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Calf Note #106 - Calves and antibiotic residues

Introduction

It's in the best interest of every calf producer to raise and market calves that are top quality and free from unacceptable levels of growth promoters and antibiotics. Unfortunately, with very young calves, this can sometimes be easier said than done. However, it's important (and the law) to carefully monitor the types of feeds used and adhere to requirements for withholding periods to minimize the risk of violative residues.

A recent [FDA Update](#) indicated that, in 2003, more than 1,800 residue violations were reported to FDA for enforcement action in various classes of cattle. The largest proportion of these violations (44%) were caused by neomycin residues in "bob" veal.

Bob veal

Bob veal is defined as calves from a few days to 150 lbs. that are fed primarily milk-based diets. Most bob veal calves come from dairy farms and are calves that are not suitable for veal or rearing in other beef (feedlot) programs. There are a lot of bob veal calves – the USDA estimates that 1/3 of all veal calves slaughtered in 2002 were bob veal.

Calves from birth to 150 lbs. are considered bob veal – but aren't necessarily veal calves. Herd replacements and bull calves on dairy farms or calf ranches are usually fed milk replacer diets plus some grain, at least for a period of time prior to being sent to slaughter. Alternatively, they may be calves kept on the farm for only a few days. These are the cull calves that cannot or will not be raised in veal farms or for beef. Generally, veal growers look for larger, healthier calves, which are more likely to grow faster and have greater feed efficiency. Small or sick calves or calves that receive little or no colostrum generally do not make good veal calves. There are often the bob veal calves.

Residues associated with bob veal gives the special-fed veal industry a black eye, since most bob veal actually comes from dairy farms and not from veal farms. The veal industry has worked hard to improve the quality of special-fed veal and the number of violations in this industry is [remarkably low](#). Indeed, the [American Veal Association](#) has established a [quality assurance program](#) to improve the quality of the product produced by the industry. The term "bob veal" is really a misnomer.

Source of residues

Where do these unacceptable antibiotic residues come from? The answer is simple, since the FDA determined that most residues were from calves contaminated with neomycin. Most residues come from medicated milk replacer. Generally, calves less than 150 lbs. will consume only three types of feed – colostrum, milk (or milk replacer) and calf starter. Calf starters are not medicated with neomycin or oxytetracycline (the combination of neomycin sulfate and oxytetracycline is commonly used in calf milk replacers and is called **Neo-Terra**). Colostrum will contain antibiotic residue only when the cow has been treated for mastitis (i.e., dry cow therapy) and has an unusually short dry period. Waste milk is a real potential source of antibiotic residues, including antibiotics used to treat mastitic cows. However, the primary source of neomycin in a calf diet is medicated milk replacer.

According to FDA, four states (Pennsylvania, New York, Maryland, Ohio, and Virginia) were responsible for over 90% of all antibiotic residue violations reported in bob veal calves in 2003. A significant proportion of producers in these states that feed milk replacers use ones containing antibiotics (Heinrichs et al., 1995), particularly Neo-Terra. So, it appears that much of the concern about residues in bob veal calves is associated with feeding medicated milk replacer.

Withdrawal times

According to FDA, withdrawal times for neomycin sulfate are 30 days for cattle (excluding veal calves), goats and 20 days for swine and sheep. But, here's the problem. If a dairy farmer feeds a bull calf with the intention of keeping that calf until it is older than 150 lbs (when it is no longer considered bob veal), then the producer will follow the 30 day withdrawal time prior to sending the calf to slaughter. Then, the milk replacer is being fed according to label directions and there is a legal withdrawal time for the product. However, if the calf sold prior to reaching 150 lbs., then the calf is considered bob veal and there is no legal withdrawal time. In this situation, there is no clearance for using the drug in the animal. Most medicated milk replacer labels will contain text that states something like this:

“WARNING: Withdraw from feed 30 days prior to slaughter. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal.”

This puts the producer in a particularly difficult position. Keep the calf until it is heavier than 150 lbs. or risk the presence of residues. *So, the use of medicated milk replacers should be restricted to calves that will be kept on the farm until they are ruminants.*

Avoiding residues

If you want to avoid residues in bull calves (bob veal) that you decide to send to slaughter, consider the points below:

- Although it is a minor issue, it is important to keep track of the potential for antibiotic residues in colostrum produced by the cow. Although this is not usually a significant source of antibiotic residues, there is the chance that cows with short dry periods may have antibiotic residues in their colostrum. Unfortunately, the high solids content of colostrum may give false positive on several cowside tests (Andrew, 2001), so testing colostrum for antibiotics may not be an appropriate strategy. (For more information on this research, see [Calf Note #73](#)). Be sure to follow the withdrawal times on the dry cow mammary treatment and don't use the colostrum if the cow has too short a dry period.
- Medicated milk replacers is by far the most common cause of violative antibiotic residues. The easiest and safest approach is to feed a non-medicated milk replacer. All milk replacer companies manufacture milk replacers without antibiotics. Indeed, producers all over the U.S. use these non-medicated milk replacers very successfully. Some report that the use of therapeutic (treatment) antibiotics is more effective if sub-therapeutic doses of antibiotics are not used. Others report little difference in performance of calves. ([Calf Note #41](#) contains more information on antibiotics in milk replacer). In addition, newer generations of feed additives, including antibodies from plasma, eggs and colostrum, oligosaccharides and β -glucans from yeast and essential oils and herbs have been used to replace antibiotics in milk replacer formulas. These are logical alternatives to antibiotics for producers that may produce bob veal.

Calf growers have a responsibility to produce a safe, wholesome and nutritious product. Careful attention to details – particularly the use of antibiotics in calf milk replacers and observing proper withdrawal times, is a contribution to the industry. And, it's the law!

References:

1. Heinrichs, A. J., S. J. Wells and W. C. Losinger. 1995. A study of the use of milk replacers for dairy calves in the United States. *J. Dairy Sci.* 78:2831-2837.
2. Andrew, S. M. 2001. Effect of composition of colostrum and transition milk from Holstein heifers on specificity rates of antibiotic residue tests. *J Dairy Sci.* 84:100-106.

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