

JUNE 2019 DAIRY NEWSLETTER

Summer Heat? Fight Bac!

Colostrum management can be more challenging in the summer months as stored milk sours quickly, breeds flies and multiplies bacteria with alarming efficiency. One solution is to pasteurize; another option is to add a preservative. Both will function to extend the shelf life of the colostrum. The Kirkton Vet Clinic now carries potassium sorbate, a preservative that has been used successfully in improving colostrum management year-round.

Why is this issue important?

- **At room temperature, bacteria levels will double every 20 min**
- **A 5 gallon pail of freshly collected colostrum will remain above room temperature for up to 12 hours, even when refrigerated!**
- **A study of 230 colostrum samples showed up to 35% of samples were contaminated**
- **Calves fed contaminated colostrum will have lower passive transfer rates and will experience higher morbidity**

What is potassium sorbate and how well does it work?

Potassium sorbate is a highly soluble salt that is widely used as a preservative in foods, drinks and even cosmetics. It acts on and inhibits the growth of bacteria and molds. Just how well does potassium sorbate work on colostrum? A study compared the total bacterial counts on refrigerated colostrum that both had and hadn't been treated with potassium sorbate. After 96 hours in the fridge, regular colostrum had on average 1,479,108 colony-forming units (cfu) per mL of colostrum, while colostrum which had been treated with potassium sorbate averaged 3,548 cfu per mL. The numbers are certainly impressive, however, potassium sorbate does not kill any bacteria already present. The goal of its use is to slow down bacterial replication, thereby extending the time colostrum can be stored and still safely fed to calves.

What are the different ways colostrum can be managed?

Options	Disadvantages	Advantages	Ways to Improve
In a 5 gallon pail on the milkhouse floor	Exponential bacterial growth occurs	Fly trapping...just kidding, there are no advantages!	Stop! Unless the milk will be fed within ½ hour
In fridge	Large pails will remain above the temp required for rapid bacterial growth	No freeze / thaw damage to IgG proteins, can store up to 1 week with potassium sorbate	Freezer bags or Perfect Udder bags will cool down faster. Place bags into ice water baths, or submerge clean frozen water bottles into pails to cool down faster

Options	Disadvantages	Advantages	Ways to Improve
In freezer	Time required to thaw. If the water bath is too hot for your hand, it's damaging IgG proteins and leukocytes	Long term storage (up to 1 year)	Freezer or Perfect Udder bags will speed up the time to thaw. Commercial systems exist that will thaw frozen colostrum evenly without damaging IgG proteins
Pasteurizer (60°C for 60 min)	Upfront cost and maintenance of equipment, and damage to colostrum leukocytes	Kills disease pathogens and lowers the # of bacterial colonies to improve shelf life	Adding potassium sorbate will further increase the time pasteurized colostrum can be stored (up to 10 days) in the fridge

What is the most important detail when it comes to colostrum storage?

No matter how you store it, the most important thing you can do for your colostrum is to ensure **rapid cooling!** Unless it's going to be fed within half an hour, its temperature needs to be quickly dropped (down to 15 °C within 30 minutes of collection) and stored in a clean container. Fridges need to be checked to ensure they are holding at 4 °C, any warmer and you are compromising colostrum quality. Failure to take these measures and you will be feeding bacterial porridge to your newborn calves.

If you're interested in adding potassium sorbate to your colostrum protocol, here are a few questions to answer first.

- Is colostrum being collected from cows who are prepped and stripped with the highest level of attention to detail?
- Are milk(er) pails clean and sanitized immediately prior to colostrum collection?
- Is there a fridge or freezer dedicated to colostrum storage that is calibrated to the correct temperature?

If you answered no to one of these questions, consider addressing the necessary bottlenecks prior to introducing potassium sorbate. Afterall, these will have a far greater impact on colostrum quality. Remember, potassium sorbate will do nothing to the bacteria already present in colostrum, it will only prevent further replication.

In addition to its use in colostrum, potassium sorbate can be used in transition milk, allowing you to capitalize on the benefits of feeding high value milk that often goes to waste. Colostrum is also a great thing to feed to scouring calves as it provides local gut protection, additional calories, and restoration of the microbe population. If you've always wanted to increase the volume or duration of feeding colostrum, but have been limited by your storage capacity, it's time to consider investing in solutions. Whether that takes the form of a new fridge, an on-farm pasteurizer, or potassium sorbate; the health of your calves will benefit tremendously!

If you would like more information on how to incorporate potassium sorbate, on farm pasteurization, or changes to your colostrum handling, please call the Kirkton Vet Clinic and we will be happy to discuss!