

# Appropriate Use of Beta-Agonists in Youth Livestock Feeding Programs

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The main goal of traditional livestock selection programs is to produce the ideal animal that is representative of the commercial livestock industry, regardless of species. Through participation in youth livestock programs, youth become important members of the commercial livestock industry. It is this experience that teaches them how to care for and manage their animals appropriately. Perhaps more importantly, youth also learn about responsibility, character, fair play and getting recognized for the results of their hard work. Even if the youth are not involved in animal agriculture as an adult, their youth livestock project can help them develop the skills and work ethic needed to become productive members of society.

The show ring affords youth the opportunity to display their newly learned livestock skills while also competing against other youth. To perform well, they must learn how to select the most appropriate animal and how to feed it for optimal growth prior to the show. In essence, the show becomes an information exchange about how different genetics work and how the latest animal products can affect the overall quality of the animal. For a small minority of youth exhibitors, the show ring has developed into an all-out competition for prizes, premiums and recognition. Some exhibitors are willing to do anything they can to gain a perceived or even real competitive advantage, which could include providing inappropriate

treatment or mismanaging the animal. It might even involve using products designed for commercial production above the recommended levels or using products that are designed for other species. These products could be nutritional, pharmaceutical or simply cosmetic.

Beta-adrenergic receptor agonists, more commonly referred to as “beta-agonists,” are a class of animal drugs designed to increase lean growth and feed efficiency in market beef cattle and market swine. They are commonly used in the feeding programs for youth market steer and market hog projects. Below are examples of ractopamine hydrochloride that are currently marketed in the U.S.:

- Paylean (Elanco Animal Health) and Engain (Zoetis) for use in swine finishing rations.
  - Indicated to increase rate of weight gain, improve feed efficiency and increase carcass leanness.
- Optaflexx (Elanco Animal Health) and Actogain (Zoetis) for use in beef cattle finishing rations.
  - Indicated to increase rate of weight gain, improve feed efficiency and increase carcass leanness when fed as a complete feed.
  - Indicated to increase weight gain and improve feed efficiency when fed as a topdress.

Another example of a beta-agonist is zilpaterol hydrochloride (Zilmax; Merck Animal Health), which has a three-day withdrawal. While still approved, Zilmax is currently not being marketed in the U.S.

Below is a description of each ractopamine hydrochloride product and their approved uses. These products have a place in the feeding programs for youth market steer and market hog projects as long as they are fed according to the label directions and all potential risks are completely understood. In order to be fed in combination with another drug (previously medicated feed), the beta-agonist must be approved for use in combination with that respective drug. It is also important to note that no beta-agonists are approved for use in sheep or goats.

## Paylean and Engain

### Approved Animals

- Market hogs that weigh at least 150 pounds for the last 45-90 pounds of gain prior to harvest.
- Not approved for breeding gilts or any other animal species.

### Feeding Rate

- 4.5–9.0 grams of ractopamine hydrochloride per ton of a complete swine finishing ration that contains at least 16 percent crude protein.
  - Feeding levels greater than this is illegal and has been shown to provide no additional benefit.
  - This is an extremely small amount. If fed as a Type B or Type C medicated feed, it is important to carefully weigh the ractopamine hydrochloride instead of using a volumetric measurement and to ensure that it is thoroughly blended with the feed.
- Must be mixed into complete feed; cannot be topdressed.

- Approved for use as the only drug, and in combination with Tylosin (requires a veterinary feed directive).
- Treat the final show as the harvest. Using the target weight of last show, subtract 45–90 pounds, and begin feeding at that point.

### Withdrawal Time

- There is currently no withdrawal time when used according to the label.

### Negative Effects

- May increase the number of injured and/or fatigued pigs during marketing due to an increase in activity. Similarly, beta-agonists should not be used for pigs that have issues with structural soundness.
- Typical show pigs are much leaner and more heavily muscled than the average commercial hog. Therefore, show pigs tend to be more susceptible to stress, which can lead to animal welfare issues and, eventually, decreased carcass quality. Add in the use of a beta-agonist, and these problems can be intensified. To avoid extra stress, it is important to remember to never restrict feed and water to your market hog.

## Optaflexx and Actogain

### Approved Animals

- Market steers and market heifers for the last 28–42 days on feed.
  - There is a perception that using ractopamine hydrochloride earlier in the feeding phase and then repeating its use after one to two months off has some performance benefits to the animal. This is illegal, and research data suggests that there is no value in this practice.

- Not approved for breeding heifers, breeding bulls or any other animal species.

### *Feeding Rate*

- As part of a complete feed:
  - 8.2–24.6 grams per ton in a complete feed. Indicated for increased rate of weight gain and improved feed efficiency.
  - 9.8–24.6 grams per ton in a complete feed. Indicated for increased rate of weight gain, improved feed efficiency and increased carcass leanness.
- As a topdress:
  - 70–400 mg per head per day topdressed in a minimum of 1 pound per head per day of a Type C medicated feed (maximum of 800 grams per ton).
  - This is an extremely small amount. Proper care should be taken to ensure that animals fed by topdressing do not receive more supplement than what is indicated, especially in group-fed programs.
- This is an extremely small amount. If fed as a Type B or Type C medicated feed, it is important to carefully weigh the ractopamine hydrochloride instead of using a volumetric measurement and to ensure that it is thoroughly blended with the feed.

- Approved for use as the only drug, as well as in combination with monensin, monensin and melengestrol acetate (MGA), monensin and tylosin, as well as monensin, MGA and tylosin.

### *Withdrawal Time*

- There is currently no withdrawal time when used according to the label.

### *Negative Effects*

- Not all cattle are structurally sound enough for beta-agonists. They should not be fed to cattle that have structural soundness issues as these problems can become magnified and could lead to decreased mobility.

For complete product information or when in doubt about the use of beta-agonists, please refer to the respective product label.

Appropriate care should be exercised when handling and mixing medicated feeds. Remember, there is no substitute for the knowledge and application of the principles of animal selection, nutrition, health and management.

Paylean and Optaflexx are trademarks for Elanco Animal Health's brand of ractopamine hydrochloride. Engain and Actogain are trademarks for Zoetis's brand of ractopamine hydrochloride.

Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions from the manufacturer.



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