



Yeasty beasties
Malassezia dermatitis
diagnostic & therapeutic update

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GBVA

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The Black and White Westie

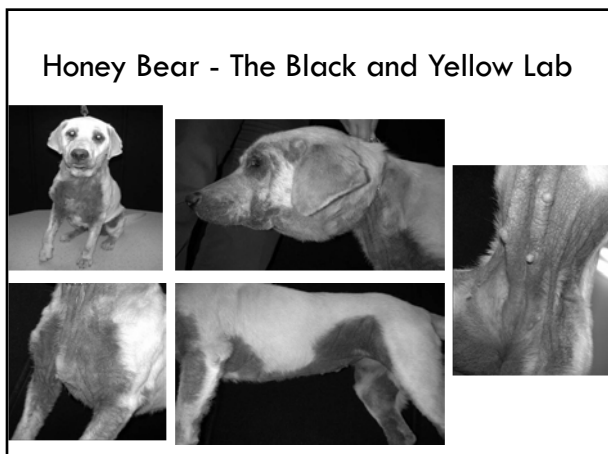


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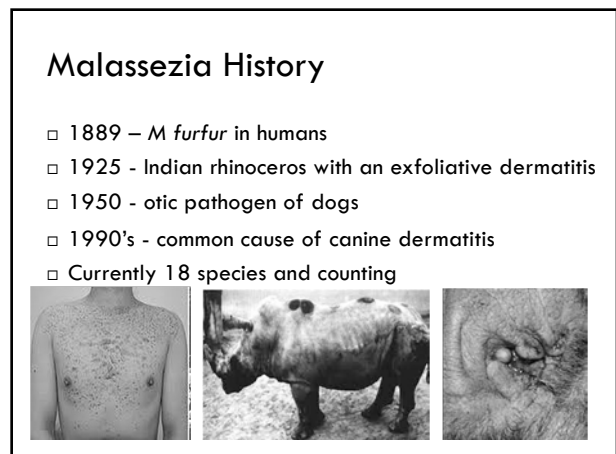
Honey Bear - The Black and Yellow Lab



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Malassezia History

- 1889 – *M furfur* in humans
- 1925 - Indian rhinoceros with an exfoliative dermatitis
- 1950 - otic pathogen of dogs
- 1990's - common cause of canine dermatitis
- Currently 18 species and counting



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Malassezia species	Synonyms	Presence on healthy skin	Presence in lesions
<i>M. furfur</i>	<i>Pityrosporum ovale</i>	In humans Sometimes in animals	In humans (PV, FG)
<i>M. pachydermatis</i>	<i>P. pachydermatis</i> , <i>P. canis</i>	In dogs, cats, many others (mostly canidae) Sometimes in humans (dog contact)	In dogs, cats, others (SD, OT) Sometimes in humans (FG)
<i>M. sympodialis</i>	<i>M. furfur</i> serovar A	In humans and animals	In humans (AD, SD) Sometimes in cats (OT)
<i>M. globosa</i>	<i>P. orbicularis</i> <i>M. furfur</i> serovar B	In humans and animals	In humans (PV, SD, AD) Sometimes in cats (OT)
<i>M. obtusa</i>		In humans	In humans
<i>M. slooffiae</i>		In pigs, cats (claws) In humans	In humans (SD)
<i>M. restricta</i>	<i>M. furfur</i> serovar C	In humans	In humans (SD)
<i>M. dermatitis</i>		In humans	In humans (AD)
<i>M. japonica</i>		In humans	In humans (AD, SD)
<i>M. nana</i>		In cats, horses	In cats, cattle (OT)
<i>M. yamatoensis</i>		In humans	In humans (SD)
<i>M. caprae</i>		In goats	—
<i>M. equina</i>	<i>M. equi</i>	In horses	In horses
<i>M. curiculi</i>		In rabbits	—
<i>M. arunalokai</i>		In humans	In humans
<i>M. brasiliensis</i>		In parrots	—
<i>M. psittaci</i>		In parrots	—
<i>M. vespertilionis</i>		In hibernating bats	—

—, not reported; PV, pityriasis versicolor; FG, fungemia; AD, atopic dermatitis; SD, seborrheic dermatitis; OT, otitis.

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Malassezia pachydermatis

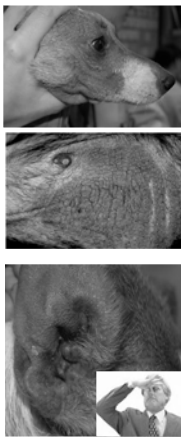
- Lipophilic, Lipid-dependent yeast
- 97% *M. pachydermatis* in allergic dogs
- Commensal organism
 - Dogs (*M. globosa* and *M. restricta*)
 - Cats (*M. restricta*, *M. globosa* >> *M. sympodialis*, *M. furfur*, *M. nana* (especially in ears), and *M. slooffiae* (especially claw folds), *M. pachydermatis*, *M. japonica*, *M. obtusa*, *M. dermatitis*, and *M. yamatoensis*)
 - Symbiotic relationship with commensal staphylococci



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Malassezia in dogs


- Moderate to INTENSE PRURITUS
 - Erythema of chin / perioral skin - lower lip fold
 - Frenzied facial pruritus in dogs
 - Misdiagnosed as neurological disease
 - Steroid/Apoquel/Cytopoint **NON**-responsive
- Malodorous seborrheic dermatitis
- Lichenification and hyperpigmentation
- Reddish brown stain of claws
- Paronychia, pododermatitis
- Otitis externa with inflammation extending onto the pinnae



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Malassezia in Cats

- Devon rex and Sphynx cats
 - especially *M. globosa* and *M. restricta*
- Pruritus, erythema, self-excoriation
 - Less commonly lichenification
- Feline chin acne
- Allergies & Otitis Externa
 - *M. pachydermatis* and *M. sympodialis*
- Idiopathic facial dermatitis
 - Persian/Himalayan
- Paraneoplastic alopecias
 - Pancreatic adenocarcinoma
 - Thymoma Exfoliative dermatitis



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Dog with yeast on its back.

Not all of them Are this obvious!

Don't forget to do cytology

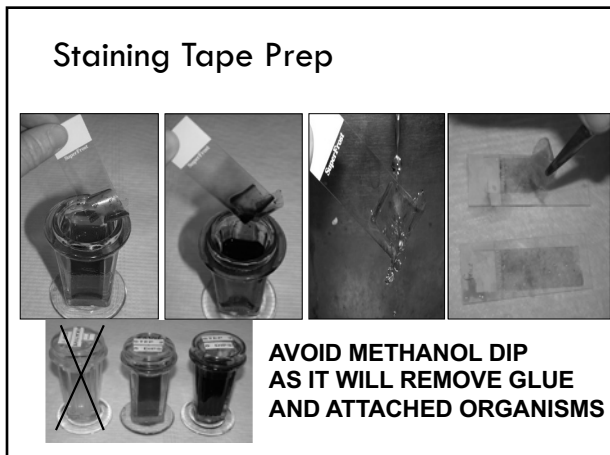
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Adhesive Tape Impression Tips

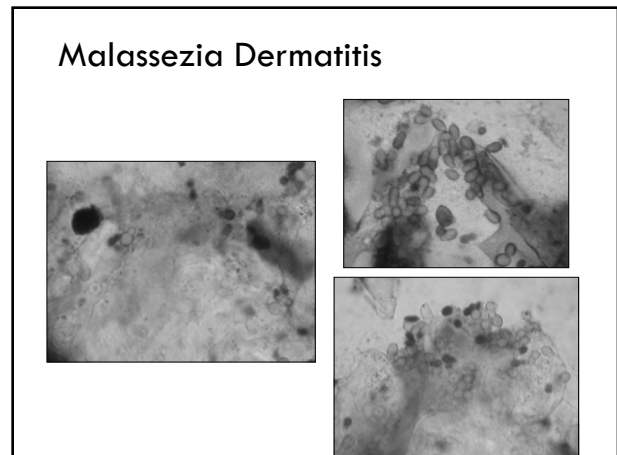
- 3M™ ScotchPad™ Packaging 3750P Tape Pad
 - Purchase online, supply store
 - Stickier (especially for Malassezia)
 - Tends not to curl as readily
 - Can also use as pharmacy label cover



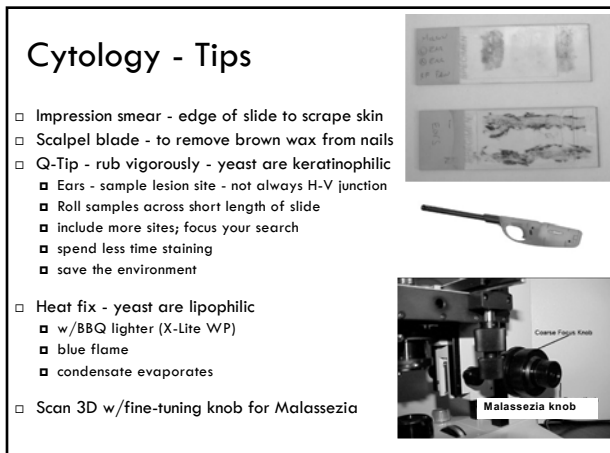
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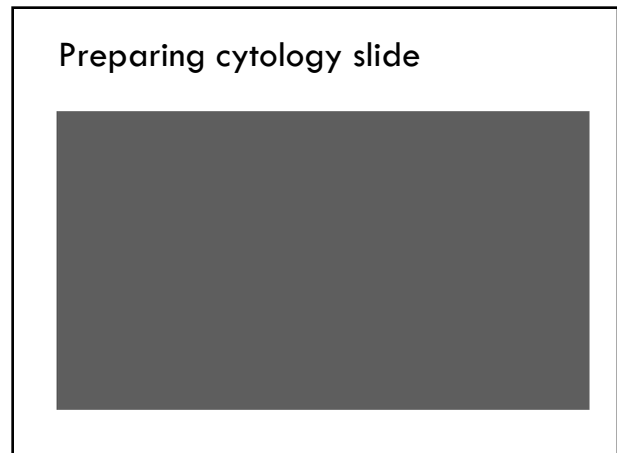
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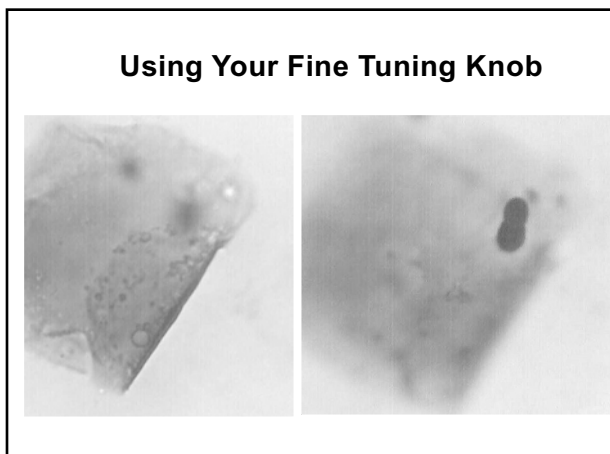
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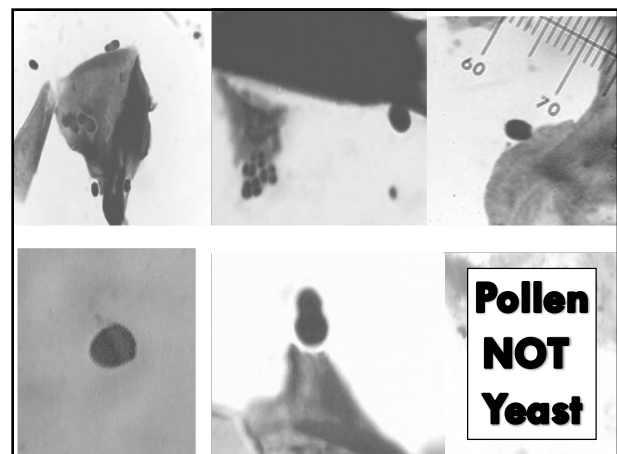
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VetScan Imagyst; Zoetis Cytology & AI Dermatology

YEAST
COCCI
RODS

AI BLOOD SMEAR ANALYSIS
Get expert-level insights on hematology and platelet counts with the VetScan Imagyst AI.

AI FECAL ANALYSIS
Take full, accurate observations on fecal findings, including worms, and more without a microscope!

AI DERMATOLOGY ANALYSIS
Detects yeast, inflammatory cells, and bacteria, and offers more insight into your skin smears with precision.

DIGITAL CYTOLOGY IMAGE TRANSFER
Get full digital access to your microscopic images.

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VetScan Imagyst; Zoetis

Inflammatory cells
VETSCAN IMAGYST detected inflammatory cells with accuracy that closely matched that of an expert, board-certified clinical pathologist!

	MACROPHAGES	EOSINOPHILS	LYMPHOCYTES	NEUTROPHILS ¹
Sensitivity (95% CI)	82% (73%-89%)	92% (82%-97%)	87% (80%-93%)	90% (84.5%-94%)
Specificity (95% CI)	88% (80%-92%)	89% (83%-93%)	81% (73%-88%)	92% (84%-97%)

Infectious agents
VETSCAN IMAGYST detected infectious agents and accurately differentiated between rod and cocci bacteria!

- VETSCAN IMAGYST precision rate for identifying infectious agents was up to 80%⁴

	COCCI BACTERIA	ROD BACTERIA	MALASSEZIA ⁴
Sensitivity (95% CI)	77% (69%-83%)	83% (70%-92%)	87% (76%-94%)
Specificity (95% CI)	78% (66%-87%)	78% (66%-79%)	83% (77%-88%)

- Comprehensive evaluation of the scan area by the VETSCAN IMAGYST AI dermatology algorithm correctly classified elements on some slides in which elements were not detected by the expert clinical pathologists

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Skin Cytology What number is significant?

Which cytology belongs to Honey Bear?

Honey Bear
Malassezia 100X
Malassezia 100X
Malassezia & Bacteria

Location, location, location – normally ears >>>>skin
Clinical relevance : 1 = relevant if pruritic or lesional
: 75 = irrelevant if non-pruritic or normal

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Journal of Fungi MDPI
Link to Publisher's site

J. Fungi (Basel). 2020 Jun; 6(2): 93. PMID: 32630397
Published online 2020 Jun 25. doi: 10.3390/jof6020093

Antifungal Resistance Regarding *Malassezia pachydermatis*: Where Are We Now?

Andrea Peano,^{1*} Elizabeth Johnson,² Elisa Chivavassa,¹ Paolo Tizzani,³ Jacques Guillot,³ and Mario Pasquetti¹

Potential mechanisms of resistance based

- 1) reduced affinity of the target (lanosterol demethylase) for the azole;
- 2) an energy-dependent efflux mechanism that causes the decreased intracellular accumulation of azoles;
- 3) up-regulation of target enzyme, with the antifungal agent being consequently overwhelmed; and
- 4) the development of bypass pathways, through which ergosterol is replaced by its precursor 14 α -methylfecosterol

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Diagnosis - Culture, Molecular & Histopath

- Culture - Modified Dixon's agar
 - Slow growing and lipid-dependent
 - Susceptibility - \$\$/drug (Texas)
- Next Generation Sequencing
- Quantitative rt-PCR
- Histopathology
 - Only evident in large #'s
 - Lost in fixation
 - Acanthosis and spongiosis
 - Lymphocytic exocytosis
 - Lichenoid pattern with basal cell vacuolation (cats)

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Malassezia Hypersensitivity

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Extracts + components

PAX pet allergy explorer

Environmental

Summary of detectable sensitizations

Species	Environmental	Food
Canine	100%	100%
Feline	100%	100%
Equine	100%	100%
Canine	100%	100%
Feline	100%	100%
Equine	100%	100%

PAX and testing for Malassezia
Measures circulating IgE
(Type I Hypersensitivity)
Evaluates crude and component extract
USA 20,000 serum submissions
Mala p, Mala s 1, 5, 6, 9, 11
1.3-3.4% of submissions
Correlation with response to ketoconazole???

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Malassezia Dermatitis Treatment

- 1) Address underlying etiologies**
 - Environmental and/or Food Allergies
- 2) Calm the microenvironment**
 - Steroids, cyclosporine
- 3) Address the yeast**
 - Topical Shampoo and Mousse
 - Chlorhexidine + Miconazole/ketoconazole
 - Systemic
 - Ketoconazole 5-10mg/kg SID-BID
 - Itra-/Fluconazole – 5mg/kg q24h
 - Terbinafine – 30mg/kg q24h
 - Pulse Rx for hypersensitivity
 - Malassezia Immunotherapy
 - 10,000-20,000 PNU weekly SQ (SCIT)
 - 1500-3000 PNU daily PO (SLIT)

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Calming the microenvironment

Vanecyl-SP
Corticosteroide sintese e naturale
proprione di sintesi di sintese
di corticosteroide
steroidale sinteticamente
modificato, con azione
antinfiammatoria, antipruriginosa
e immunosoppressiva.

**DEXAMETHASON
Tablets USP**

**Prednisone
Tablets USP
5 mg**

Atopica 100 mg
Soft Capsule for Dogs

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Atopy & Malassezia Dermatitis

Atopica 10 mg

**Ketoconazole
Tablets USP**

½ Atopica® dose (2.5mg/kg vs 5mg/kg)
when combining with 2.5mg/kg ketoconazole

If discontinuing KCZ, increase Atopica® dose
If decreasing frequency of Atopica/KCZ, same day, same time

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Gray L, et al The effect of ketoconazole on whole blood and skin concentrations of cyclosporine
Vet Derm 2012;23 suppl13

- T1 = 5mg/kg Atopica
- T2 = 2.5mg/kg CSA
- T3 = 2.5mg/kg CSA + 5mg/kg KCZ
- T4 = 2.5 mg/kg CSA + 2.5 mg/kg KCZ

Blood: **T3 (644ng/ml) >> T4 (417ng/ml), T1 (307ng/ml) > T2 (169 ng/ml)**

Skin: **T3 (1.2 ng/mg) >> T4 (0.7ng/mg), T1 (0.6ng/mg) > T2 (0.26ng/mg)**

e.g. 30kg dog with yeast

- normal Atopica dose @5mg/kg = 150mg
- 2.5mg/kg KCZ (75mg) + 2.5mg/kg Atopica (75mg)
- Consider instead 5mg/kg KCZ (150mg → 200mg) + 1.67mg/kg Atopica (50mg; 67% less At)
- Cost savings and fewer side effects

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Using Ear Medications on the skin

Topical corticosteroid safety ranking

1. Hydrocortisone, Mometasone
2. Prednisolone
3. Betamethasone
4. Fluocinonide, Triamcinolone
5. Dexamethasone

SAFEST (top) → **GREATEST SIDE EFFECTS** (bottom)

- Apply and massage a thin film into the affected area(s) on the skin (interdigital skin of the paws, lower lip margins, perivulvar region, preputial fossa, ventral aspect of the base of the tail)
- Once daily for 14 days, then decrease to **TWO CONSECUTIVE DAYS WEEKLY**
- Allow 15 minutes of contact time to allow for absorption of active ingredients

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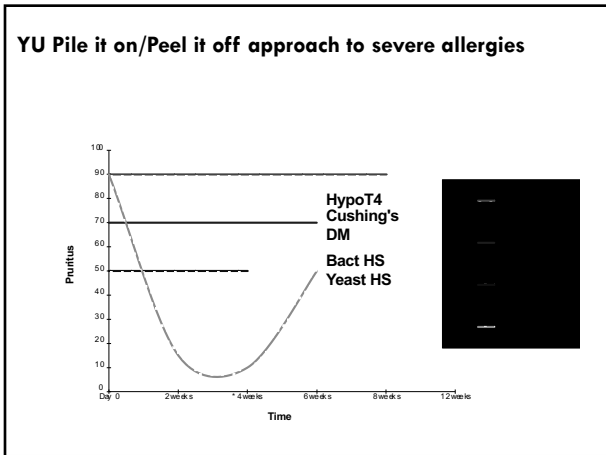


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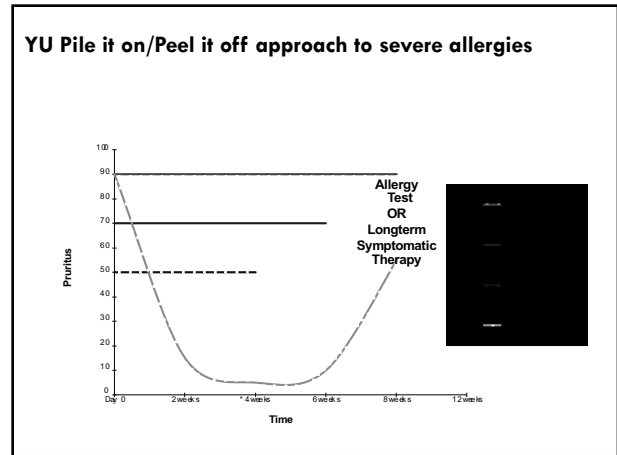
YU Pile it on/Peel it off approach to severe allergies

- Dietary trial
 - 4wk (50%); 8-12 wk (100%)
- Symptomatics for atopy
 - 6 weeks
 - Apoquel®, Cytopoint®
 - Steroids, Atopica
- Antimicrobials
 - Min 4wks based on cytology
- R/O Sarcoptes
 - Isoxazolines e.g. Simparica®

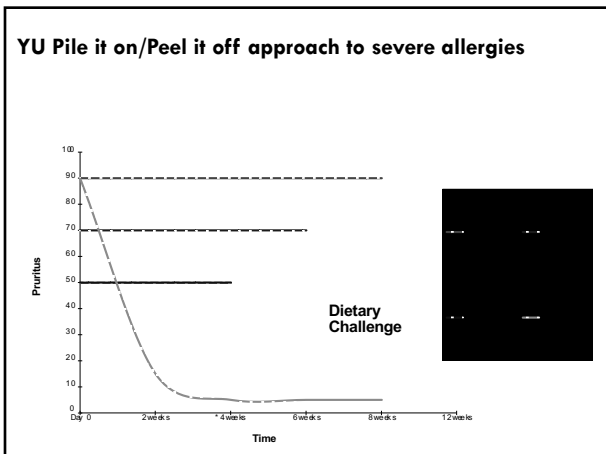
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Multi-Modal Therapy

Fig 1. The forest fire analogy to treatment of canine atopic dermatitis (A. Yu)
Olivry T, et al. Treatment of canine atopic dermatitis: 2015 updated guidelines from the International Committee on Allergic Diseases of Animals (ICADA). *BMC Veterinary Research* 2015, 11:210


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Bathing Pets with Atopy
- Use COOL/COLD H2O
- Once weekly
- Shampoo selection based on cytology

Benefits:
1) Wash off superficial allergens
2) Rehydrate the skin
3) Control bacterial & yeast overgrowth



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Franklin rescued by vet
Atopica /Keto daily
Convenia q2weeks for 6weeks
Dexamethasone
Apoquel
Chlorhexidine:Miconazole
Hypo HP food.

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Franklin - 6 week recheck
D/C antibiotics and Keto
Atopica (adjust dose X2)
Apoquel
Added in amitriptyline for anxiety.


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Franklin 12 weeks
Atopica every third day, Apoquel PRN, amitriptyline bid.
Started dietary challenges - reacted to Venison

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Questions?



vetdermboston.com

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July 25-29, 2024 | Boston, Massachusetts, USA

6 Themes

- Atopic Disease and Allergy
- Dermatology and One Health
- Immunodermatology
- Innovations in Dermatology
- Otolaryngology
- Skin Biology in Health and Disease

We invite you to join us!

WAVD
WORLD ASSOCIATION FOR VETERINARY DERMATOLOGY

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