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Options for Ractopamine Testing for Fairs and Exhibitions

An Overview of Surveillance Methods That Fairs and Exhibitions Can Use to Determine Ractopamine Usage

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Overview

As fairs and exhibitions continue exploring their options for commercial sales of pigs, they will be making decisions on ractopamine restrictions for their events. To validate and enforce the restrictions, and provide surveillance, a number of different options are available for fairs for testing processes including the testing of blood and urine, hair, or organs and tissues.

Blood and Urine Testing

Ractopamine can be traced in the blood and urine for approximately 7 days. These tests will not determine use prior to 7 days after the withdrawal of the product. However, this may be a simple deterrent to randomly verify ractopamine restrictions have been followed. Self-test kits for blood and urine are available from [Neogen Corporation](#).

The ractopamine Lateral Flow Device (LFD) test:

- Is intended for field applications to screen cattle and swine urine samples for the presence of ractopamine.
- Is a qualitative one-step test, which easily detects the presence of ractopamine at set concentrations in either blood or urine.

To take a sample, use the mini-pipette in the sample kit to extract the appropriate sample (blood or urine depending on the kit). Apply 100 microliters of sample to test device sample port. The test should sit for 10 minutes before showing the results. Use a different pipette for each sample and make sure to use biosecurity practices between each pig. (Those handling the test should wear gloves during the process. Helpers should wash or sanitize hands.)

- Turnaround time: about 10 minutes
- Cost: about \$185.50 per 25 tests (\$7.50 per test)

Hair Testing

Hair sample testing can be the most viable option for most fairs and exhibitions due to a quick turnaround time. It is an innovative, easy sampling collection method. When testing hair, ractopamine can be detected from the last 42 days before testing, with some research noting detection of the compound up to 100 days. This option is noninvasive and can be done on live animals. The hair collection process should include gathering one centimeter of hair from a dense region of the pig (such as the ears or tail) with roots attached. When shipping,

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keep hair dry and out of direct sunlight, and make sure to label appropriately.

Laboratories that will provide this service:

- **Texas A&M Veterinary Medical Diagnostic Laboratory**
 - Will accept hair samples to test for ractopamine use
 - Turnaround time: 10 days
 - Cost: \$100 to test for beta-agonist, additional \$100 to confirm ractopamine

- **MSU Veterinary Diagnostic Lab**

[Michigan State University Extension](#) is exploring a workable solution for a hair sample test to be used through the MSU Veterinary Diagnostic Lab on campus. This option should be viable within the next few months. More information on cost, shipping information, and intake forms will be available soon. The hair sampling procedure will be a low-cost, quick turnaround option that potentially will allow flexible testing on multiple banned substances. MSU is working on a two-step process for 2020 with an ELISA test, and sampling it further to a one-step process in 2021 using a GC-MS procedure.

Step 1: ELISA (measures antibodies to ractopamine)

- Collect hair samples.
- Estimated turnaround time: 3 days
- Re-test those with positive results as well as winners of class.

Step 2: Begin to phase in GC-MS “finger-printing” for use in 2021 and beyond

- GC-MS testing is highly accurate.
- Turnaround time: Similar to ELISA testing
- Can test for other banned livestock substances for additional costs

Organ and Tissue Testing

Organ and tissue testing is the standard way of testing for USDA slaughter facilities. This testing process is done postmortem. This poses an issue for nonterminal shows with gilts going home to be bred.

- Request at any processor (even local butchers)
- The sample collection will need to be completed by a certified sampler
- Ractopamine can be detected in organs up to 4 weeks after withdrawal of the product
- Turnaround time: weeks (most labs are 8 to 10 days)
- Highest cost option (\$250 to \$325)
- Lab available for testing: Burnaby Lab (British Columbia, Canada), Crete Lab (Crete, Illinois) and Eurofins (New Orleans, Louisiana)

Testing Results

Fairs, exhibitions, and youth participants: incorrect results do not frequently occur; however, it is possible that any test could give an incorrect result. These results are defined as false positives or false negatives. A false positive suggests that a particular substance was detected in a sample, even though it was not actually present. Whereas a false negative result would suggest a particular substance was not detected in the sample, even though it was present.

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Many things can cause false negative or false positive results, including sample contamination, outdated sampling materials, equipment failure, improper sample labeling, masking agents, or a substance that has a similar chemical composition. Testing laboratories responsible for completing these tests have built in protocols to reduce the occurrence of false negatives and false positives.

If a false positive is suspected, the laboratory can run a second test using a GC-MS testing process that is specific and will provide more definitive results. The secondary test using these methods will confirm the results of the initial test and allow the fair to make definitive decisions regarding the use of banned substances. Fairs and exhibitions should consider who would cover the cost should a confirmation test be requested.

Additional Resources

Find additional resources for fairs and exhibitions on the [MSU Extension website](#) or visit:

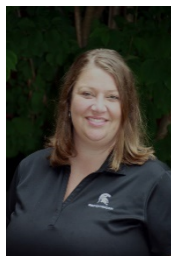
- [4-H Animal Science](#)
- [Biosecurity](#)
- [Fair and Exhibition Animal Health](#)
- [Pork From Ractopamine-Fed Pigs Is Safe for Consumption](#)
- [Ractopamine FAQ](#)
- [Zoonotic Disease](#)

Questions

To find out more about improving air quality or to discuss options for your county fair, show or exhibition, contact:



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