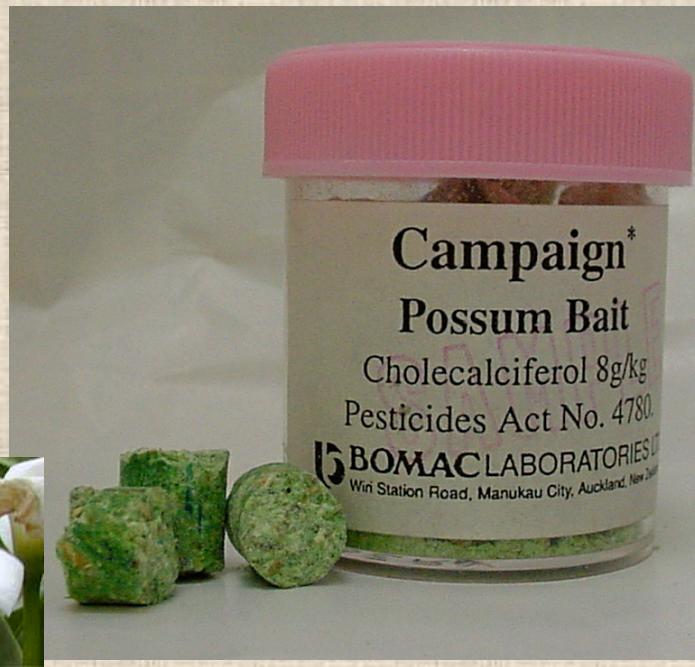




# Renal Toxicities

## Kathy Parton, IVABS



# Renal Toxicities

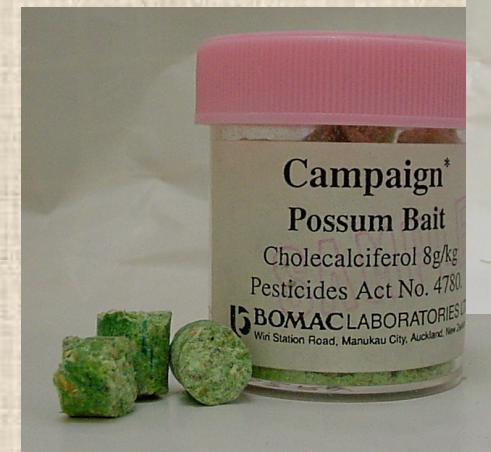
## PROBLEMS:

- Anorexia
- Depression
- Dehydration
- Vomiting
- Oral lesions
- Diarrhoea
- Hypothermia

# Renal Toxicities

## Differential diagnoses:

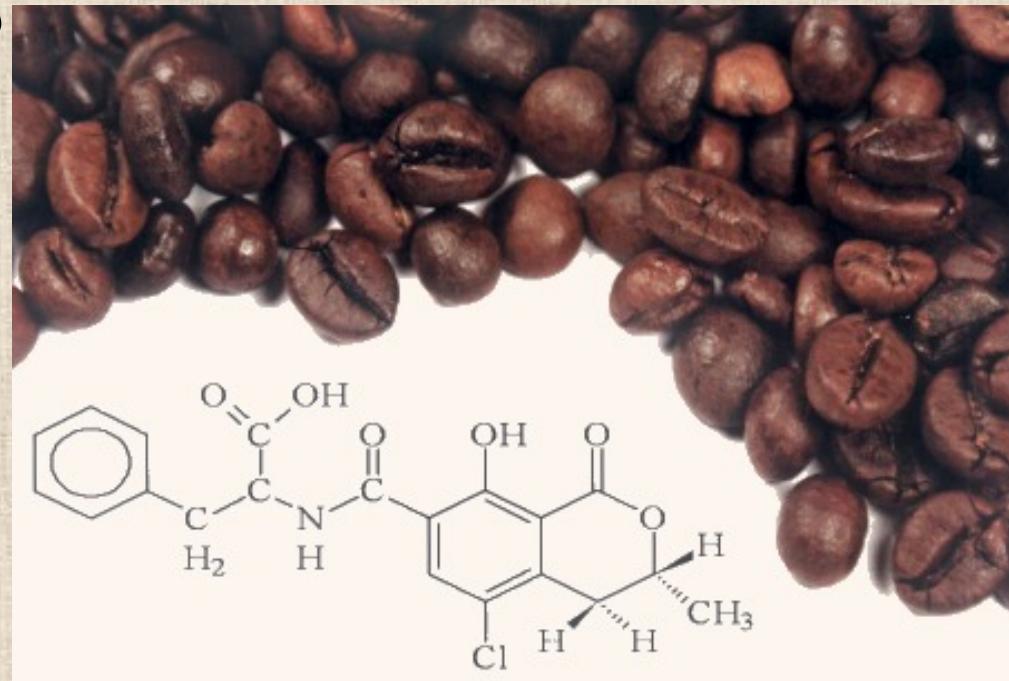
- Aminoglycoside antibiotics
- CHOLECALCIFEROL
- ETHYLENE GLYCOL



# Renal Toxicities

Differential diagnoses:

- Heavy metals
- Ochratoxin



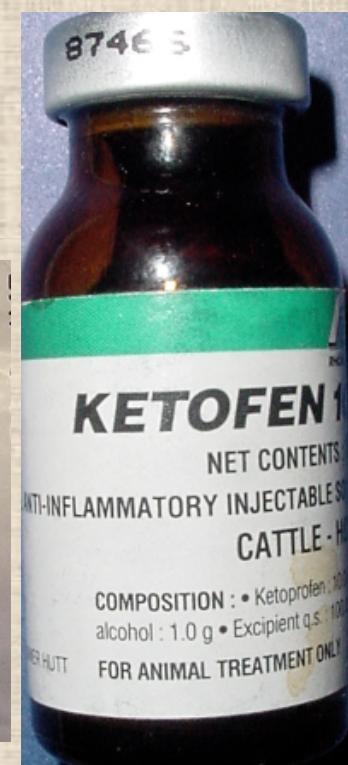
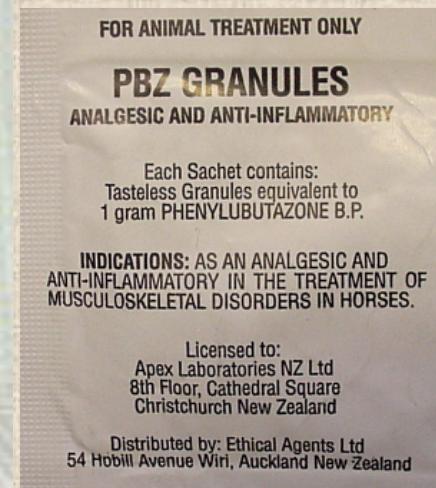
# Renal Toxicities

## Differential diagnoses:

- Raisins & grapes



- NSAIDs



# Renal Toxicities

## Differential diagnoses:

- Oxalates (plants)
- Easter Lily (cats)



# Renal Toxicities

## CHOLECALCIFEROL-Sources

- Pesticides
- Plants
- Vitamin D<sub>3</sub>  
Toxicity:  
2 mg/kg (low)  
 $LD_{50}$  13 mg/kg



# Renal Toxicities

## CHOLECALCIFEROL- Clinical Signs

- Initially - lethargy & anorexia
- Vomiting, PU, PD
- Dehydration
- Cardiac - PR ↑, QT↓
- Azotaemia

# Renal Toxicities

## CHOLECALCIFEROL - Diagnosis

- Hypercalcaemia
- Hyperphosphataemia
- Ca:P
- ECG: ↑ PR interval, ↓ QT
- Histo: Tissue Mineralisation

# Renal Toxicities

## Cholecalciferol Treatment Plan

depends on severity and Calcium levels

- Activated charcoal (repeat)
- Fluids - Saline diuresis
- Frusemide
- Prednisone
- salmon calcitonin (Miacalcic) OR
  - \*pamidronate disodium (Aredia)
- Guarded to Grave Prognosis

# Renal Toxicities

## ETHYLENE GLYCOL

- Antifreeze
- Clinical signs appear from 30 minutes to 12 hours post ingestion



# Renal Toxicities

## ETHYLENE GLYCOL - Antifreeze

- Stage I - drunkenness (1-2 hours)
  - Vomiting, depression, ataxia
  - Metabolic Acidosis,
  - Cats - lethargy
- Stage II - (2-6 hours)
  - diuresis, dehydration, polydipsia

# Renal Toxicities

## ETHYLENE GLYCOL - Antifreeze

- Stage II - Cardiopulmonary Signs

- Hypocalcaemia
- Hypothermia,
- Muscle tremors (6 hours)
- Tachycardia,
- Pulmonary oedema
- ↑ phosphorus

# Renal Toxicities

## ETHYLENE GLYCOL - Antifreeze

- Stage III - Renal Failure

- Painful swollen kidneys
- Anuria, uraemia
- Increased BUN and Creatinine

# Renal Toxicities

## ETHYLENE GLYCOL - Antifreeze

Clinical Pathology:

Metabolic Acidosis, ↑ anion gap

Urine specific gravity - isotherenuric or dilute

Uraemia, ↑ creatinine (renal failure)

# Renal Toxicities

## ETHYLENE GLYCOL - Antifreeze

Clinical Pathology:

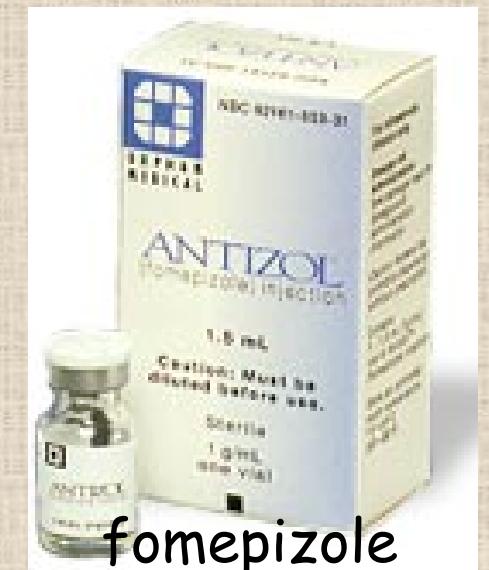
Birefringent crystals in kidneys



# Renal Toxicities

## ETHYLENE GLYCOL TREATMENT

- Ethanol (dogs and cats)
- Dogs: 4-methylpyrazole (fomepizole)
- Symptomatic and supportive care
  - fluid therapy
  - sodium bicarbonate (acidosis)
  - electrolyte correction



# Renal Toxicities

## SUMMARY

- Clinical Signs of Renal Failure
- Hypothermia
- Activated charcoal (cholecalciferol)
  - Reduce hypercalcaemia
- Metabolic Acidosis (ethylene glycol)
  - Ethanol or 4-Methylpyrazole