** Accesses | **23** Citations | **4** Altmetric | [Metrics](#)

# ADVERSE FOOD REACTION

Food allergy

Food intolerance

Intoxication

Hypersensitivity reaction  
(likely involving types I, III, and/or IV)

- Metabolic reaction
- Pharmacologic reaction
- Idiosyncratic reaction

- Bacterial toxins
- Fungal toxins
- Other toxins

# FOOD ALLERGY

- Trophallergen = heat-stable, water-soluble glycoprotein
- Major allergens = MW 10-60 kDa
  - 3 to 5 kDa
- 5-20% pruritic dogs & cats
- IgE-mediated – sensitization
  - T cells + antigen = TH2 resp., upreg of IL-4, IL-5, IL-13 & class switching to IgE
- Effector phase
  - Mast cells, basophils, eosinophils (Fc-ε receptors)
  - Bind food specific IgE → histamine



# TOP ALLERGENS



- Dogs
  - Beef (34%)
  - Dairy (17%)
  - Chicken (15%)
  - Wheat (13%)
  - Lamb (5%)
  - Soy, corn, egg, pork, fish, rice

## TOP ALLERGENS

- Cats
  - Beef (18%)
  - Fish (17%)
  - Chicken (5%)
  - Wheat, corn, dairy (4% each)
  - Lamb (3%)
  - Egg, barley, rabbit







## SIGNALMENT

- Any age and sex
- Cats
  - 9% before 6 months
  - 23% before 12 months
- Dogs
  - 22% before 6 months
  - 38% before 12 months



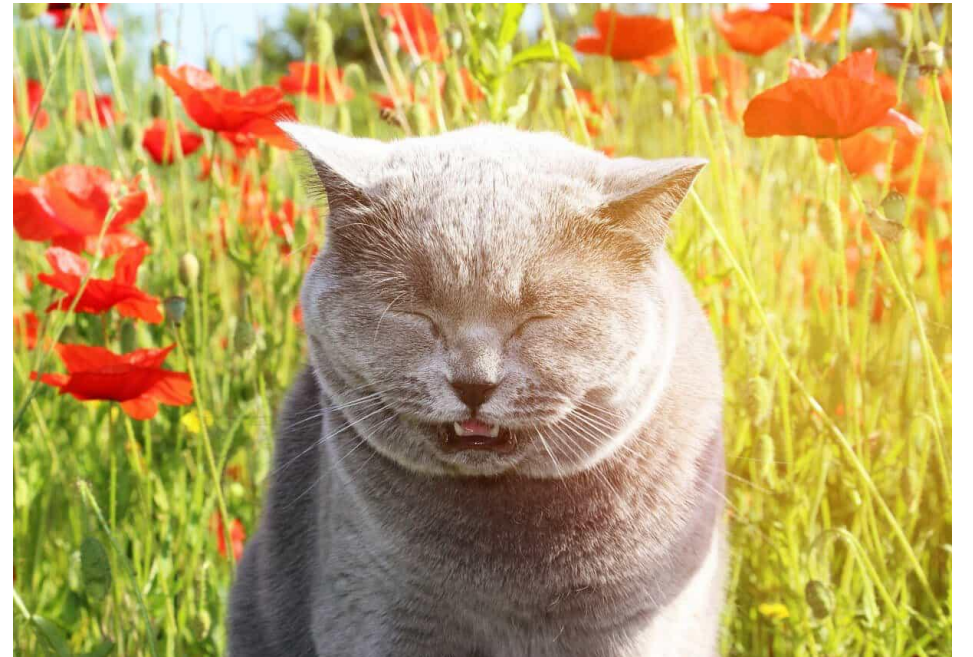
# CLINICAL SIGNS

- Pruritus
- **Indistinguishable from AD**
- Face/head: 53% cats
- Reaction patterns (cat)
- Urticaria



# NON CUTANEOUS SIGNS

- Gastrointestinal
  - Vomiting and diarrhea
  - Increased frequency of defecation
  - Anal gland
- Anaphylaxis
- Symmetric lupoid onychodystrophy
- Sneezing
- Conjunctivitis
- Hyperactivity
- Respiratory signs



## DIAGNOSING CAFR - HISTORY CLUES

**Consider AFR if <  
6-12 months**

**On offending food  
years before reaction  
(70%)**

**Pruritus less  
responsive to  
glucocorticoids,  
Year round  
pruritus**



# DIAGNOSING CAFR

- Saliva testing
  - Normal, food allergic, atopic, tap water
  - All showed positives
- Hair testing
  - All showed positives



# THE GOOD OLD “FOOD TRIAL”!



- **Elimination diet**
  - Novel protein or hydrolyzed diet
  - **Don't** use term hypoallergenic
- Avoid prior ingredients
  - Avoid top allergens/cross rxn
- **FEED DIET SOLELY** - no treats, scraps, flavoured medications, rawhides, flavoured toothpaste or **PILL POCKETS**



Canadian Academy of  
Veterinary Dermatology

Académie Canadienne de  
Dermatologie Vétérinaire

Updated December 2023

### Veterinary Diets for Food trials (Canine)

Manufacturer	Diet name	Main protein	Carbohydrate source	Formulated for growth	Calories per cup	Other indications for use/Added benefits	Kibble/canned	Treats
Hill's	Prescription Diet d/d Potato and Salmon	Salmon	Potato	No	360 kcal 369 kcal/can		Both	No
	Prescription Diet d/d Potato and Duck	Duck	Potato	No	371 kcal 356 kcal/can		Both	No
	Prescription Diet d/d Potato and Venison <b>**Canned food currently unavailable</b>	Venison	Potato	No	371 kcal 1091 kcal/can		Both	No
	Prescription Diet Derm Complete	Egg product	Brown rice, Brewer's rice	No	388 kcal 448 kcal/can	Atopic dermatitis	Both	No
	Prescription Diet z/d	Hydrolyzed chicken liver	Corn starch	No	317 kcal 349 kcal/can		Both	Hill's Prescription Diet Hypo-treats
Purina	Proplan Veterinary Diets HA Hydrolyzed (Vegetarian) Canine Formula	Hydrolyzed soy	Starch	No	311 kcal		Kibble	Yes (Purina Gentle Snackers)
	Proplan Veterinary Diets HA Hydrolyzed Chicken Flavour canine formula	Hydrolyzed soy and hydrolyzed chicken liver and chicken	Corn starch (kibble), pea starch (canned)	No - kibble Yes - canned	322 kcal 346 kcal/can	Pancreatitis, lymphangiectasia, protein-losing enteropathy, Exocrine pancreatic insufficiency, hyperlipidemia	Both	Yes (Purina Gentle Snackers)



WAIT A MINUTE DR  
PYE...YOU'RE SAYING  
FLUFFY CAN'T HAVE HER  
STEAK FOR HER  
BIRTHDAY??????



Jackson HA, Hammerberg B. The clinical and immunological reaction to a flavoured monthly oral heartworm prophylactic in 12 dogs with spontaneous food allergy. *Vet Dermatol.* 2002;13(4):211–229.

# MAKE SURE TREATS ARE IDENTICAL INGREDIENTS.....



- Toothpaste, flavoured medications, flavoured chews
- Monthly parasite preventatives - topical
- Not even Hypoallergenic pill pockets
- No fruits/vegetables – oral allergy syndrome

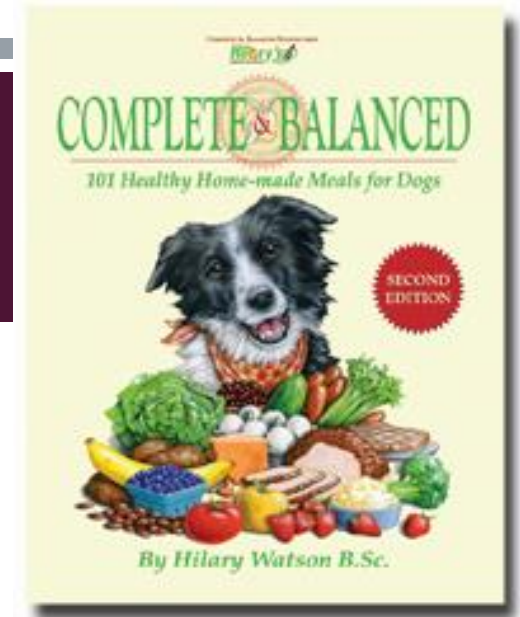


## DURATION

- 50% dec. pruritus 3 wk
- 85% after 5 wk
- 95% after 8 wk
- Cats: 90% after 8 wk

# HOME COOKING

- Gold standard
- Time consuming
- Novel protein and carbohydrate - E.g. pork and potato, rabbit, goat
- Balanced?
  - Hilary's Blend
  - Balance It
  - Veterinary Nutritionist







## NOVEL PROTEIN DIETS

- 64% food allergic dogs sensitive to > 2 food allergens
- Mean # food allergens in dogs = 2.4
- Potential cross reactions in humans:
  - Chicken/turkey X flight fowl - **alpha-livetin**
  - Venison has 20% homology with beef
  - Wheat, barley, rye – **Gluten/gliadins**
  - Wheat, rice, corn, barley -  **$\alpha$ -amylase inhibitors**
  - Fish - **$\beta$ -parvalbumin**
- In my opinion - the most novel is best!

## VETERINARY PARTIALLY “HYDROLYZED” DIETS

- Hill's Z/D
  - Hydrolyzed chicken
  - Low fat: Hydrolyzed soy
- Purina HA
  - Hydrolyzed soy (vegetarian)
  - Hydrolyzed soy and chicken
  - Hydrolyzed soy and salmon
- Royal Canin Hypoallergenic HP
  - Hydrolyzed soy
- Allergenic proteins  $> 10$  kDa; Reducing protein size to  $< 6$  kDa
- Peptides as small as 3 to 5 kd can be allergenic

# HYDROLYZED DIETS

- 20% - 50% ingesting partial hydrolysates = worsening
  - Peptides 3–5 kDa
  - Peptides 0.5 kDa could activate lymphocytes in non-IgE-mediated CAFR
- Conclusions
  - Use in dogs not hypersensitive to components
  - Use in pets with cutaneous AND GI signs or unknown diet history



# EXTENSIVELY HYDROLYZED DIETS

- Purina Elemental
- An-allergenic: >95% peptides below 1 kDa
  - 88% single aa
- Poultry feathers
- 10 dogs
  - Randomized, double blinded, crossover trial
  - No pruritus with chicken induced CAFR
  - Chicken liver hydrolyzed diet caused moderate flare in 40%

# HILL'S DERM COMPLETE

- CAFR & atopic dermatitis
- Egg protein
- Food allergy study (21 days)
  - 57 dogs
  - 21 day baseline, 21 day test food
- Continued control
- No sig diff in scratching, shaking and sleep quality



# ARE OTC LIMITED INGREDIENT DIETS OK?

- 4 OTC 'made with no soy' + 8 VET RX
- 3/4 OTC 'no soy' diets - all positive (2 diets >25 ppm)
- Vet diets
  - 4/8 VET diets - <2.5ppm
  - 2/8 hydrolyzed soy diets were positive (>2.5 ppm)
  - 1/8 VET diet contained >25 ppm soy but soybean oil listed
  - 1/8 VET diets contained 4.6 ppm with no soy



# Veterinary Professionals - Atopic Dermatitis and Adverse Food Reactions

## Resources

[Critically Appraised Topics on Adverse Food Reactions](#)

[Veterinary Elimination Diets Available in Canada - Dogs](#) 🔒

[Veterinary Elimination Diets Available in Canada - Cats](#) 🔒

[Treatment of canine atopic dermatitis: 2015 updated guidelines \(ICADA\)](#)

## Handouts

[Dog and Cat Itch Scale](#)

[Allergy Assessment Calendar + Printable Blank Calendar Pages](#)

[CAVD Allergy Handout: a resource for dog and cat owners](#) 🔒

[Canine Ear Anatomy Illustration](#) 🔒

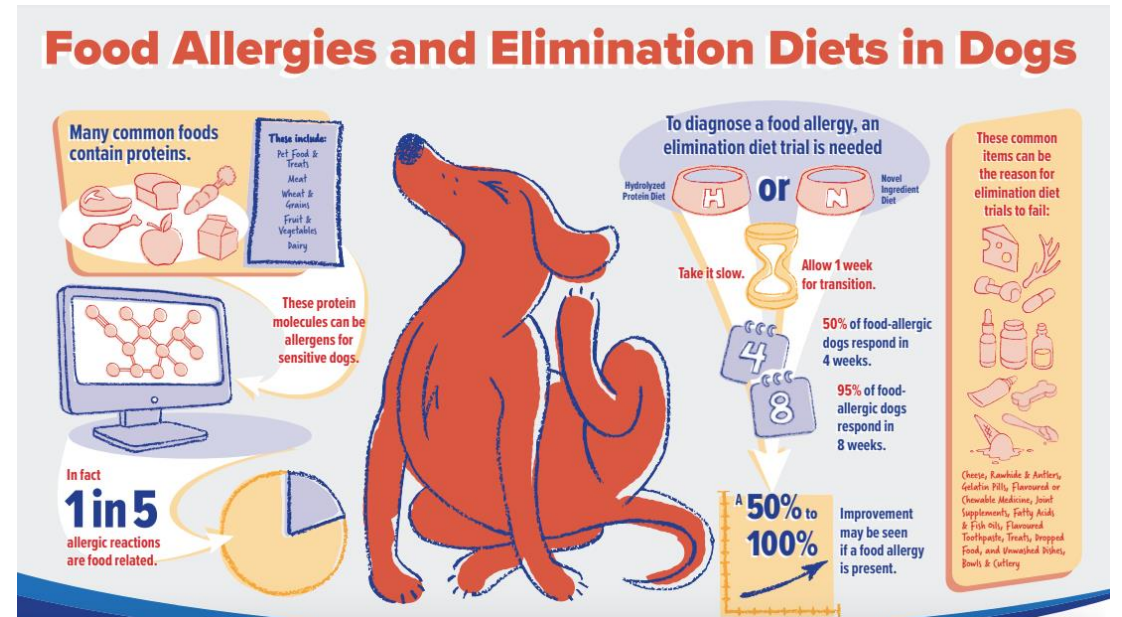
[CAVD Illustrated Diet Trial Handout for Dogs](#) 🔒

[CAVD Illustrated Diet Trial Handout for Cats](#) 🔒

[Elimination Diet Trial Handout for Dogs - Original](#) 🔒

[Elimination Diet Trial Handout for Cats - Original](#) 🔒

[How can we help your pet, Canine atopic dermatitis](#) 🔒



## DURING DIET TRIAL....



- Things should get better NOT worse!!
- Tell your owners to watch for:
  - Increased pruritus
  - Increased flatulence
  - Soft stools
  - Vomiting
- Maybe reacting to component of food



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## MEDICATION USE DURING A DIET TRIAL

- Taper off weeks 4-6
  - Example: Oral glucocorticoids daily for 2 weeks, EOD for 2 weeks, ETD for 2 weeks
- Treat concurrent infection



# DIETARY RESTRICTION-PROVOCATION TRIAL

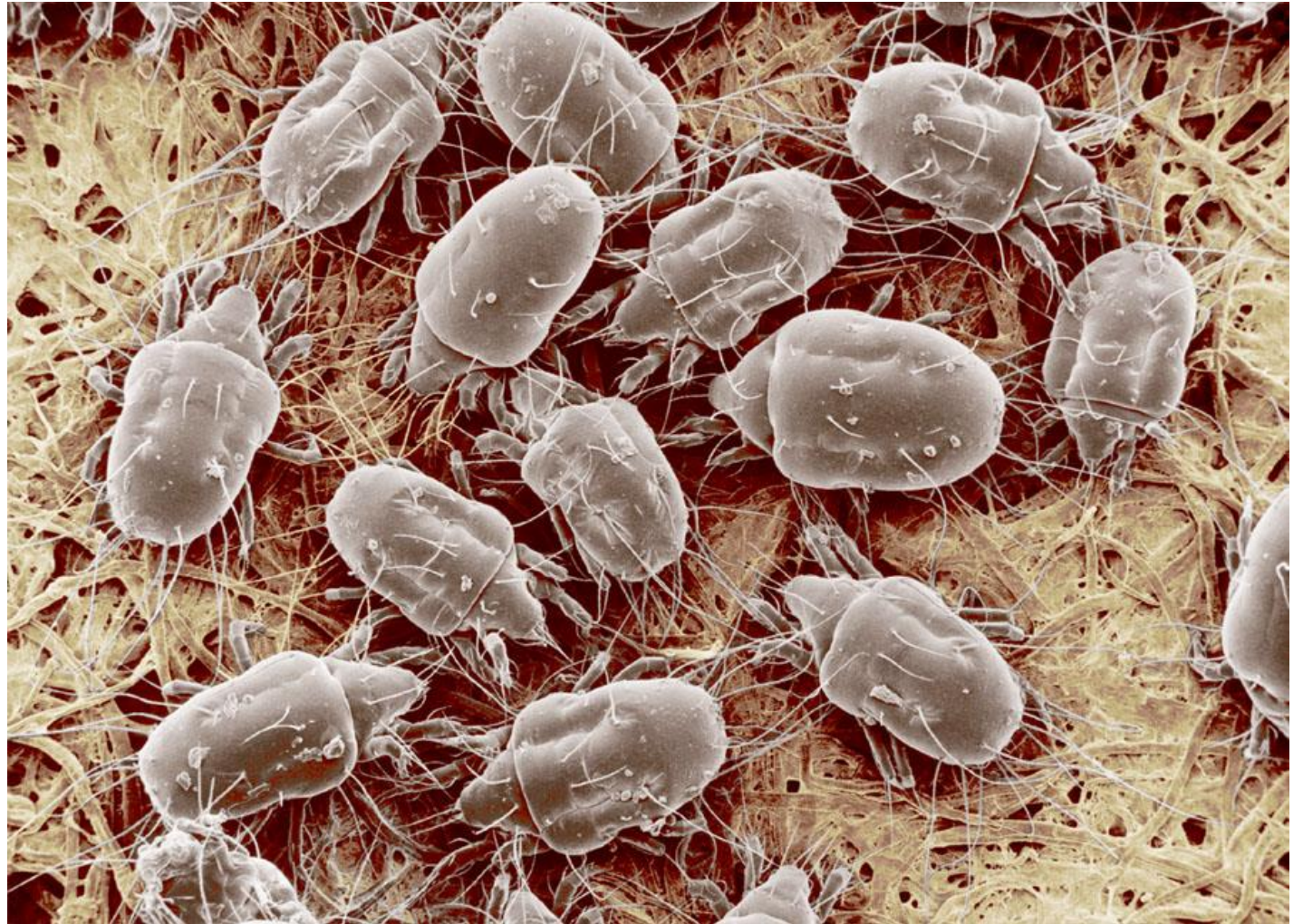


- Reintroduce previous food
  - Pruritus within 14 days
  - Does not identify exact allergen
- Consider dietary challenges
  - 1 ingredient for 14 days
  - New diet, specific treat, vegetable etc
  - Return of pruritus - cannot feed
  - No return of pruritus - continue to feed

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## STORAGE MITES

- Stored food (low amounts)
- Flare with new diet
- Keep food indoors in low humidity
- Store food in airtight container



## TIPS FOR A SUCCESSFUL FOOD TRIAL!

- Trial as diagnostic test
  - **Not for ever**
  - Ability to change longer term
- Be COMPLETELY RESTRICTED
  - Ingredient list
  - Bake canned food
  - Vegan marshmallows
  - Vanilla mint toothpaste

## TIPS FOR A SUCCESSFUL FOOD TRIAL!

- Challenges: family members, toddlers, multi animal households
- New bowl, clean bowl, scoop for food, clean food storage bin
- **Always rule out prior to allergy testing/therapy for AD**



## WHEN TO REFER

- Anytime!!!!!!
- Young patient – yrs of therapy
- ACVD survey
  - 82% referred earlier
  - 73% reached “tipping point”
    - 3 visits OR \$925
  - 15% stopped seeing rDVM
  - Derm addressed issue 3.8 visits at overall lower cost

## WHEN THE DIET TRIAL FAILS

- Consider atopic dermatitis (**diagnosis of exclusion**)
- Genetics
- Environment
- 4 routes – **Percutaneous**, inhalation, ingestion, conjunctival
- **Most 6 months-3 yrs of age (dog)**
  - 78% during this time
  - 53.3% Frenchies, 66.7% Shar-Peis during 1st year
  - **Cats 4-5 yrs**
- Management vs cure = **Lifelong**







# DIAGNOSIS OF AD

- **Diagnosis of exclusion**
- Favrot's criteria
  - Combination of any 5/8 criteria:
    - 1. Onset of clinical signs under 3 years of age
    - 2. Dog living mostly indoors
    - 3. Glucocorticoid-responsive pruritus
    - 4. Alesional pruritus at onset
    - 5. Affected front feet
    - 6. Affected ear pinnae
    - 7. Non-affected ear margins
    - 8. Non-affected dorso-lumbar area

If only used these criteria  
would miss 1/5 atopic dogs

5/8



## MULTI MODAL TREATMENT

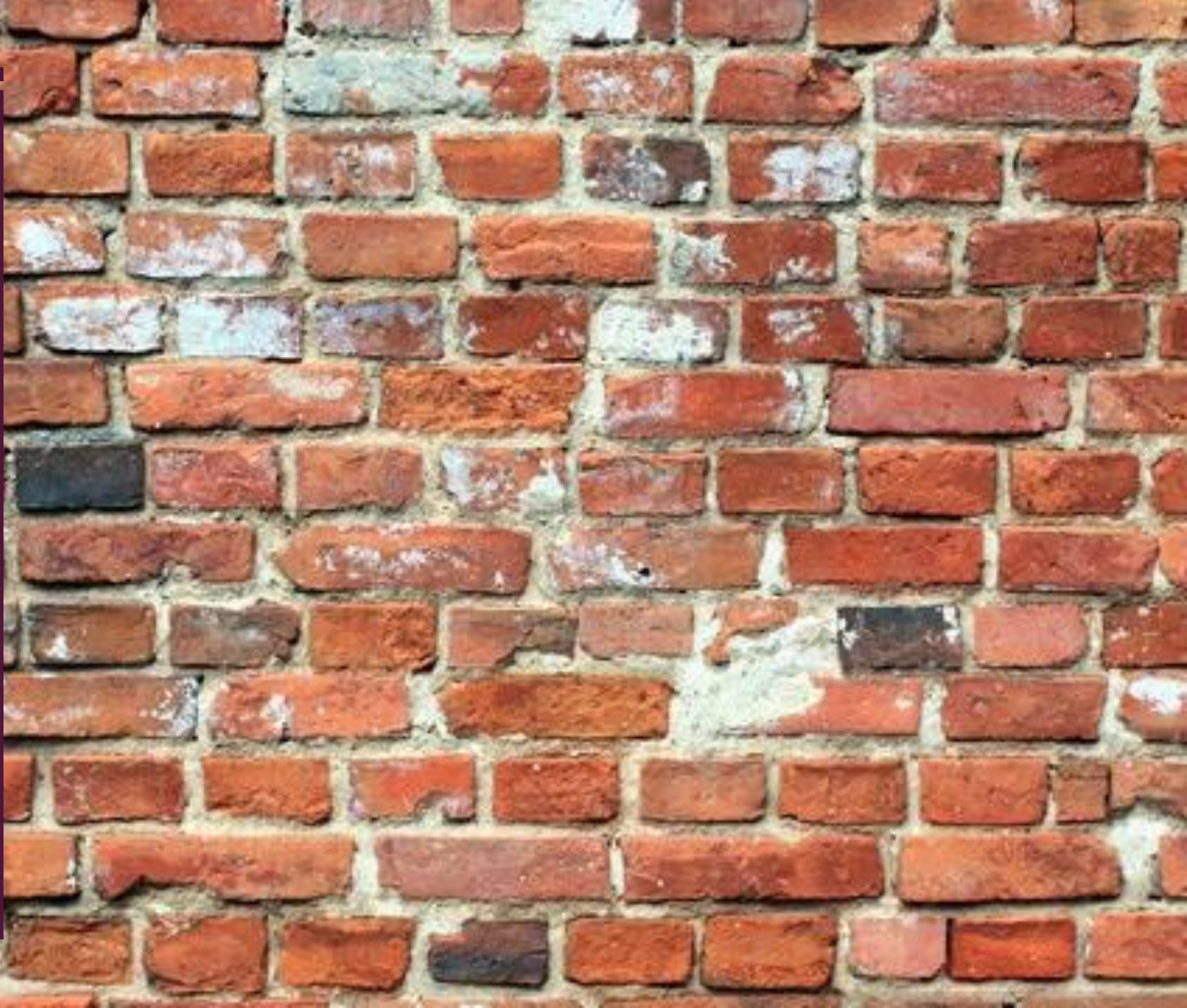
- Degree of inflammation
- Barrier repair
- Change approach
- Care giver burden





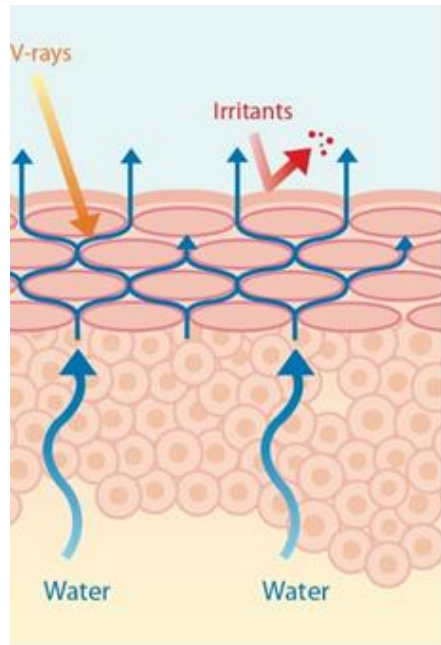
# ATOPIC DERMATITIS

- Inside-out theory
  - IgE mediated (type I)
  - Cell-mediated (type IV)
- Outside-in theory
  - Decreased ceramides
  - Filaggrin mutations
  - “Crumbly brick wall”
- Combination

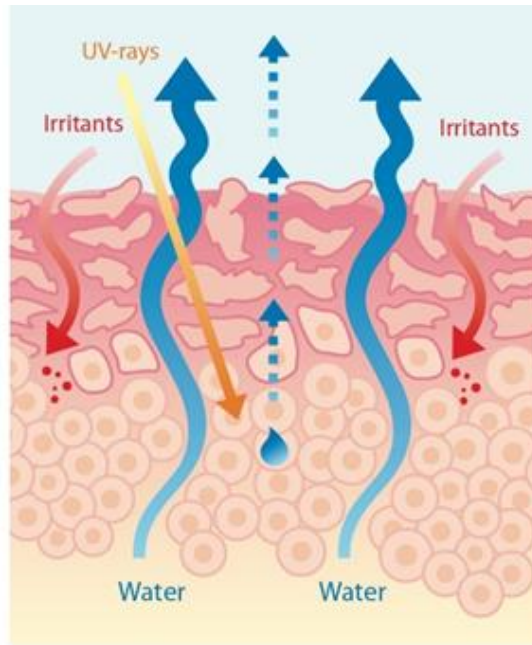




# RESTORATION OF BARRIER FXN



Normal skin barrier, balanced TEWL



Damaged skin barrier, disbalanced TEWL

- Disrupted in AD
  - Thinner stratum corneum
  - Decreased ceramides
- Easier than bathing
- Wide safety margins
- Time!

Brand	Allerderm	Douxo Seborrhea	Essential 6
Active ingredient	Skin Lipid Complex (SLC) (ceramides, free fatty acids and cholesterol)	Ophytrium	Essential fatty acids Essential oils
Manufacturer	Virbac	CEVA	Ldca (Aventix)
Loading phase	Once a week for 4 weeks 2-3x/week if severe	Once a week for 3-4 weeks	Once a week for 8 weeks
Maintenance phase	1 monthly application	1 application q 2 weeks	1 application q 2 weeks

# TOPICAL LIPID FORMULATIONS



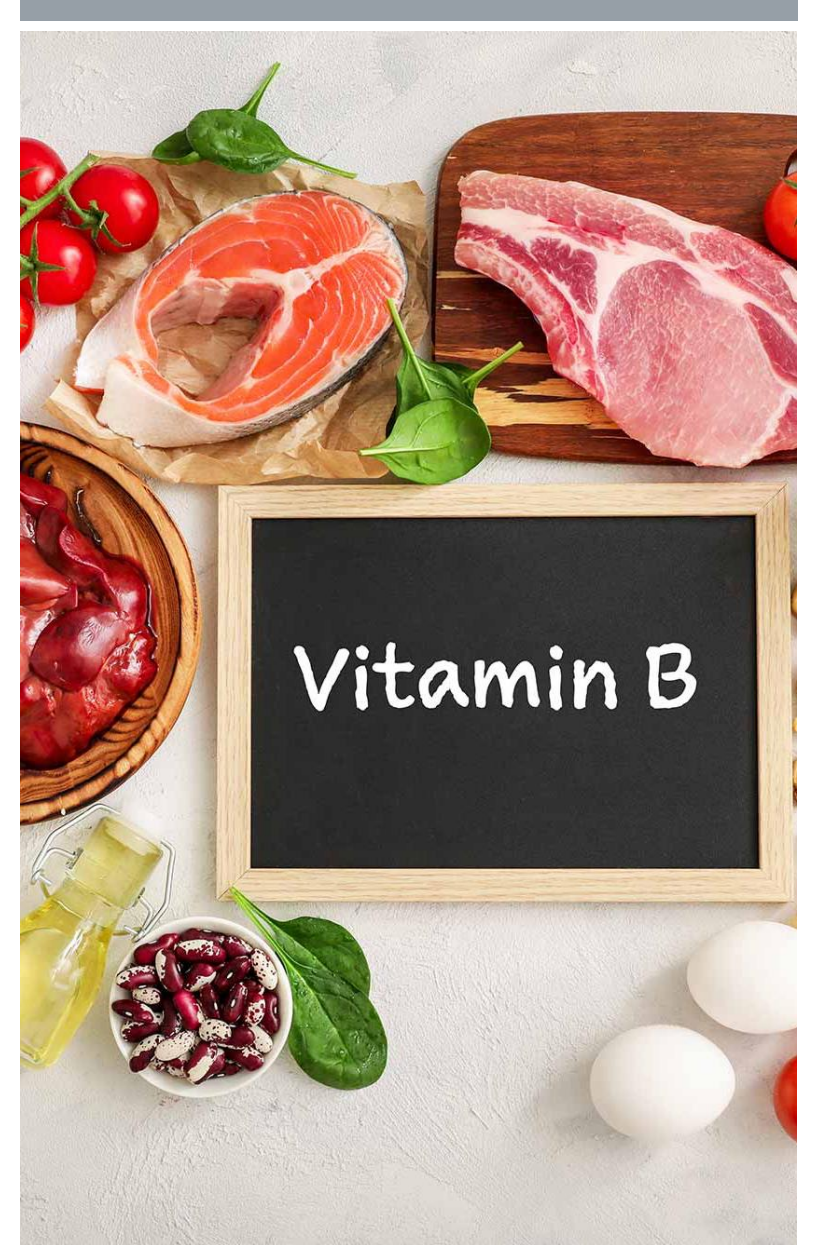
# NUTRITIONAL MANAGEMENT

- Hill's Derm Complete®
  - Polyphenols
    - Inhibit lymphocytes
    - Inhibit mast cell release
  - Omega fatty acids
  - Egg
    - Egg vs. prednisone
    - Exposed to allergen via intradermal skin testing
    - Similar reduction in acute & delayed cell-mediated immune response



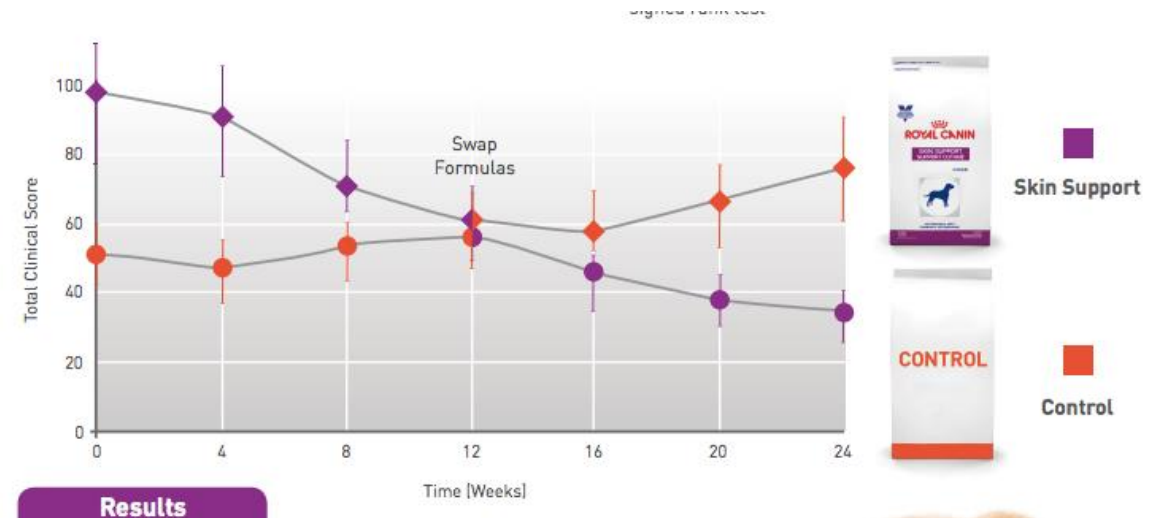
## DERM COMPLETE ®

- Minerals for skin health (e.g. zinc)
  - Vitamin A - wound healing, hair regrowth, keratinization
  - Vitamins E and C - antioxidants
  - B vitamins - cell renewal, collagen maintenance
  - Vitamin E
    - Decreased CADESI scores



# ROYAL CANIN SKIN SUPPORT®

- EPA/DHA – healthy skin and coat
  - Reduce inflammation
- Antioxidants
- B vitamins and amino acids
  - Reduce TEWL
- Curcumin, aloe vera, vitamin C and taurine
  - Help wound healing
  - Decrease secondary infections
  - Decrease pruritus

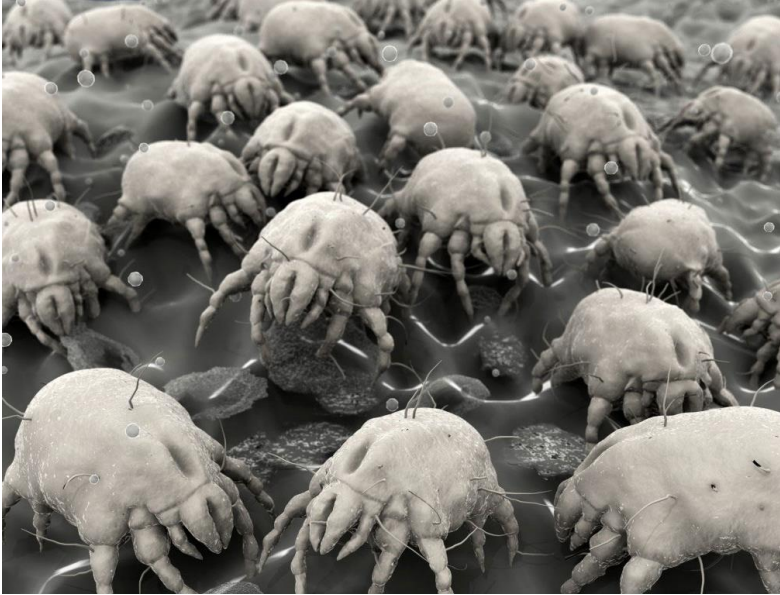


# TOPICAL THERAPY



- Weekly bathing
  - Maintenance
- Infection control
- Lukewarm water
- Contact time
- No dryer



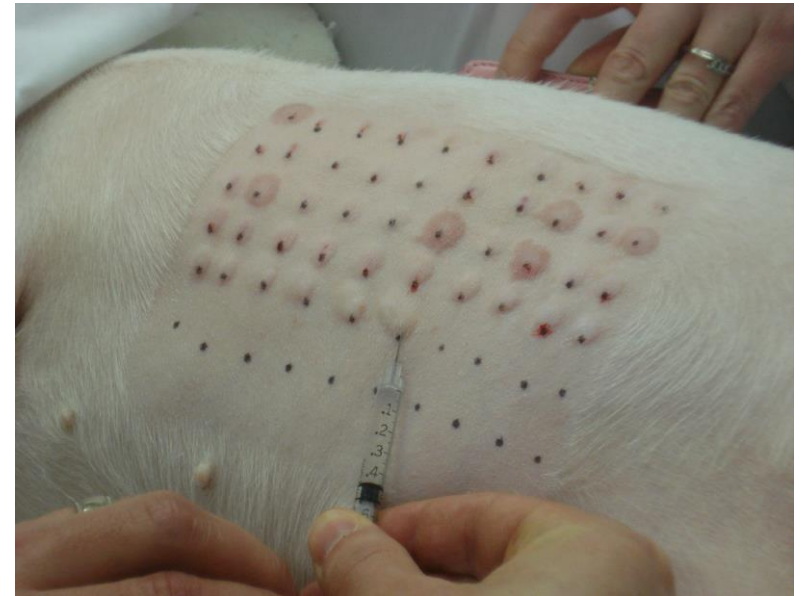


## ENVIRONMENTAL ALLERGY TESTS

- **NOT to diagnose**
  - False positives
- Negative test results do not rule out
- To identify allergies for ASIT
  - Interpret - history, seasonality and exposure

# ALLERGY TESTING

- Intradermal test (skin test, IDT)
  - Best after peak season
  - Drug withdrawal
- Serum test
  - Prior to allergy season
  - Laboratory limitations
- Cross reaction between mites
  - **Rule out parasites prior to testing**



# SERUM ALLERGY TESTING

- RAST or ELISA
  - VARL, Idexx, Greer, Spectrum
- Frequency of positive result
  - 1. Heat-inactivated fetal bovine serum
  - 2. Purified canine albumin in saline
  - 3. Pooled serum from specific pathogen free dogs
  - Triplicate to four laboratories
  - 11.1%, 1.4%, 29.1%, 3.3% false positives
- **IMPORTANT to review WITH history of patient**
- Take a part in serum formulation



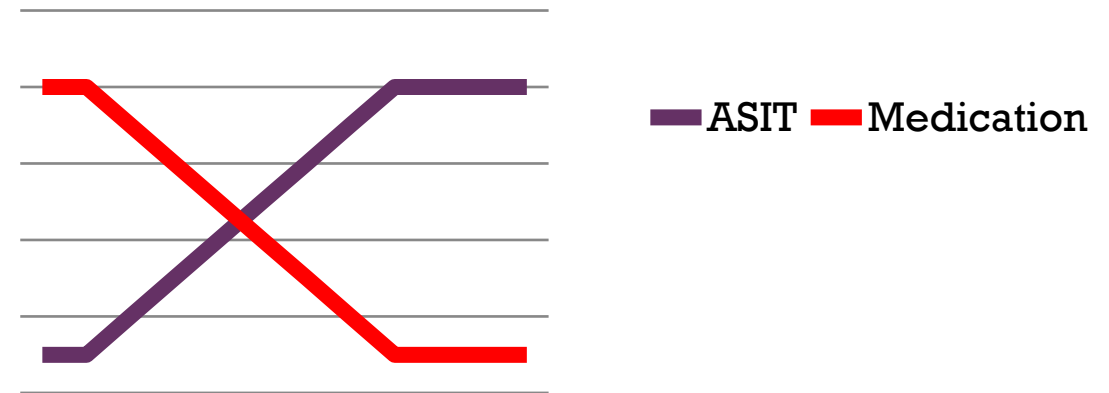
## ALLERGEN SPECIFIC IMMUNOTHERAPY

- SQ vs oral
- Gradually increasing quantities of allergen extract
  - Increase in IgG
  - Increase Treg cells and IL-10 and decrease in IgE
- Minimal adverse effects
- Efficacy 50-100%
- Adverse reactions rare
  - Pruritus/swelling after injection
  - Systemic reactions (< 1%)
  - Diarrhea, vomiting, urticaria, anaphylaxis



# ALLERGEN SPECIFIC IMMUNOTHERAPY

- Subcutaneous injection
- Induction phase - q 2 days to q 7 days
  - Gradually increasing conc.
- Maintenance phase - q 7-28 days
- Oral immunotherapy - daily
- 6-12 months to effect
- No loss of efficacy when receiving EOD pred during induction
- Synergistic effect between ASIT and cyclosporine



# ANTI-PRURITIC MEDICATIONS

	Oclacitinib	Lokivetmab
<b>Onset</b>	Within hour(s)	Hours to days
<b>Action</b>	Jak-I inhibitor	Monoclonal antibody
<b>Dosing</b>	Daily	Q 4-8 weeks
<b>Contraindications</b>	Neoplasia, systemic infections, immunosuppression, demodicosis, interdigital cysts?	None listed
<b>Age</b>	1+ years	Any
<b>Species</b>	Labelled for dogs	DOGS ONLY
<b>Side effects</b>	Vomiting, diarrhea, lethargy, skin/ear infections, cutaneous masses, demodicosis	

# ANTI-INFLAMMATORY MEDICATIONS

	Glucocorticoids	Cyclosporine
<b>Onset</b>	Within hour(s)	4-8 weeks
<b>Action</b>	Many actions	Calcineurin inhibitor
<b>Dosing</b>	Daily -> tapered	Daily -> q48-72 hrs
<b>Contraindications</b>	Cardiac disease, hepatic disease, renal disease, diabetes, hyperadrenocorticism, systemic infection	Neoplasia, diabetes
<b>Age</b>	Any?	6+ months
<b>Species</b>	Dogs/cats	Dogs/cats
<b>Side effects</b>	PU/PD, polyphagia, thin skin, calcinosis cutis, renal disease, hepatic disease, development of diabetes, iatrogenic cushings	Vomiting, diarrhea, anorexia, gingival hyperplasia, hirsutism



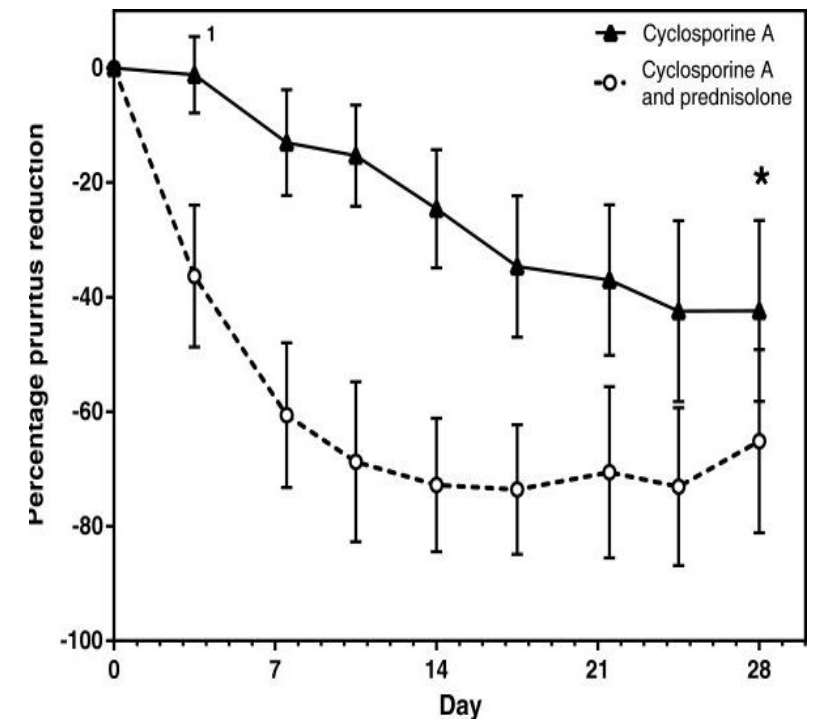
## GLUCOCORTICOIDS

- Can use in bursts of 3-7 days
  - No tapering required
- How much steroid is too much?
  - Candace Sousa, Dip ACVD
  - Body weight in Kg x 30 = amount of steroid per year
  - Prednisone/prednisolone
  - E.g. 10 kg dog =  $10 \times 30 = 300$  mg
  - If receiving 5mg per day = 60 days = 2 months over a year



# ATOPICA™ AND PRED – CONCURRENT USE STUDY

- Cyclosporine 5 mg/kg +/- prednisolone
  - 1 mg/kg q24 hrs x 7d then EOD x 14 d
- Day 28: Both groups significant improvement
- Both: reduced pruritus by day 3–4, 72.8%
- Cyclosporine: reduced pruritus by day 7–8, 24.7%



# DEGREE OF INFLAMMATION







# PRURITIC

- Itchy
- No major ear disease
- No chronic skin changes
- No chronic infections
- Doesn't help = change approach



# CORTAVANCE™ TOPICAL THERAPY

- 0.0584mg/ml Hydrocortisone aceponate
- Atopic dogs, 84 days
  - > 50% reduction in pruritus
- 1 spray covers area 10 x 10 cm
- At labelled dose, no systemic side effects (7 days)
  - No adrenal suppression
- Twice labelled duration → no bloodwork changes
- Skin thinning? 5 x dose x 14 days, not noted



## WHAT APPROACH DO I USE?

- Short “season”: oclacitinib, lokivetmab, glucocorticoids, cyclosporine, nutritional management, topical
- Year round pruritus: ASIT, oclacitinib, lokivetmab, cyclosporine, nutritional management, topical therapy
- Acute flare ups of pruritus: oclacitinib, lokivetmab, glucocorticoids, topical therapy
- Preventative therapy -> Treat atopy BEFORE it becomes a forest fire
  - Start medications at MAINTENANCE dose, longer term nutritional modifications
  - Start 1 month PRIOR to start of season
  - Barrier repair

THANK YOU





## WINSTON, 3 YR OLD, MN, PUG

- AVC Derm 1.5 yrs prior
  - Diagnosed with AD
- Apoquel for 9 months
  - More pruritic
  - More lesions
  - Non-responsive to antibiotics
  - Non-responsive to food change



## WINSTON, 3 YR OLD, MN, PUG

- Lethargy
- No GI
- Other dog in house unaffected
- Fish based grain inclusive diet + treats
- Receives selamectin monthly
- No PU/PD
- No known health issues



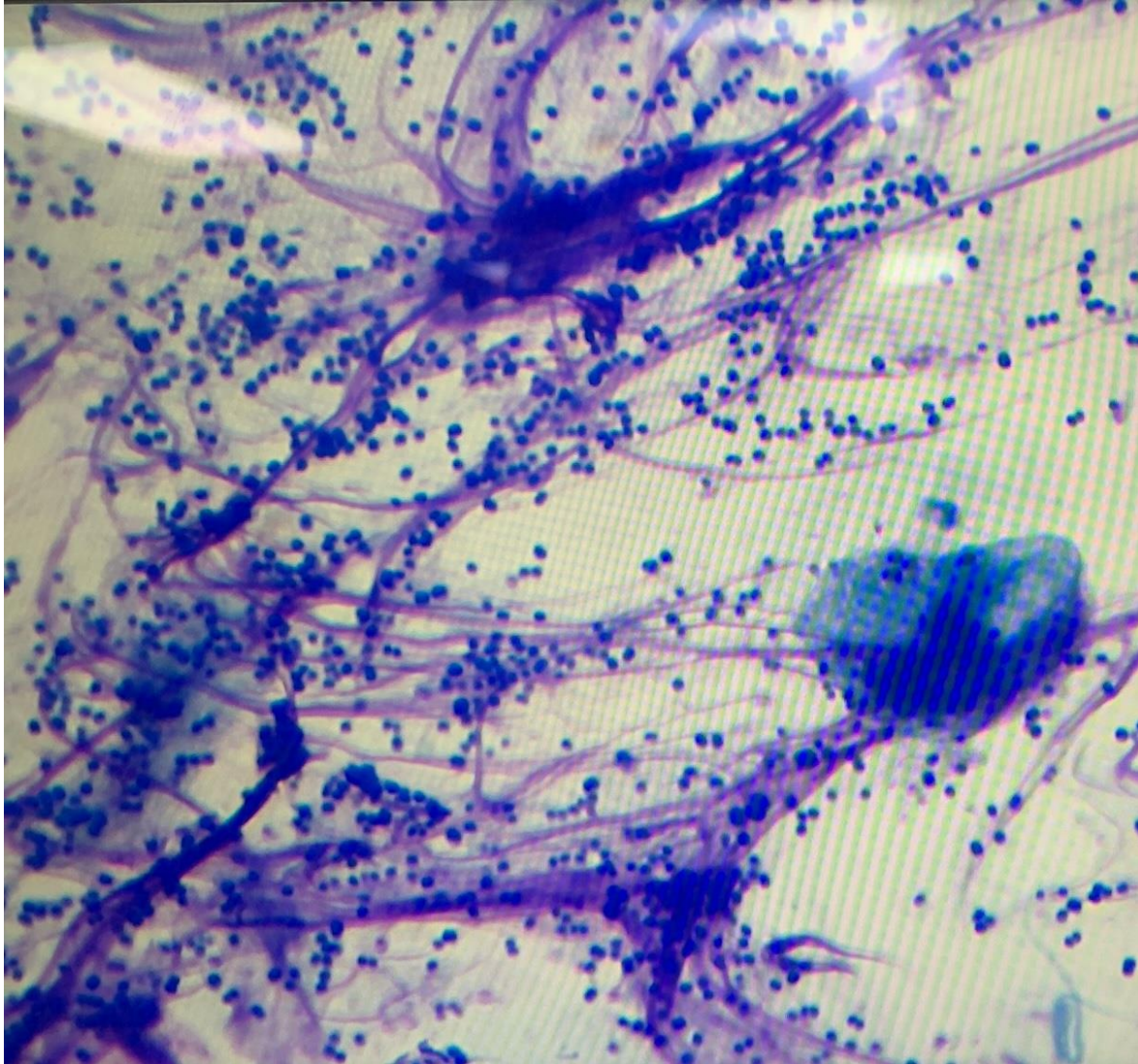
# DIFFERENTIALS

- What could this be?
- Allergy flare
- Cutaneous adverse food reaction
- Infection
- Parasite
- Cutaneous T Cell lymphoma
- Endocrine disease
- Dermatophytosis
- Immune mediated disease

## WHAT NOW?

- Minimum database
- Cytology + Skin scraping + Wood's lamp







# HOW TO TREAT

## Clinical Microbiology

### General Comments:

AEROBIC BACT. SWAB x 2 on 07-Jun-18  
FINAL REPORT 2018-JUN-08

Isolates \* prefixes an isolate that has sensitivity results

Specimen	Organism
* SKIN SWAB FACE	LIGHT GROWTH MRSP Fusidic acid sensitive. positive for methicillin-resistant staph. pseudintermedius (mrsp) by pbp2* latex agglutination.

Skin swab FACE (panel: Companion Gram Positive)      Organism: MRSP

#### Sensitive

AMIKACIN  
CHLORAMPHENICOL  $\leq 8$   
ENROFLOXACIN  $\leq 0.25$   
MARBOFLOXACIN  $\leq 1$   
PRADOXACIN  $\leq 0.25$   
RIFAMPIN  $\leq 1$

#### Intermediate

#### Resistant

AMOX/CLAV.ACID  $\leq 0.25$   
AMPICILLIN 4  
CEFAZOLIN  $\leq 2$   
CEFOVECIN 2  
CEFPODOXIME  $\leq 2$   
CEPHALOTHIN  $\leq 2$   
CLINDAMYCIN  $> 4$   
DOXYCYCLINE  $> 0.5$   
ERYTHROMYCIN  $> 4$   
GENTAMICIN 16  
MINOCYCLINE  $> 2$   
PENICILLIN  $> 8$   
TETRACYCLINE  $> 1$   
TRIMETH/SULFA  $> 4$

## WHY DEMODICOSIS??

- No immunosuppressive medication
- Endocrine?
- Neoplasia?
- Allergic skin disease?

Bloodwork unremarkable  
+  
History of allergic skin disease

# TREATMENT PLAN

- Isoxazoline
  - Until 2 negative scrapings 4 weeks apart
- Topical antimicrobial treatment
  - 4 weeks then REPEAT cytology
- Start cyclosporine

## LIVING HIS BEST LIFE

