



PROPER COLLECTION AND HANDLING OF DIAGNOSTIC SAMPLES

PART 3: SWABS

Diagnostic samples are used to determine health status or identify specific pathogens in pullet, layer and breeder flocks. Routine samples include whole blood, serum, formalin-fixed tissue and swabs: tracheal, choanal, oropharyngeal, cloacal, organs and joints. For specific investigations, Fast Technology for Analysis of nucleic acids (FTA) cards can be used to collect feather pulp, whole blood or isolates from any type of swab.

MOLECULAR DIAGNOSTICS

The advent of molecular diagnostics such as PCR and rt-PCR has provided new tools for rapidly and accurately diagnosing poultry diseases. It is now possible to sequence the genome of many pathogens. Sequencing allows comparing isolates to better understand the disease epidemiology. Tissues, swabs and FTA cards can be submitted for molecular diagnostics.

SAMPLE SUBMISSION

When submitting samples to a diagnostic laboratory, it is important to provide thorough and relevant flock information on the laboratory submission form. Send the swabs to the diagnostic laboratory for immediate analysis. Do not freeze samples.

Collection of Swabs

Cotton or dacron tipped swabs are an effective, non-invasive method for sampling for Mycoplasmas, bacteria, and many viruses (examples: infectious bronchitis, avian influenza, infectious laryngotracheitis, Newcastle). Samples for PCR, virus isolation, bacterial isolation or other tests can be obtained from swabbing the oral/choanal cleft, trachea, cloaca, affected joints, and organs.

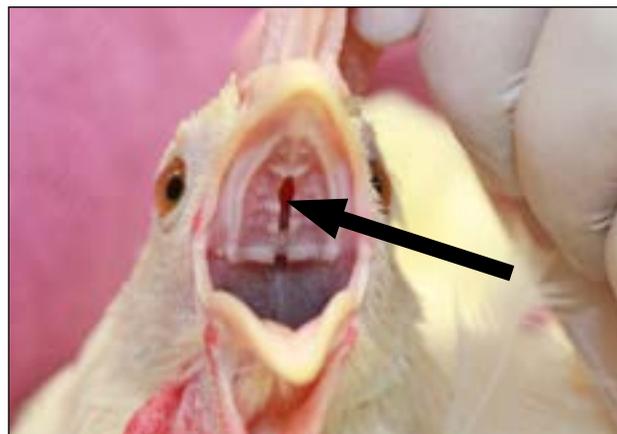


Figure 1. Choanal cleft (arrow) is present in the upper beak.

Critical information that should accompany all diagnostic sample submissions:

- Flock identification and location
- Age of flock
- Date of sample collection
- Vaccination program
- Flock history, including pertinent health or production problems



Figure 2. Proper technique for restraining the bird while collecting oropharyngeal swabs.



Figure 3. Be sure to insert swab into the choanal cleft when collecting oropharyngeal swabs.

| Pathogen(s) | Sample Pooling for PCR | Media Used | Location |
|-----------------------------------|---|--|----------------------------|
| Avian Influenza | pool of up to 11 swabs in 5.5mL media; pool of up to 5 swabs in 3mL media | BHI (Brain heart infusion) | Tracheal, oropharyngeal |
| Newcastle Disease | pool of up to 5 swabs in 5.5mL media; pool of up to 5 swabs in 3mL media | BHI | Tracheal, oropharyngeal |
| Mycoplasma gallisepticum/synoviae | pool of 5 swabs per PCR reaction | Dry or BHI media | Tracheal, oropharyngeal |
| Bacteria and/or Viruses | only pool tissues from a single bird; pool by organ system (respiratory, enteric, reproductive) | media provided in the culturette tube | Affected organs |

See <http://poultryimprovement.org/documents/WIAV0020.pdf> for recommendations for collecting specimens from poultry for viral diagnostic testing.

It is advised to confirm the proper type of swabs and necessity for enrichment media for sample collection and transport. Prior communication with the diagnostic lab will ensure correct sample handling and expedite processing. When submitting swab samples in liquid media such as brain-heart infusion broth (BHI), many laboratories request that the actual swab is not included in the tube. The proper procedure in this case is to gently swish the swab in the media to wash off any material, and then roll the swab against the tube as it is pulled out to drain any excess fluid from the swab that may contain pathogenic material. Depending on the test, 5 to 11 individual swab samples can be pooled together without reducing the sensitivity of the PCR.



Figure 4. The swab is inserted gently through the glottis into the trachea.



Figure 5. Remove feathers and clean the skin with an alcohol pad before cutting into the joint of a euthanized bird.



Figure 6. Swab the synovial surface of the affected joint.



Figure 7. Expose the cloaca and insert the swab gently into the cloaca and rotate the swab over the mucosal surface.

