

CNS - MIXED EFFECTS
PYRETHRINS OR PYRETHROIDS



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- Numerous sources popular 'safe' insecticides



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Clinical Signs:

- Cats - very sensitive to permethrin
- Ear twitching
- Muscle tremors
- Dyspnoea
- Hyperthermia (muscle activity)



**CNS - MIXED EFFECTS
PYRETHRINS OR PYRETHROIDS**
Mechanism of Action:

- Act on sodium channels (Na in/ K out)
 - "open channel blockers"
- Results in repetitive nerve impulses
- Type II - GABA, glutamic acid receptors
 - leads to hyperexcitability of nervous tissue

**CNS - MIXED EFFECTS
PYRETHRINS OR PYRETHROIDS**
Treatment:

- Decontaminate
 - Dermal - thoroughly wash animal
 - Oral - activated charcoal & laxative
- Symptomatic & Supportive therapy
 - watch body temperature
- Anticonvulsants - prefer methocarbamol (Robaxin®) 55-220mg/kg to effect

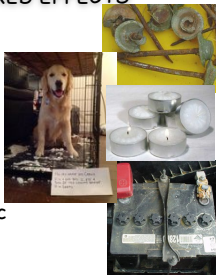
**CNS - MIXED EFFECTS
PYRETHRINS**
SUMMARY:

- Common and 'safe' insecticides
- Reversible effect on sodium ion channels
- Thoroughly decontaminate!
- Symptomatic care - anticonvulsants &/or muscle relaxants (e.g. methocarbamol)
- DO NOT use dog products on CATS

**CNS - MIXED EFFECTS
LEAD**

Sources:

- Paint
- Leaded gasoline
- Lead shot
- Roofing nails etc
- Batteries



LEAD POISONING

Toxicity:

- Variable as lead is poorly absorbed
- Toxicity increased in young animals
- Most species - esp dogs and calves
- All species are susceptible
- Acute oral dose from 50-900mg/kg

CNS - MIXED EFFECTS

LEAD

Mechanism of Action:

- Exact mechanism not well understood
- Toxic to enzymes, tissues, organs
 - Inhibits delta-amino levulinic acid dehydrase
- Nervous, gastrointestinal and haematopoietic tissues affected

CNS - MIXED EFFECTS

LEAD - Dog

Clinical Signs:

- GI signs: vomiting, anorexia, colic
- Lethargy
- Seizures (& chomping fits)
- Hysterical barking, hyperexcitable
- Paraplegia, loss of coordination
- Blindness
- Megaesophagus

CNS - MIXED EFFECTS

LEAD - Cat

Clinical Signs:

- GI signs: vomiting and anorexia
- Lethargy
- Depression

CNS - MIXED EFFECTS

LEAD - Cattle

Clinical Signs:

- Acute poisoning (calves):
 - Sudden death or stagger, vocalise, chomping, eye rolling, frothing
- Subacute (usually adult):
 - anorexia, ataxia, blindness, salivation, muscle tremors (ear tics) and hyperaesthesia
 - abdominal pain, rumen atony, constipation

CNS - MIXED EFFECTS

LEAD

Clinical Pathology:

- Basophilic stippling of RBCs
- Blood lead levels
- Urinary lead
- Delta-aminolevulinic acid (urine)
- Radiographic evidence of lead

CNS - MIXED EFFECTS - LEAD

TREATMENT

- Decontamination (magnesium sulphate)
- Chelation therapy - Small animals
 - Calcium EDTA - parenteral SC
 - D-Penicillamine - oral
 - DMSA (dimercaptosuccinic acid)
- Anticonvulsants - diazepam
- Supportive therapy
- Thiamine in cattle

CNS - MIXED EFFECTS

LEAD

SUMMARY:

- Numerous environmental sources
- Decontamination **MUST** remove lead
- Gastrointestinal and neurological signs
- Chelation therapy
- Anticonvulsants
- Supportive therapy

CNS Toxicities

SUMMARY

- Decontamination & Elimination
- "Treat the patient not the poison"
- Good nursing care is IMPORTANT!

OTHER LESS FREQUENTLY SEEN TOXICITIES

ORGANOCHLORINE PESTICIDES

ILLEGAL DRUGS

Amphetamines and Cocaine

CNS Excitation Toxicities

ORGANOCHLORINE PESTICIDES

Limited availability in NZ

- Behaviour: agitated and aggressive
- Spastic gait
- Blepharospasms
- Muscle fasciculations (head first)
- Continuous chewing
- Tonic-Clonic convulsions
- Other signs: weakness, paraesthesia

CNS Excitation Toxicities

ORGANOCHLORINE TREATMENT

- Light sedation with anaesthetics
- Symptomatic and supportive care
- Oxygen

CNS Excitation Toxicities

ILLEGAL DRUGS

Amphetamines and Cocaine

- Dilated pupils
- ↑ Heart rate, ↑ Respiratory rate
- Amphetamines-vocalisation, ↑ temp.
- Muscle tremors

CNS Excitation Toxicities

ILLEGAL DRUGS TREATMENT

- Anticonvulsants
- Symptomatic and supportive care
- Tachyarrhythmias-beta blockers
- PVCs-lignocaine
