

# Surveillance of Selected Antimicrobial Residues in the 2000 Alberta Honey Crop

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- Why concerns about antibiotic residues
- How to get a representative cross section of the Alberta produced honey
- Results and interpretation



# American Foul Brood (AFB)

- AFB is caused by *Paenibacillus larvae* subspecies *larvae*, a spore forming bacteria
- Vegetative form infects and kills bee larvae and may result in loss of colony
- Spores form - contaminating hives and equipment



# AFB Spread

- Mechanically through working with contaminated hives and equipment



- Healthy bees entering and robbing diseased colonies



# AFB Control

- Destruction of infected colonies and burning all equipment



- Control through use of antibiotics

# Antibiotic Control

- Historically - sulfa drugs
- Currently – oxytetracycline
- Future/Experimentally – tylosin, erythromycin, lincomycin



# Half life of Oxytetracycline (OTC)<sup>1</sup>

<u>Substrate</u>	<u>Temp (C)</u>	<u>Time (Hours)</u>
Honey/Water (1:1)	60	4.1
Honey/Water (1:1)	30	6.8
Honey	60	6.5
Honey	30	330

1. Sporns, P., S. Kwan and L. Roth. 1985 HPLC Analysis of oxytetracycline residues in honey. *Journal of Food Protection* 49 (5):383-388.

# OTC treatment use

“Do not medicate bees with this drug for at least four weeks prior to the main honey flow. Honey or syrup stored during medication periods in combs for surplus honey should be removed following final medication of the bee colony and must not be used for human food”.

Health Canada has recently established an administrative MRL for OTC in honey at 0.4 ppm.

# Honey production in Alberta 2000

- 750 beekeepers
- 205,800 colonies
- 12,486 tons honey



# Alberta Honey Co-op

- Receives honey from major honey producers (>5,000 lbs/season)
- Approximately 200 major honey producers in Alberta –180 belong to the Co-op.
- Co-op collects a random sample of each shipment for quality control analysis.



# Samples from 2000 season

- 362 samples representing shipments from 131 producers were collected
- Samples were screened for sulfonamides and tetracyclines using the CHARM screening test.
- Suspect positives were confirmed and quantified using HPLC.

# Results

- Sulfonamide residues were not detected.
- 13/362 samples (3.6%) were suspect positive for tetracyclines by CHARM
- 7/13 suspect positives (1.9%) contained quantifiable levels of tetracycline ( $>0.02$  ppm)
- 6 of the 7 positives originated from a single producer
- None of the samples contained levels above the administrative MRL of 0.4 ppm

# Interpretation

- The major Alberta honey producers are producing a product free of tetracycline and sulfonamide residues.
- Quantifiable residues were detected from only 2 of 131 producers, indicating individual producer education may be the only requirement for further reducing the prevalence of residues.

# Further Study

- Alberta Honey Co-op QC samples from the 2003 honey season may be analyzed for sulfonamides tetracyclines, tylosin, lincomycin, and erythromycin residues.

