



Honey bee testing at the AHL and AFL *Hugh Cai DVM, MVSc, MSc, DVSc*

1. Bee testing offered at the AHL

The AHL offers quantitative detection of honey bee (*Apis mellifera*) pathogens as a routine testing service. The test results can be used to identify the presence of pathogens, many that can lead to disease and negatively affect honey bee health. The testing can also assist in the distinction between low-grade latent infection and high-level infection by pathogens. The quantitative PCR test methods for honey bee pathogens listed below are now Standards Council of Canada (SCC) accredited under the AHL flexible scope for PCR assays as listed on Lab Services' SCC scope of accreditation to ISO/IEC 17025. These assays include

- Acute bee paralysis virus (ABPV)
- Black queen cell virus (BQCV)
- Chronic bee paralysis virus (CBPV)
- Deformed wing virus (DWV)
- Israeli acute paralysis virus (IAPV)
- Kashmir bee virus (KBV)
- Sacbrood virus (SBV)
- *Crithidia mellificae*
- *Spiroplasma apis*, *Spiroplasma melliferum*
- *Tropilaelaps* spp.

The AHL also offers:

- microscopy examination for tracheal mites (*Acarapis woodi*)
- visual detection and PCR genotyping of *Varroa* mites (*Varroa destructor*)
- PCR detection and DNA sequencing confirmation for small hive beetles
- PCR detection of *Lotmaria passim*, *Nosema apis* and *N. ceranae*, *Apocephalus borealis*.

The bacterial causes of American foulbrood (AFB) (*Paenibacillus larvae*) and European foulbrood (EFB) (*Melissococcus plutonius*) can be culture isolated for detection. *P. larvae* isolates can be tested for antimicrobial resistance.

The AHL can also quantitatively test vitellogenin (a biomarker for honey bee health) mRNA levels for honey bee health monitoring.

Sample submission:

- For PCR and tracheal mite testing: 100-150 bees, live or frozen, shipped on dry ice
- For AFB and EFB testing: honey or comb, shipped cool
- For small hive beetles: beetle or larvae, shipped cool

2. Test provided by the AFL:

Analytical support for bee-specific matrices such as honey for 8 neonicotinoid class pesticides, which can be detected by our LC-MS/MS multi-residue screen, TOPS-142LC.

The following neonicotinoids can be detected with this method:

- Acetamiprid

- Clothianidin
- Dinotefuran
- Flonicamid
- Imidacloprid
- Nitenpyram
- Thiacloprid
- Thiamethoxam

Sample submission: please provide a minimum of 5 g for each sample type. Freeze samples soon after collection. Ship samples frozen in a cooler with ice packs for next-day delivery. Please do not ship on Fridays since we are closed on weekends. The standard TAT is 15 business days.

Contact the AHL:

Email: ahlinfo@uoguelph.ca

Tel: 519-824-4120 ext 54530 AHL Specimen Reception

Contact the AFL:

Email: aflinfo@uoguelph.ca

519-767-6299 AFL Client Services

For field samples submitted through the **OMAFRA Apiarist or Apiary Inspectors**, please contact:

Email: paul.kozak@ontario.ca

Tel: 519-826-3595

Website: www.omafra.gov.on.ca/english/food/inspection/bees/info_beeinspectors.htm