Drugs applied to the Skin



drugs

- acting locally
 - -skin disease
 - -otitis
 - -external parasites
- for systemic absorption
 - anthelmintics
 - -(anti-inflammatories)

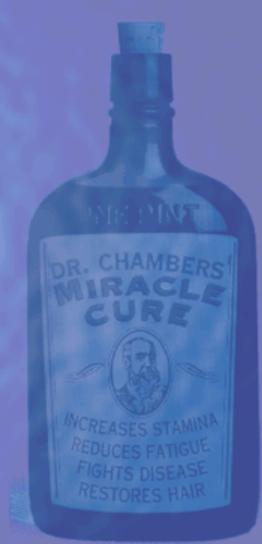


principles

- · is topical therapy appropriate?
- ancillary treatment?
- consider active ingredients and excipients
- systemic absorption?

penetration depends on

- surface area
- hair follicles
- blood flow
- ambient temperature
- skin thickness
- · rainfall
- vehicle and formulation
- skin damage



preparation

- clip affected area
- clean area
- antiseptic?
- stop animal licking



a very rough rule

If it is dry - wet itIf it is wet - dry it



vehicle

affects hydration

anti-inflammatory effects

aids penetration

controls spread

· ie, often as important as active!



vehicles

- aqueous cream
- emulsifying ointment
- hydrous ointment
- white soft paraffin (Vaseline)
- powders
- lotions
- · gels
- sprays



emollients

inert oils used to soothe irritated skin

- -vegetable oils
- -cocoa butter
- -lanolin
- -liquid paraffin
- -white soft paraffin
- –polyethylene glycols



demulcents

- inert substances used to soothe irritated mucous membranes
 - -gums
 - -glycerine
 - -methylcellulose
 - -etc



astringents

used locally to precipitate proteins

- -salts of silver, iron & zinc
- -tannins



counter irritants

 irritate skin to "promote healing" of underlying tissue

- obsolete and unethical
- · · do not use



caustics

use local anaesthesia and actual cautery / cryosurgey instead



keratolytics

- dissolve keratin
 - -salicylic acid
 - -selenium sulphide
 - -benzoyl peroxide



anti-seborrhoeics

- selenium sulphide
- · coal tars



anti-inflammatories

- topical steroids
- dimethyl sulphoxide
- methylsalicylate



topical steroids

- fluocinolone
- beclomethasone
- hydrocortisone
- triamcinolone
- betamethasone



DMSO

 solvent for both hydrophobic and hydrophilic drugs

anti-inflammatory and antimicrobial

· carries other drugs across skin

DMSO

used on dogs & horses

• often mixed with NSAIDs or

sometimes copper



DMSO side effects

diuretic

blocks collagen production

erythema / pruritus

DMSO kinetics

- very rapidly absorbed
- distributes everywhere
- rapidly metabolised (especially cattle)
- · eliminated by kidneys & lungs

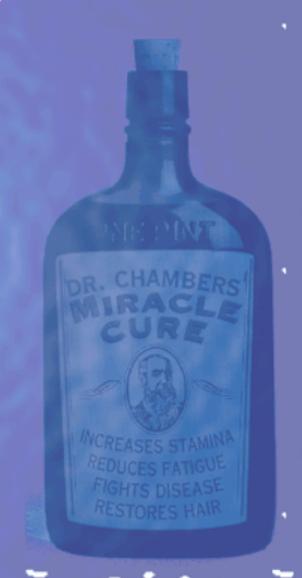
DMSO toxicity

- convulsions
- dyspnoea
- pulmonary oedema
- teratogenic
- carcinogenic?



DMSO uses

- sprained tendons
- (CNS trauma)



otitis externa

- diagnose cause
- check eardrum
- flush thoroughly
- treat cause
- parenteral steroids?
- treat contact animals
- collars?





otitis externa

20% of dogs, 5% of cats

numerous causes

 drugs are not always the answer

primary causes

- ear conformation
- generalised skin disease
 - atopy
 - -endocrine problems
- mites
- without correcting these, treatment is only palliative

opportunist pathogens

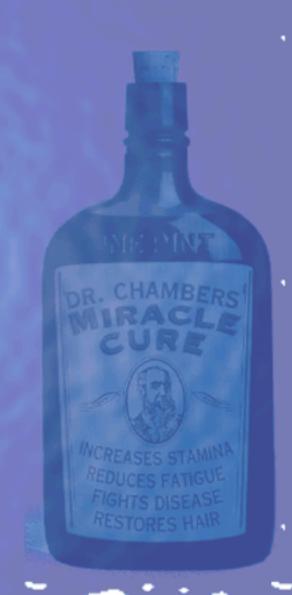
- bacteria
- yeasts





bacteria

- Staphs
 - 10 20% normal ears
 - -20 40% inflamed ears
- Streps
 - -16% normal ears
 - 10% inflamed ears
- Proteus
 - -11% inflamed ears
- Pseudomonas
 - 20% inflamed ears



yeast

Malassezia pachydermatis
– pathogenic?



mites

- Otodectes cyanotis
 - -10% of dogs
 - -50% of cats



mites

pyrethroids (1924)

• monosulphiram (1946)



yeast

- nystatin (1950)
- natamycin (1960)
- miconazole (1969)
- clotrimazole (1969)



bacteria

- neomycin (1949) St, Prot, Ps
 - (Framycetin = neomycin B)
- gentamicin (1963) St, Prot, Ps
- polymyxin (1951) Prot, Rs
- bacitracin (1947) St, Strep
- thiostrepton (1956) St

bacteria

pathogens like sebum

 pus inactivates many antibiotics

so clean ears first!



beware - toxic!

- aminoglycosides
- polymixin
- detergents
- chlorhexidine
- propylene glycol
- alcohol



2nd line antibacterials

- amikacin
- ticarcillin
- cephalosporins
 - -ceftazidime etc
- fluoroquinolones
 - enrofloxacin etc





very old antibacterials

- 50% vinegar in water
- 1% silver sulphadiazine
- Tris EDTA solution
- saline

Tris - EDTA solution

12g Tris

6.05g EDTA disodium

water to 1L

· adjust to pH8 with HCl





- steroids usually useful
 - reduce secretions
 - –dry canal
- use short acting steroids if possible
- systemic administration may be necessary

