

# Cocaine Adulterants

MATT May 1, 2008



# History of Adulterants

- Adulterants vs Diluents
  - Diluents: lactose, mannitol, sucrose, dextrose, starch
- By-products and precursors
  - benzoylecgonine, methylecgonine, ecgonine, *cis*- and *trans*-cinnamoyl cocaine,  $\alpha$ - and  $\beta$ -truxillines, and tropacaine.
  - Hydrocarbons from kerosene
- Heroin – quinine

# Adulterants Found in Cocaine

- Benzocaine, lidocaine, procaine, tetracaine
- Caffeine
- Diltiazem
- Phenacetin
- Levamisole

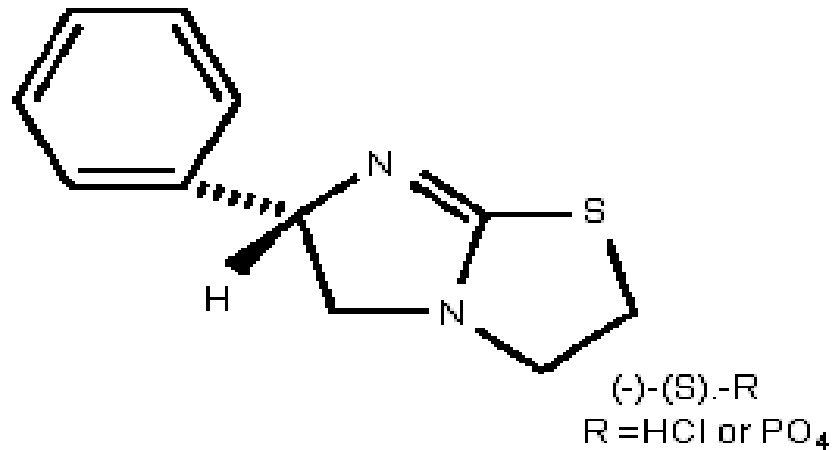
# Identification of Adulterants/Diluents

- Quantitation
  - Cocaine penalties based on amount
- Tracking or “Fingerprinting”



**Delaware Health Alert Network  
#102  
September 2, 2005 8:26 AM**

# Levamisole



(Ergamisol, HCl salt) is an antibiotic belonging to a class of synthetic imidazothiazole derivatives. It was discovered at Janssen Pharmaceutical in 1966.

# Levamisole

- Originally used as an antihelminthic to treat worm infestations in both humans and animals.
- It has been tested in combination with 5-FU to treat colon cancer and some other cancers.
- Human dose was 150 mg/day
- Half life of about 4 hrs
- Used in aquariums for control of internal parasites

# Levamisole

- Extensively metabolized in liver – 5% excreted unchanged
- Main metabolite is p-hydroxy and glucuronide
- Toxicity
  - Leucopenia, agranulocytosis, thrombocytosis
- Nausea, vomiting, diarrhea, mouth sores, loss of appetite, stomach pain, change in taste and smell, muscle aches, fatigue, dizziness, headache and skin rash
- May diminish effectiveness of vaccines



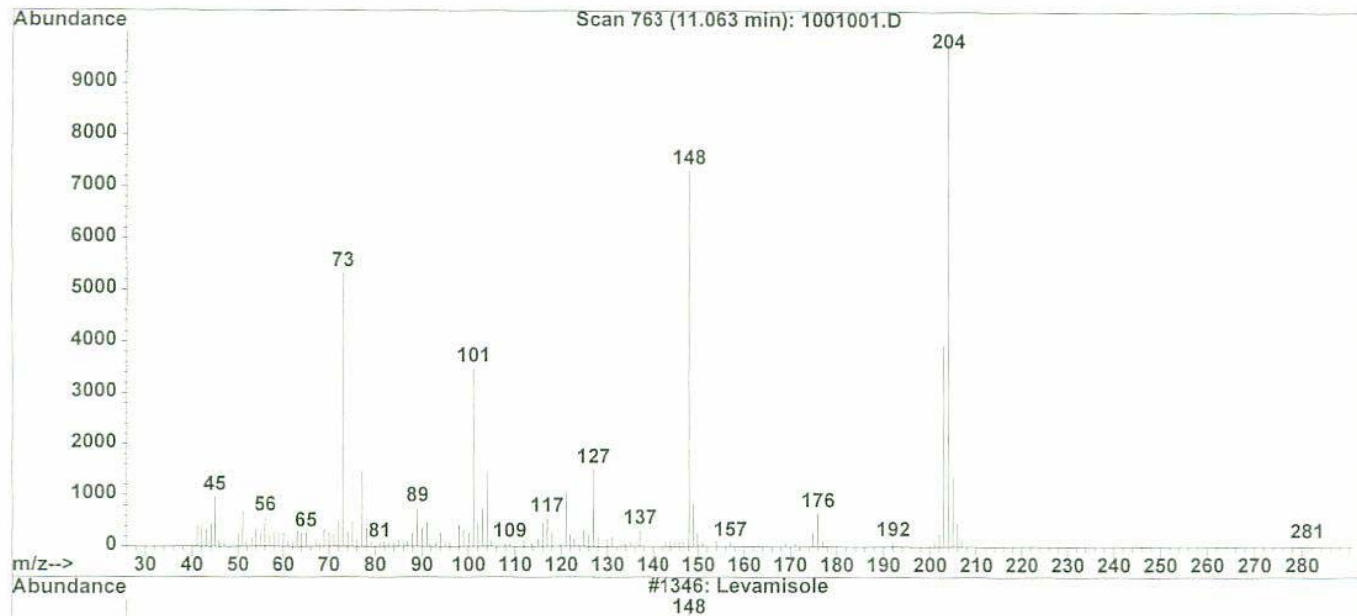
# Cocaine Adulterant

- All cocaine positives for a 3 month period in fall 2007 – 33% contained levamisole -3% Diltiazem
- UK – 2005-2006 in coroners cocaine positive cases - 14% positive
- DEA seizure cases beginning 2003
- Found in UK with MDA known as “E”

# Testing For Levamisole

- GCMS base screen

Library Searched : C:\DATABASE\AAFSOLD.L  
Quality : 97  
ID : Levamisole



# Levamisole & Aminorex

- 2007 horse racing laboratories reported positives for aminorex

