

# Discussing Case Studies

**Game-changing compounded innovations improves patient care, client satisfaction and practice profit**

**01** New therapeutic compounding options for the treatment of gastrointestinal parasites and protozoa in dogs and cats.



**02** How controlled clinical compounding assisted in the possible prevention of enucleation in a dog with mycotic keratitis.



**03** Assisting veterinarians in the rational treatment of otitis externa in dogs.



**04** An all-encompassing therapeutic approach in the treatment of chronic snuffles in cats.



Dr Ockert Botha

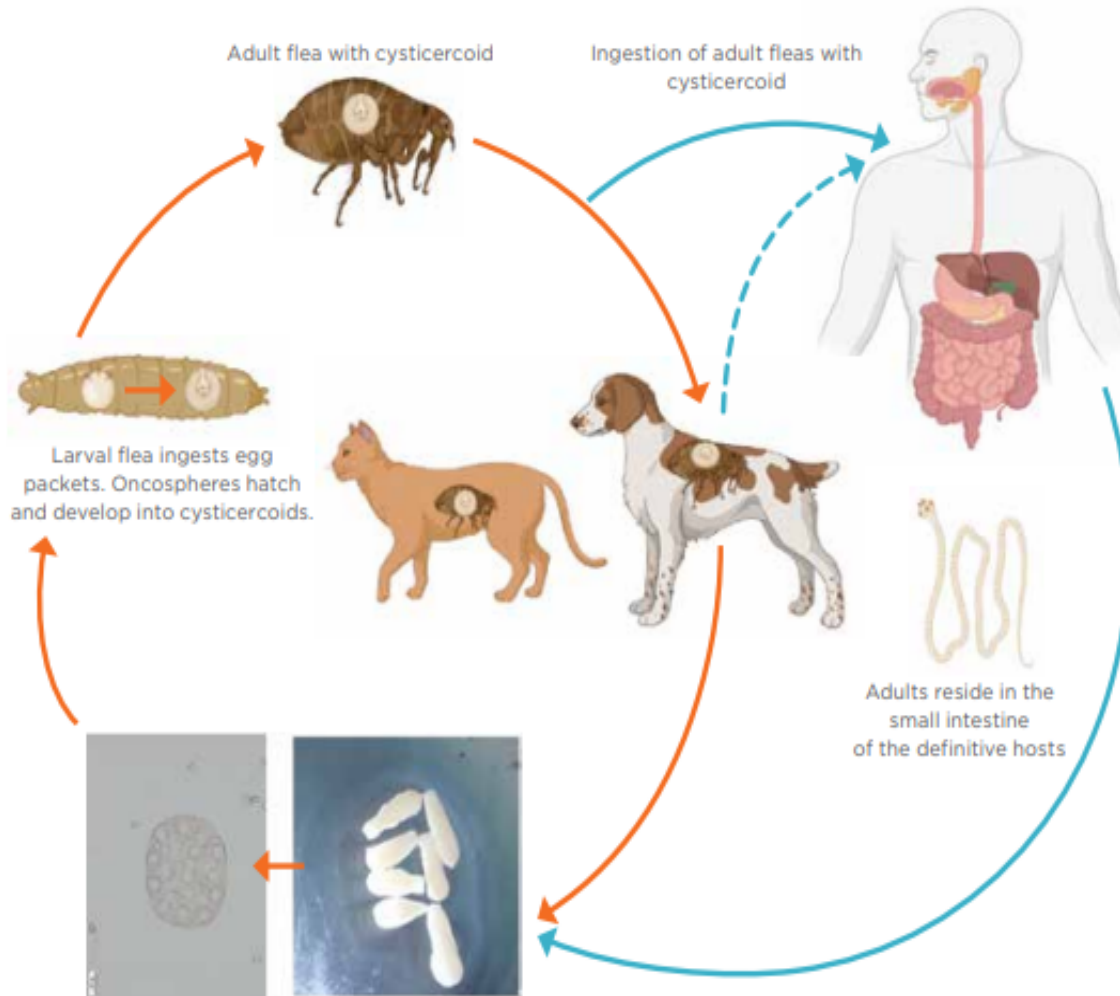
Dr Izak Venter



# 01 New therapeutic compounding options for the treatment of gastrointestinal parasites and protozoa in dogs and cats.



# DIPYLIDIDIUM CANINUM



# Current Perspectives Regarding *Dipylidium caninum* Infection in Companion Animals

*Ranju Ravindran Santhakumari Manoj, BVSc, MVSc, PhD  
Cornell University College of Veterinary Medicine, Ithaca, New York*

An 11-year-old neutered male American foxhound dog with a history of regular deworming and vaccination was presented to a pet clinic after the client noticed gravid proglottids in the feces.

Monthly chewable heartworm preventive (2.3 mg milbemycin oxime with 22.8 mg praziquantel)

Single oral dose of Drontal Plus [praziquantel/pyrantel pamoate/febantel] whenever proglottids were seen in the feces

No improvement has been noted and the patient was still passing proglottids at regular intervals

# DIPYLIDIDIUM CANINUM

Treatment

Praziquantel  
Flea Control

Increased  
resistance against  
Praziquantel

Milbemycin & Praziquantel

Spirocerca

Prophylaxis monthly



# NITAZOXANIDE

## Current Perspectives Regarding *Dipylidium caninum* Infection in Companion Animals

Ranju Ravindran Santhakumari Manoj, BVSc, MVSc, PhD  
Cornell University College of Veterinary Medicine, Ithaca, New York

If the parasite is refractory to praziquantel, nitazoxanide may be effective.

Nitazoxanide was used at 100mg/kg dosage to treat *D caninum*

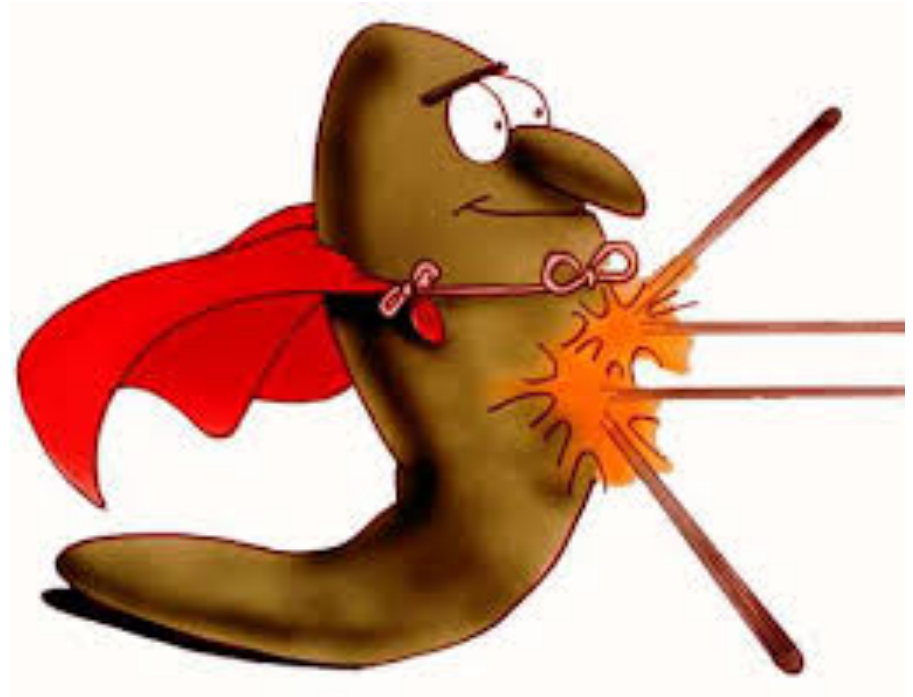
Protracted vomiting after 2 doses

Vomiting controlled by using antiemetics

Tapeworm segment shedding stopped right after the 2 doses

# Resistance prevention

**Use required  
medication only**





Contents lists available at ScienceDirect

Veterinary Parasitology

journal homepage: [www.elsevier.com/locate/vetpar](http://www.elsevier.com/locate/vetpar)



The use of milbemycin oxime in a prophylactic anthelmintic programme to protect puppies, raised in an endemic area, against infection with *Spirocerca lupi*

D.J. Kok<sup>a,\*</sup>, E.J. Williams<sup>a</sup>, R. Schenker<sup>b</sup>, N.J. Archer<sup>b</sup>, I.G. Horak<sup>c</sup>

## Conclusion

*S. lupi* is endemic in Grahamstown and its surroundings in the Eastern Cape Province of South Africa.

**Puppies raised in this endemic area, who received prophylactic treatment with milbemycin oxime (0.5 mg/kg body weight) at monthly intervals, showed a significant reduction in the level and severity of infection with *S. lupi*.**



Contents lists available at ScienceDirect

Veterinary Parasitology

journal homepage: [www.elsevier.com/locate/vetpar](http://www.elsevier.com/locate/vetpar)



The efficacy of milbemycin oxime against pre-adult *Spirocerca lupi* in experimentally infected dogs

D.J. Kok<sup>a,b,\*</sup>, R. Schenker<sup>c</sup>, N.J. Archer<sup>c</sup>, I.G. Horak<sup>b</sup>, P. Swart<sup>a</sup>

## Conclusion

**Milbemycin oxime, administered at repeat intervals of 2 or 4 weeks, demonstrated excellent efficacy against pre-adult *S. lupi*.**

**It completely prevented the establishment and encapsulation of *S. lupi* in the oesophagus of experimentally infected dogs**



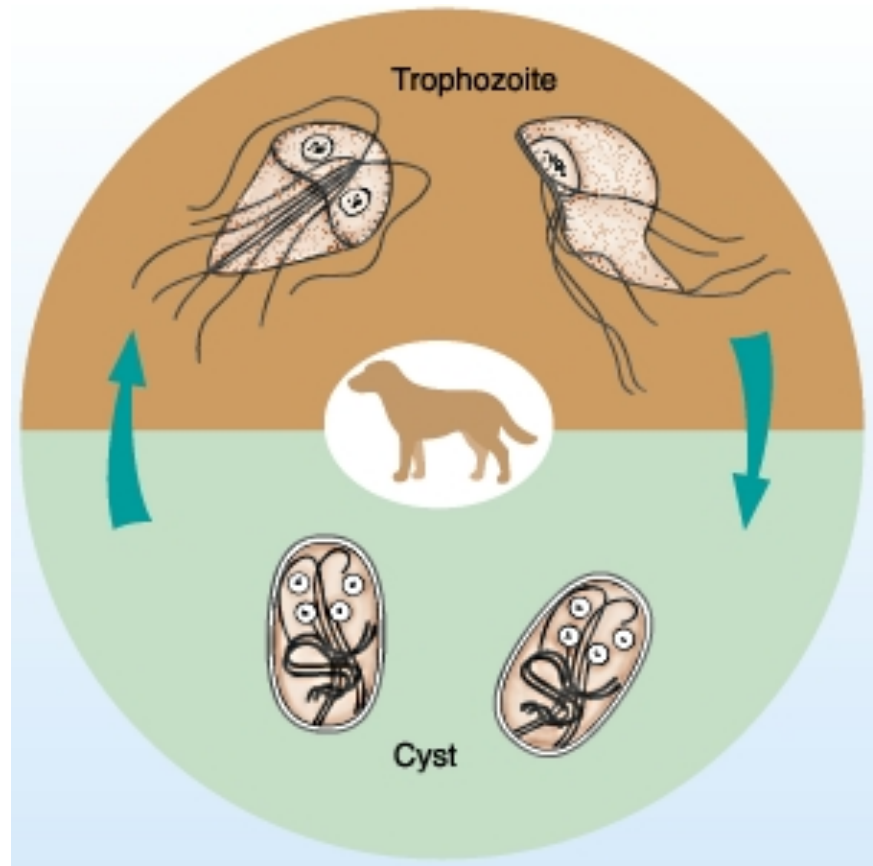
## MILBEMYCIN OXIME 5 MG CROSS SCORED TABLETS

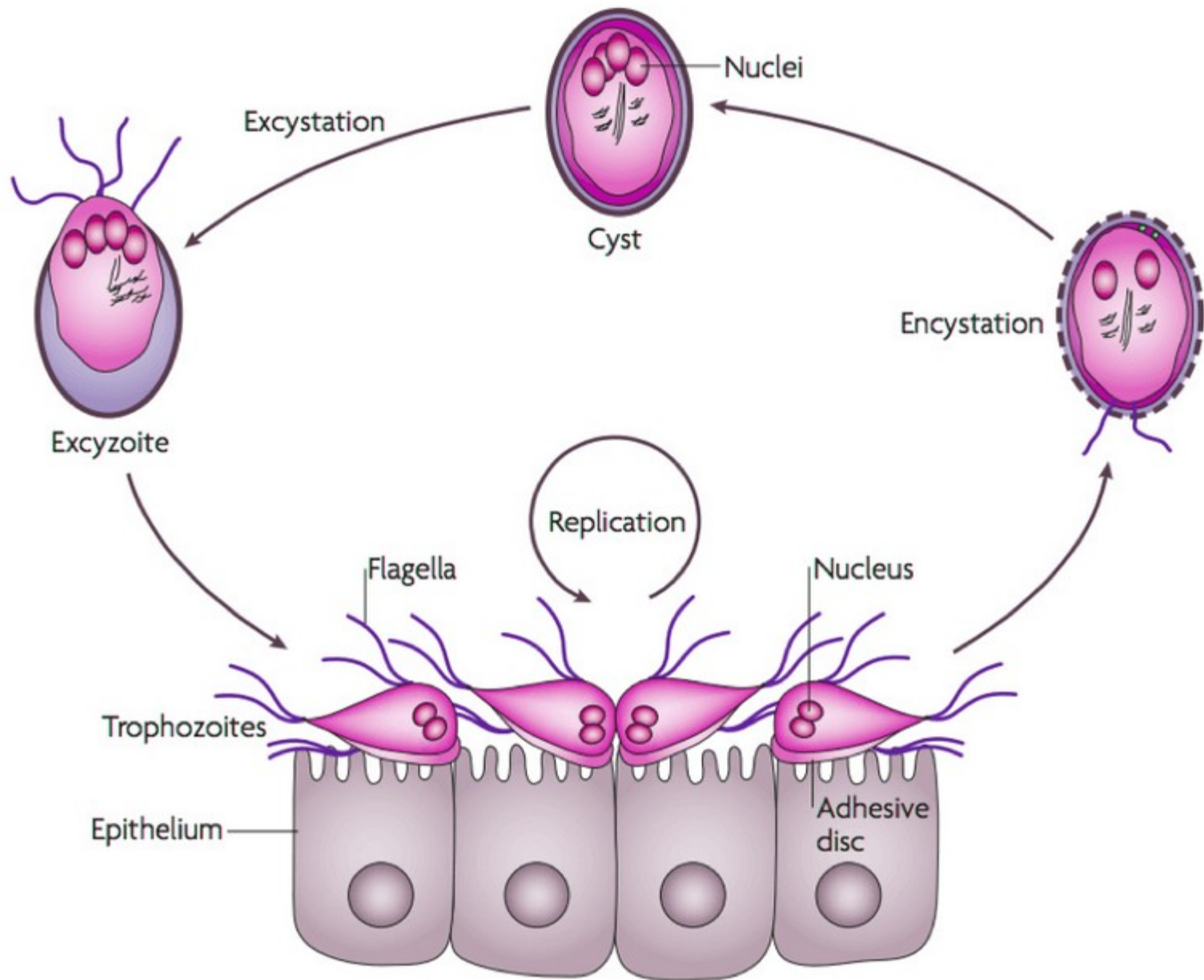
**INDICATIONS AND USAGE:** Indicated for the prevention of heartworm disease and *Spirocerca lupi* infestation. Treatment of *Spirocerca lupi*, *Ancylostoma* spp, *Toxocara* spp, . *Toxascaris leonina* and *Trichuris vulpis* infection in dogs.

**DOSE AND ADMINISTRATION:** *Ancylostoma* spp, *Toxocara* spp, . *Toxascaris leonina* and *Trichuris vulpis* infection in dogs: 0.5 mg/kg once  
*Spirocerca lupi*: Milbemycin oxime (0.5 mg/kg, PO, days 0, 7, 28, then monthly for at least 2 months)  
Generalized demodicosis in canines 0.5–1.5 mg/kg q24h  
*Spirocerca* porphyllaxis 0.5 mg/kg monthly

Combination product 6 monthly

# GIARDIA







Efficacy of a single dose of nitazoxanide in dogs naturally infected with *Giardia duodenalis*

Felipe Romano, Maria Anete Lallo \*

**The treatment of giardiasis is a challenge for veterinarians and therapeutic failures are related to**

- i) re-infection**
- ii) poor adherence**
- iii) resistance to drugs**

Fenbendazole  
Metronidazole  
Ronidazole  
Secnidazole



RESEARCH

Open Access

## Efficacy of nitazoxanide to treat natural *Giardia* infections in dogs



Mario Moron-Soto<sup>1</sup>, Lilia Gutierrez<sup>2</sup>, Héctor Sumano<sup>2</sup>, Graciela Tapia<sup>3</sup> and Yazmin Alcala-Canto<sup>1\*</sup>

While metronidazole has been regarded as the drug of choice for treating giardiasis, resistance has been documented in human cases of *Giardia* infection, possibly due to mechanisms that allow the protozoan to tolerate the oxidative stress caused by this drug





Contents lists available at ScienceDirect

Research in Veterinary Science

journal homepage: [www.elsevier.com/locate/rvsc](http://www.elsevier.com/locate/rvsc)



Efficacy of a single dose of nitazoxanide in dogs naturally infected with *Giardia duodenalis*

Felipe Romano, Maria Anete Lallo \*

Moron-Soto et al. *Parasites & Vectors* (2017) 10:52  
DOI 10.1186/s13071-017-1998-7

Parasites & Vectors

RESEARCH

Open Access



## Efficacy of nitazoxanide to treat natural *Giardia* infections in dogs

Mario Moron-Soto<sup>1</sup>, Lilia Gutierrez<sup>2</sup>, Héctor Sumano<sup>2</sup>, Graciela Tapia<sup>3</sup> and Yazmin Alcala-Canto<sup>1\*</sup>

We demonstrated efficacy of NTZ against *Giardia duodenalis* in dogs with a lower single dose of NTZ (50 mg/kg)

NTZ has shown a higher percentage of efficacy against giardiasis in our study, when compared to the group treated with FBZ

Undesirable adverse effects in almost 50% of animals

Emesis and lethargy

## Conclusions

This study demonstrates that the administration of 75 mg/kg of NTZ every 14 days to dogs infected with *Giardia* reduces cyst excretion.



**NITAZOXANIDE POWDER / TABLETS / SUSPENSION**

**INDICATIONS AND USAGE:** Alternative treatment for dogs with resistant Giardia infections. Treatment for resistant Dipylidium caninum.

**DOSAGE AND ADMINISTRATION:** Dogs 50mg/kg once for Giardia. Dogs 100mg/kg once for praziquantel resistant Dipylidium.

# 02

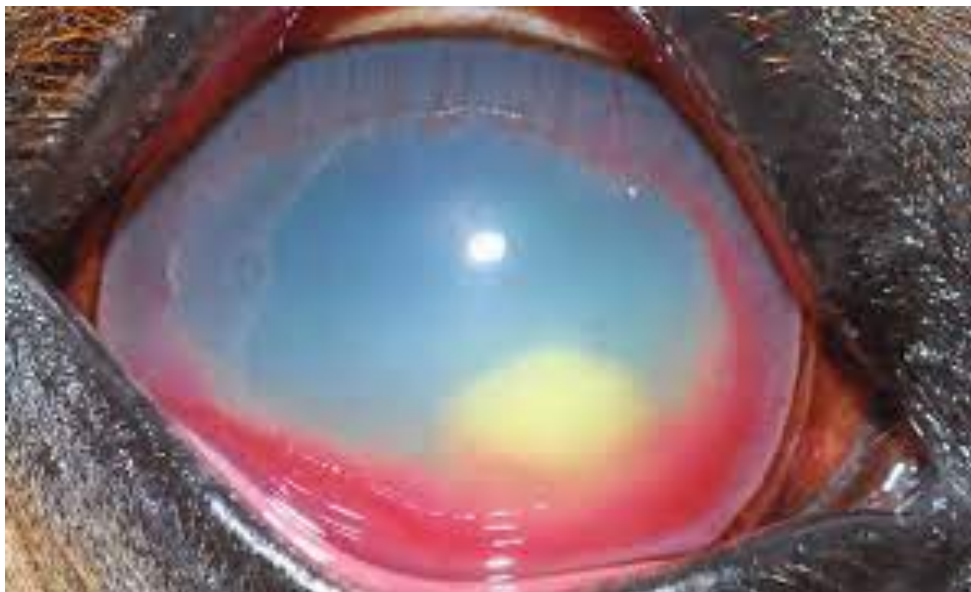
How controlled clinical compounding assisted in the possible prevention of enucleation in a dog with mycotic keratitis.





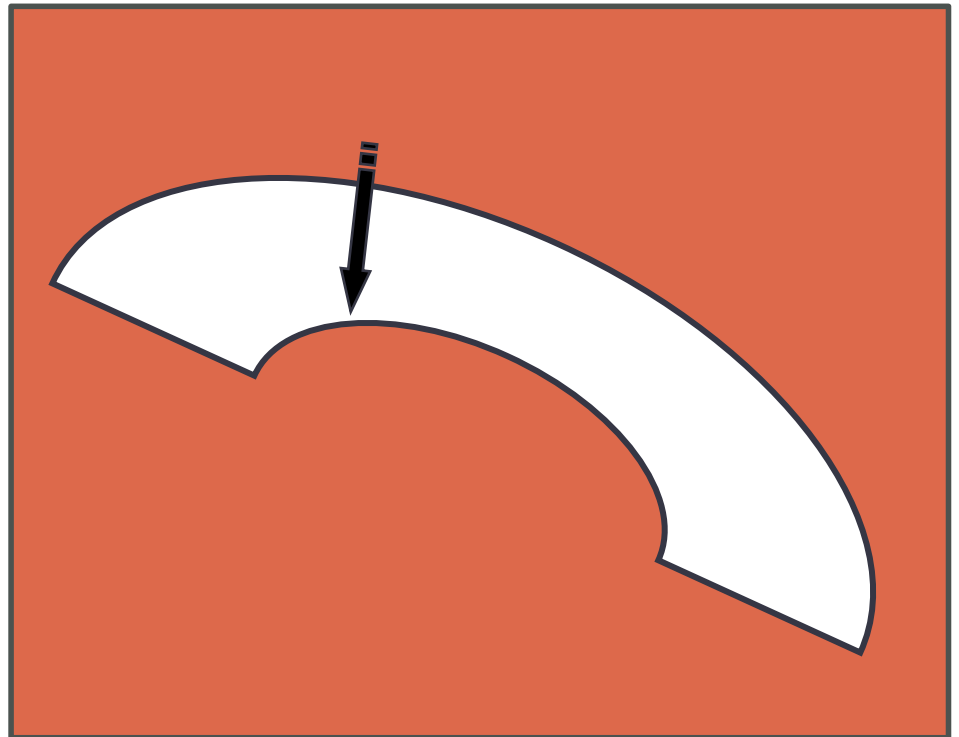
Rare in dogs

“Equine problem”



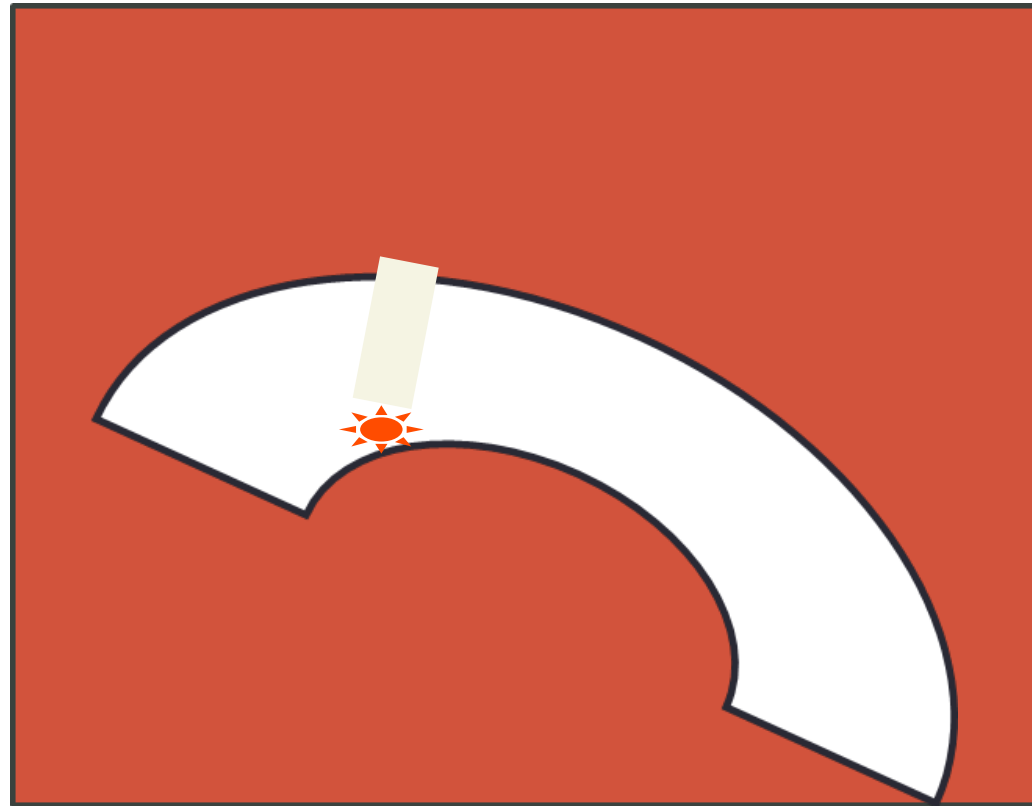
# Corneal Stromal Abscess [SA] -Pathogenesis

- Superficial, deep, or full thickness
- Etiology of SA is complex most likely multifactorial
- Micropuncture inoculates the stroma with microbes or a foreign body



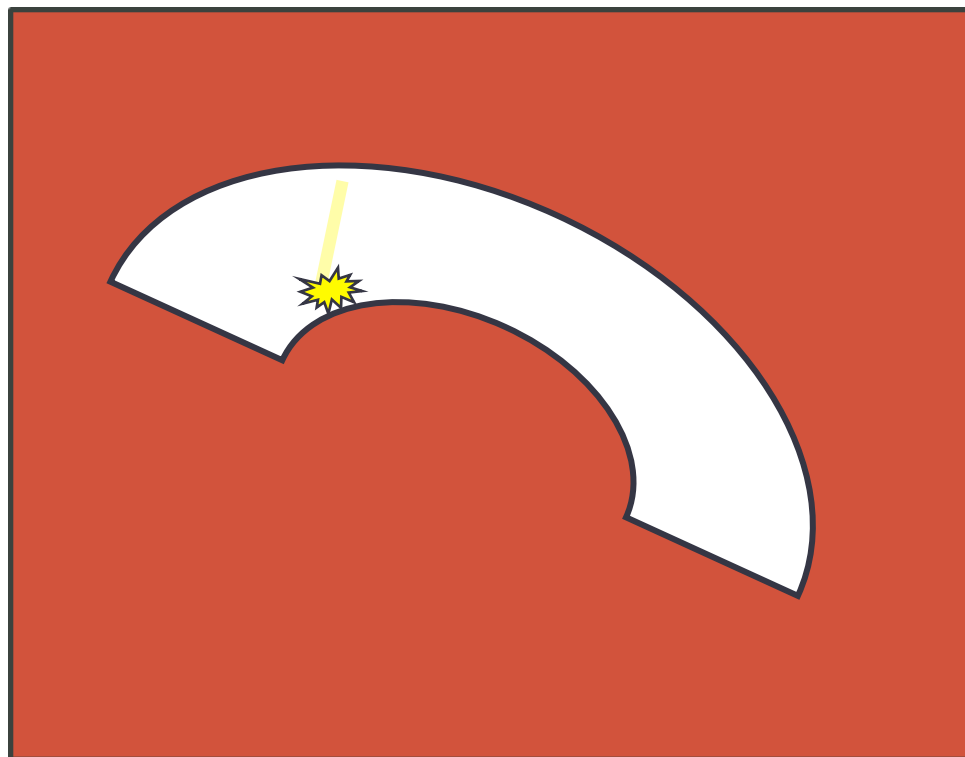
# Corneal Stromal Abscess [SA]

- Pathogenesis
  - Epithelial cells absent over defect
  - Fluorescein positive initially (not always detected)



# Corneal Stromal Abscess [SA] -

- Epithelial cells migrate over defect
- Seal infectious agents or foreign bodies into the corneal stroma
- Barrier between topical applied medications and the infectious agent
- Tracks sometimes visible



# DIAGNOSIS

Fungi love Descemet's  
membrane

Cultures

Cytology

**Often  
negative**



# “Bassie Schultheiss”

**Chased insects in  
compost heap**

**Blepharospasm**

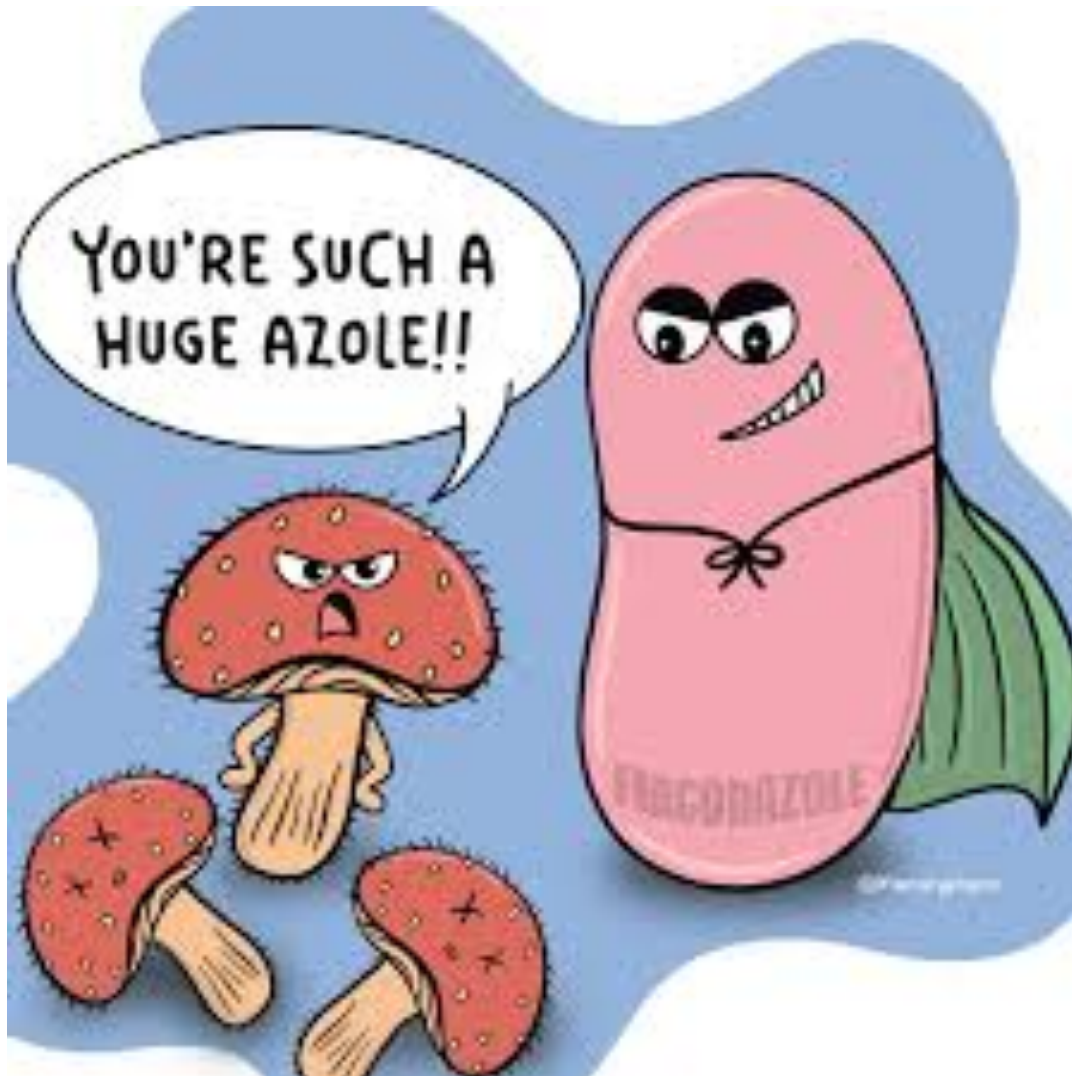
**“Yellow stromal  
infiltrate”**

**Voriconazole  
[overnight]**

**Tobramycin**

**“synergistic effect”**

# Antifungal agents

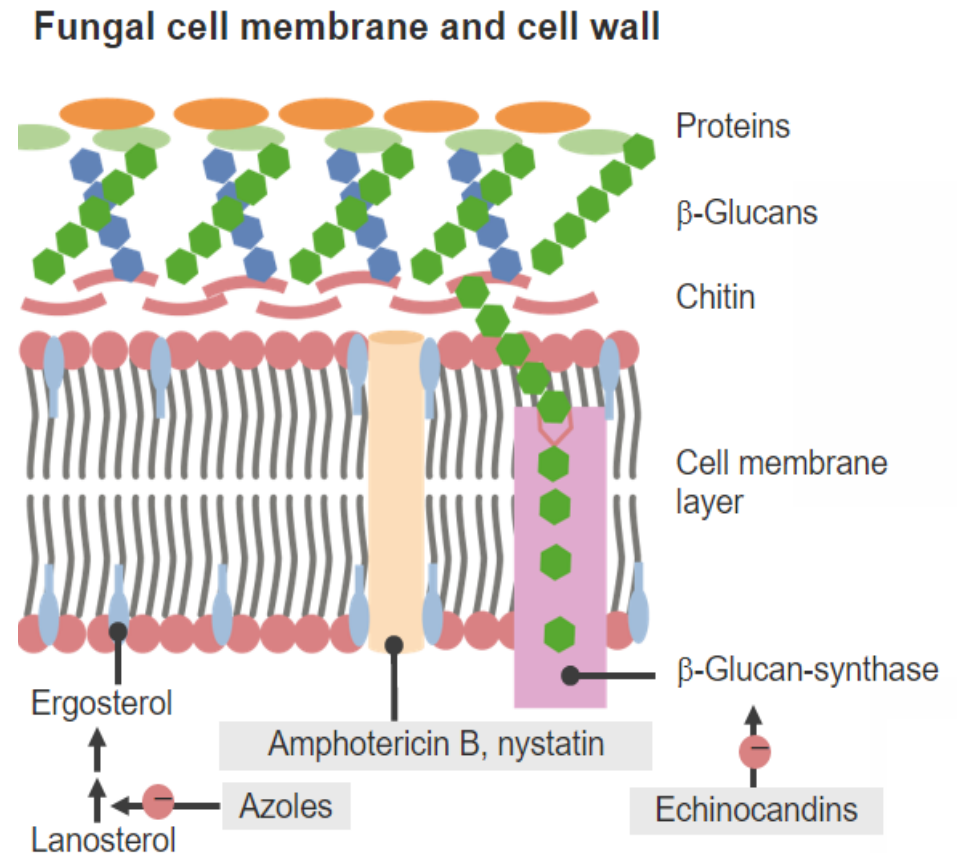


# Antifungal agents

- Selective pharmacological targeting difficult
  - Fungal organisms are more complex than bacteria
  - Share more structural commonalities with mammalian cells
- Antifungal drugs classes
  - **Polyenes**
  - **Azoles**
  - Pyrimidines
  - Echinocandins
- Target the fungal cell wall
  - Greater selectivity for the fungal organism versus the host

# Antifungal agents - Polyenes

- Natamycin,
- Bind ergosterol [cell membrane sterol]
- Increase cell membrane permeability
- Also bind cholesterol - leading to possible toxicity



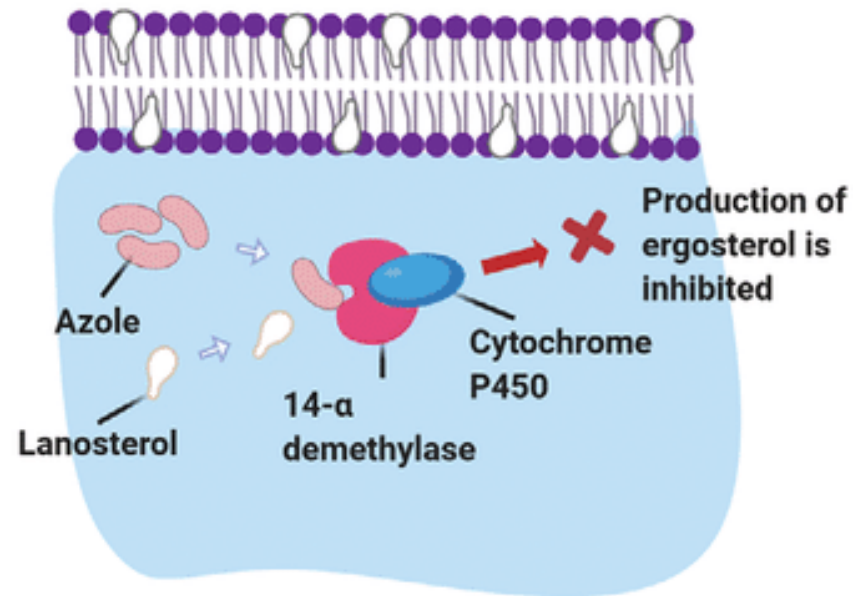
# Antifungal agents - Polyenes

- Natamycin
  - Only commercially available topical antifungal agent
  - Broad spectrum, Candida, Aspergillus.
  - Well tolerated
  - High molecular weight
    - **Low corneal penetration**
    - **Epithelial debridement**
  - Long term use of the drug, averaging 39 days



# Antifungal agents- Azoles

- Fungal cytochrome P450 enzymes
- Block the synthesis of ergosterol
- Imidazoles
  - Miconazole, econazole and ketoconazole
- Second-generation triazoles
  - Metabolized more slowly
  - **Voriconazole**



- **Voriconazole**
  - **Improved spectrum of activity**
  - **Good penetration through intact epithelium**



**VORICONAZOLE 1 % W/V EYEDROPS**

**SCHEDULING STATUS:** S4

**PHARMACOLOGICAL CLASSIFICATION:** Ophthalmic agents

**DESCRIPTION:** Voriconazole 1 % w/v is a multiple dose anti-fungal sterile drop for topical application.

**CLINICAL PHARMACOLOGY:** Voriconazole is a triazole antifungal agent that inhibits the C-14a demethylase enzyme of fungal cytochrome P450, essential to ergosterol synthesis, thereby altering fungal cell membrane synthesis, repair, and permeability.

Voriconazole has a broad spectrum of activity against both yeasts and moulds, including Candida, Aspergillus, Fusarium, and Scedosporium.

**Intrastromal  
infiltrate improving**

**Corneal erosion “lip  
unattached  
epithelial cells**

**Debride**

**Continue Tobrex  
Voriconazole**

**Add hyaluronic  
acid**



**Stromal abscess cleared**

**Keratomalacia**

**Pseudomonas / Beta  
hemolytic strep**

**Tobramycin / Moxifloxacin**

**Oral Doxycycline**

**Levofloxacin  
Chloramphenicol eye drops**

**Levofloxacin Gram-negative and  
Gram-positive including  
Pseudomonas**

**Chloramphenicol Gram-negative  
and gram-positive organisms  
including Streptococcus**

**Debride**

**Tobrex**

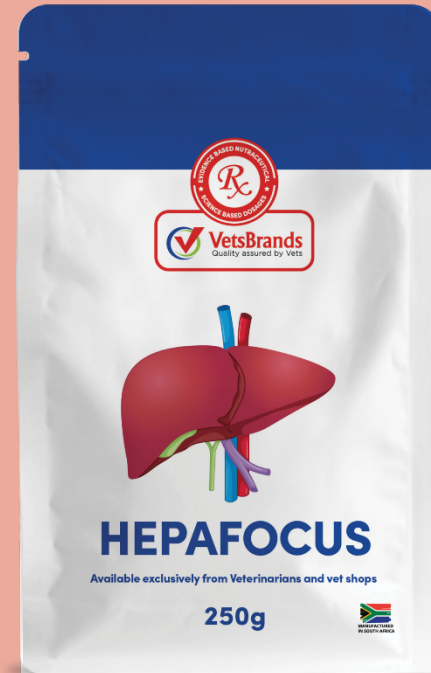
**High molecular weight  
hyaluronic acid**



Article

# $\alpha$ -Lipoic Acid Protects against Cyclosporine A-Induced Hepatic Toxicity in Rats: Effect on Oxidative Stress, Inflammation, and Apoptosis

## Bassie ate Tacrolimus bottel !!



# 04 An all-encompassing therapeutic approach in the treatment of chronic snuffles in cats.



# Feline upper respiratory disease & conjunctivitis

## “Snuffles”



jfms

**Detection of bacterial and viral organisms from the conjunctiva of cats with conjunctivitis and upper respiratory tract disease**

Anja D Hartmann DrMedVet<sup>1</sup>, Jennifer Hawley BS<sup>2</sup>, Christiane Werckenthin DrMedVet, DrHabil<sup>3</sup>, Michael R Lappin DVM, PhD, DipACVIM<sup>2</sup>, Katrin Hartmann DrMedVet, DrHabil, DipECVIM-CA<sup>1\*</sup>



jfms

**Infectious causes for feline upper respiratory tract disease — a case–control study**

Bodil Ström Holst DVM, PhD, Dipl ECAR<sup>1,2\*</sup>, Sofia Hanås DVM<sup>3</sup>, Louise T Berndtsson DVM<sup>4</sup>, Ingrid Hansson DVM, PhD<sup>5</sup>, Robert Söderlund MSc<sup>5</sup>, Anna Aspán PhD<sup>5</sup>, Titti Sjö Dahl-Essén DVM<sup>6</sup>, Göran Bölske DVM, PhD<sup>5</sup>, Christina Greko DVM, PhD<sup>2</sup>

**Feline Herpes Virus**  
**Feline Calici Virus**  
**Chlamydophila felis**  
**Mycoplasma felis**  
**Bordetella bronchiseptica**



# Feline Herpes Virus

Oculonasal discharge

Sneezing

Hypersalivation

Conjunctivitis

**Dendritic/geographic corneal  
ulcers**

Pneumonia

Death

Chronic rhinitis /  
keratoconjunctivitis



# Feline Calici Virus

Less severe than FHV

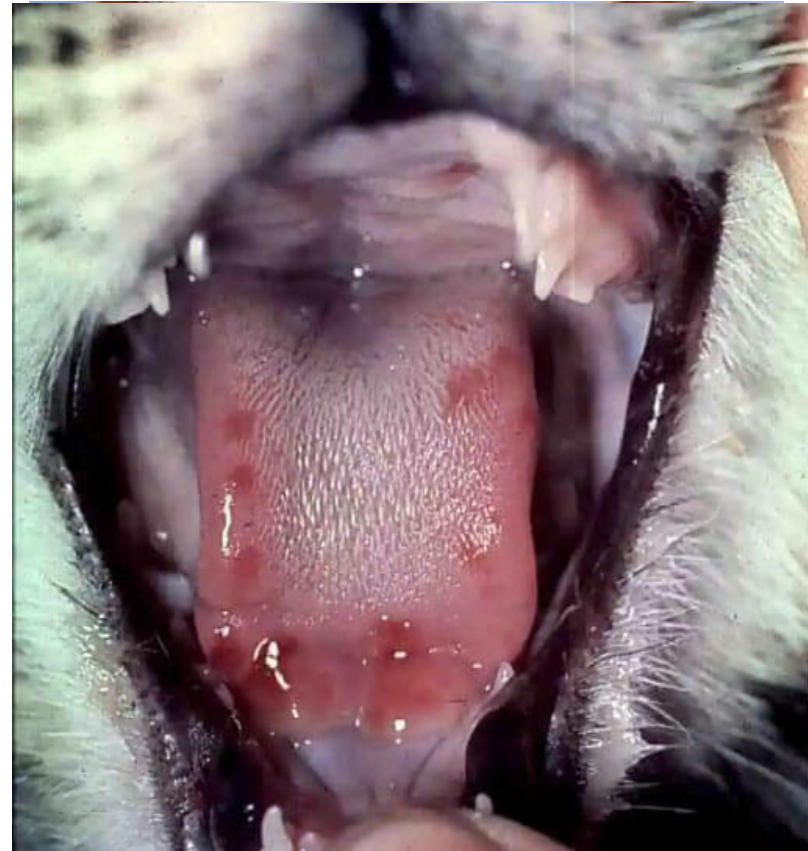
Sneezing

Hypersalivation

Mild conjunctivitis

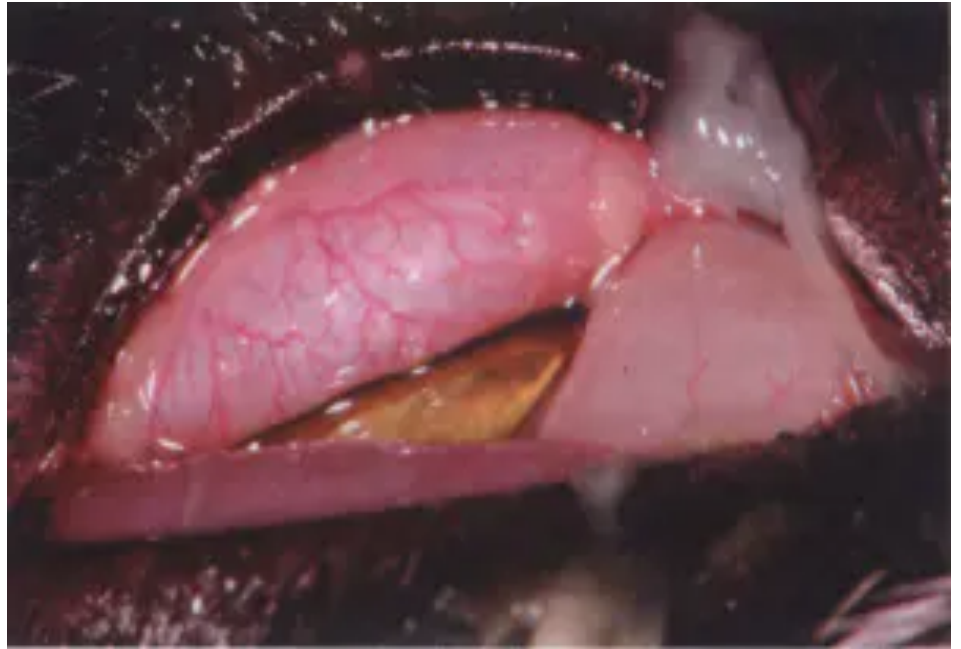
No corneal lesions

**Ulcerative gingivostomatitis**



# Chlamydophila felis

Mainly conjunctivitis  
**Severe chemosis**  
No corneal ulcers



# **Mycoplasma felis**

**A systematic review and meta-analysis  
of the association between *Mycoplasma* spp  
and upper and lower respiratory tract disease in cats**

**Normal flora in the upper  
respiratory tract**

**M felis may have a pathogenic role in  
URT disease of cats and that treatment  
may be warranted in mycoplasma-  
positive cats**

# Bordetella bronchiseptica

**Productive/unproductive cough**  
**Mild URT signs**  
**Fever**  
**Sneezing**  
**Oculonasal discharge**  
**Enlarged submandibular lymph nodes**



# Treatment

**Doxycycline & Spiramycin tablets 14 days  
[Chlamydia, Mycoplasma, Bordetella]**



## **DOXYCYCLINE & SPIRAMYCIN TABLETS**

**DESCRIPTION:** Doxycycline & Spiramycin tablets is available as Doxycycline 10 mg & Spiramycin 10 mg as well as Doxycycline 50 mg & Spiramycin mg tablets

**DOSAGE AND ADMINISTRATION:** Cats 10mg/kg q24h

# Treatment

Doxycycline paste 14 days  
[Chlamydia]

Bromhexine powder over food



## BROMHEXINE

**DESCRIPTION:** Bromhexine 10mg/g powder, 20mg/ml syrup, 5mg, 25 mg, 75 mg tablets for oral administration in dogs and cats.

**DOSAGE AND ADMINISTRATION:** The mucolytic dose of bromhexine hydrochloride in dogs and cats is 2mg/kg/12h orally for 7 to 10 days then 1mg/kg/12h for a further 7-10 days.

# Treatment

**Antiviral products [Feline Herpes Virus]**

**No RX for Calici virus [ RNA]**

**FAMCICLOVIR 180 MG / ML ORAL PASTE**

**DOSAGE AND ADMINISTRATION:**

90 mg/kg orally q 12 h for 2 – 3 weeks

**CIDOFOVIR IN HIGH MOLECULAR WEIGHT HYALURONIC ACID EYE DROPS**

**DOSAGE AND ADMINISTRATION:**

Instil one drop into the affected eye every 12 hours for up to 21 days.

# Treatment

## Levofloxacin eyedrops



### LEVOFLOXACIN 0,5% EYE & EAR DROPS

**DESCRIPTION:** Levofloxacin 0,5% w/v eye/ear drops is a multiple dose anti-infective sterile drop for topical application.

### DOSAGE AND ADMINISTRATION:

Instil one drop into the affected eye every 4 hours for 7 to 10 days. |

### REFERENCES:

- 1 Koch [HR](#), [Kulus SC](#), Roessler M, et al. Corneal penetration of fluoroquinolones: Aqueous humor concentrations after topical application of levofloxacin 0.5% and ofloxacin 0.3% eyedrops. Journal of Cataract & Refractive Surgery. 2005; 31 (7): 1377-1385.

# Treatment

**Nutritional aid in managing and preventing recurrence of Feline herpes virus symptoms.**

## Composition

**EACH KG CONTAINS:**

|                      |                           |
|----------------------|---------------------------|
| Curcumin             | 40g                       |
| Beta Glucan          | 40g                       |
| Resveratrol          | 3g                        |
| Enterococcus Faecium | 2.5 x 10 <sup>9</sup> CFU |

## Indications

As a nutritional aid in managing and preventing recurring feline herpes virus symptoms.



## Contact VetsBrands

Studio A4-Q2d,  
Brick Lane, Devonbosch,  
Stellenbosch, 7605,  
South Africa  
076 403 2571  
info@vetsfocus.co.za  
www.vetsbrands.co.za  
Co. Reg. No. 2012/043606/07



## Directions for use

Use 1g per 2kg of cat's bodyweight, once daily.

## Feeding instructions 1 x = 5 g

**Option 1:** Add dry powder over wet or dry food.

**Option 2:** Mix 1 part powder and 2 parts water and pour over food as a gravy.

**Option 3:** Mix 2 parts powder and 1 part water to form a paste which can be dosed with a syringe.

## Advantages

- Evidence-based raw materials
- Science-based dosages
- The ultimate nutraceutical combination proven to reduce recrudescence of Feline Herpes viral disease
- Exceptional supportive aid in the management of Feline Herpes virus symptoms



PRODUCTION DATE

BEST BEFORE

BATCH CODE