HELPFUL INFORMATION:

1) **Never Fed Beta Agonists Program:**
https://www.ams.usda.gov/services/imports-exports/beta-agonists

2) **Official Listing of Approved Never Fed Beta – Agonists Programs:**
https://www.ams.usda.gov/sites/default/files/media/LSOfficialListingNeverFedBetaAgonistsProgram.pdf

3) **Veterinary-Client Patent-Relationship (VCPR) template:**
https://vet.osu.edu/extension/general-food-fiber-animal-resources

4) **Blue Bird Labels:**
https://animaldrugsatfda.fda.gov/adafda/views/#/blueBirdLabels

THE OHIO STATE UNIVERSITY
COLLEGE OF VETERINARY MEDICINE

Veterinary Extension
A100P Sisson Hall
1920 Coffey Road
Columbus, Ohio 43210
Phone: 614-292-9453
Fax: 614-292-4142

trincado.1@osu.edu
schuenemann.5@osu.edu
workman.45@osu.edu
vet.osu.edu/extension

VETERINARY EXTENSION

THE FACTS REGARDING RACTOPAMINE

Changes are impacting commercial and exhibition swine production in the US:

- **What is ractopamine?**
- **How does ractopamine work?**
- **What is the approval status of ractopamine?**
- **Why ractopamine-free pork now?**
- **Can use of ractopamine be detected?**
- **What are the potential alternatives?**

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VETERINARY EXTENSION
DEPARTMENT OF
VETERINARY PREVENTIVE MEDICINE

The Facts Regarding Ractopamine

What is ractopamine?

Ractopamine is a feed additive marketed by Elanco Animal Health in the US for swine (Paylean®), cattle (Optaflexx®), and turkeys (Topmax®). Zoetis also markets generic versions for swine (Engain®) and cattle (Actogain®). Ractopamine is intended to provide economic benefits by increasing rate of gain, improving feed efficiency, and increasing carcass leanness. The active ingredient is ractopamine hydrochloride, a synthetic, racemic biogenic amine, and a Beta-adrenoceptor agonists (β-agonists or beta-agonists). β-agonists are anabolic compounds that promote fat loss and muscle gain. It is not an antibiotic, hormone, or steroid.

How does ractopamine work?

Ractopamine is fed to market animals intended for slaughter, and is not approved for breeding animals. Paylean® is fed to swine during the final 20-40 days, Optaflexx® is fed to cattle during the last 28-42 days, and Topmax® was fed to turkeys during the final 7-14 days. Ractopamine mimics stress hormones and increases the rate at which feed is converted to muscle. It essentially redirects nutrients away from fat deposition to muscle deposition.

What is the approval status of ractopamine?

The use of ractopamine is approved in 26 countries including the US, Canada, and Mexico. The US Food and Drug Administration (FDA) approved Paylean® in 1999, Optaflexx® in 2003, and Tomax® in 2009. In 2015, the generic versions, Engain® and Actogain®, were approved. The FDA determined ractopamine to be safe and effective when used as directed by the label, and there is no withdrawal period prior to slaughter. However, over 160 countries including the European Union, Russia, and China (the largest importer of US pork) have banned ractopamine because they consider it a potential risk for consumer health. It is a drug in the beta-agonist family, and some other beta-agonists have been shown to have negative effects on human health including increased heart rate and anxiety. Specific effects of ractopamine on human health are not widely understood at this time.

Veterinary Feed Directive or Over-the-Counter?

Ractopamine is sold OTC (over-the-counter) as a pre-mix directly to producers and feed mills, or with a VFD (veterinary feed directive) when it is combined with an antibiotic and sold as a medicated feed. A valid VCPR (veterinary-client-patient-relationship) is necessary to receive a VFD.

Why ractopamine-free pork now?

This is a market driven-decision led by Tyson, one of the largest pork processors in the world, as well as other packers deciding to no longer process hogs fed ractopamine. Processors are addressing issues with an international export market and an increasing customer base who will only accept ractopamine-free product. This is reminiscent of what happened in 2007 in the dairy industry regarding the use of rBST. Milk processors and retailers announced that they would no longer purchase milk from farms using rBST; thus, essentially eliminating its use in the industry. Retailers as well as producers are constantly working to adapt to consumer trends and meet consumer demands. The USDA initially created the “Never Fed Beta-Agonists Program” for the export market; however, they also approved the use of a ractopamine-free label in 2013 to meet the demands of some domestic consumers.

Can use of ractopamine be detected?

Yes, ractopamine residue can be found in swine tissues in the laboratory using by high-performance liquid chromatography (HPLC) with fluorescence detection. There are also some pen-side tests on the market that can be used in the field to detect ractopamine in feed, urine, and tissue using ELISA and lateral flow devices.

What are the potential alternatives?

Genomic technology is available for producers to select for combined economically important traits such as growth, loin eye area, backfat, and percent muscle without neglecting other critical traits (e.g., health, fertility, longevity, etc.). Commercial producers may also utilize dietary adjustments and management practices as ractopamine replacement strategies. Dietary adjustments may include: increased SID Lysine (amino acid), increased energy levels (fat), less dried distillers grains and wheat middlings, increased copper levels, and utilizing specialty ingredients such as enzymes and other feed additives. Management practices may include: “consistency”, eliminating feed outages, monitoring stocking density, maintaining housing comfort (e.g., air quality and temperature-humidity index), monitoring feed particle size and pellet quality, increasing weaning age to at least 23-25 days, and monitoring flow differences. In addition, use of immunological castration may be an alternative to improve growth performance and carcass characteristics.

Exhibition swine producers may rely more on selection, genetics, nutrition, and feeding practices to produce heavier muscled and leaner hogs. Ractopamine was primarily used for hogs that were structurally sound and in need of a boost in growth or muscle expression.

An ounce of prevention is worth a pound of cure!

Prevention of disease at the herd level requires an ongoing and constant effort with effective coordination of the whole system (animals, feed/water, facility, environment, and personnel). Consult with your veterinarian and nutritionist for more information.