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Q&A REVIEW

Successfully Developing High-Performing Heifers

April 21, 2020

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Can I use colostrum powder to enrich the quality of fresh colostrum? Brix increased to 25-30%? You could but I would not suggest doing it that way – assuming you are adding powder to the colostrum. You will create too much osmotic pressure in the gut and will pull water out of the body to equalize the pressure across the gut. You could reconstitute the powder with water and add it to the colostrum in a ratio that increased the brix to help with IgG content keeping in mind the volume limits.

Could this be applied to dairy beef calves? Yes, everything we discussed is the same for the beef animal. Calves are calves and beef calves will benefit in a similar manner.

I would like to know is it possible to overfeed colostrum, what is the most you can feed in the first feed? Good question. I think for large framed breeds like Holsteins, Brown Swiss, Simmentals, that 4 L or 4 qt is the largest first meal that is acceptable given the size of the abomasum. It will stretch but we don't want to put too much pressure on it. For high quality colostrum, that is adequate for good IgG transfer. Then just come back in 12 h with another 2 L/qt. For smaller breeds like Jerseys, 2 to 3 L/qt is plenty.

Do you have any information on the effect of long dry-off periods (more than 90 days) on colostrum yield and composition, and milk yields? Is there any negative effect on the udder which decreases the milk production ? Long dry periods do not negatively affect colostrum yield or quality, but there are more potential negative effects on milk yield for a variety of reasons. Many of those reasons are related to increased BW and BCS in long dry cows as managing energy intake is difficult. Other reasons are due to undetected mastitis and mammary infections that can cause problems over time.

What effect does heat treating (pasteurization) have on the anabolic factors in colostrum? No negative effects as long as the pasteurizer maintains good tolerance around the upper temperature limit. Sandra Godden's 60 degrees C for 60 min is great for pastuerization and based on some work we did the bioactives, other than the leukocytes, are still intact and active.

Does pasteurization of colostrum kill/deactivate any of these bioactives? No, as long as the pasteurizer maintains good tolerance around the upper temperature limit. Godden's 60 degrees C for 60 min is great for pastuerization and based on some work we did the bioactives, other than the leukocytes, are still intact and active.

Is this simply due to dilution or an active decrease in the secretion of these components? It appears to be a decrease in the secretion or sequestration of these components. Some of them are sequestered from circulation and others appear to be "residuals" from the significant amount of cell proliferation and differentiation occuring in the mammary gland.

Any difference in milk production in 2+ lactation cows when calving with a heifer vs bull? The data indicate an increase in milk yield in the 2nd lactation if the cow is carrying a heifer vs a bull. No one that I'm aware of has looked beyond the second lactation.

How are you defining "mature" 2+ or 3+ lactations? Cattle are considered mature once they reach the 4th lactation. However, there are not a lot of them in many herds so we use 3rd lactation as a proxy and multiply by 1.04 to get a 4th lactation weight.

Can I used the 1st colostrum instead of day 2, 3, and 4 if colostrum is available? If you have adequate amounts of first milking or first day colostrum, yes that would be ideal but not necessary. It is important that calves receive at least 3 qt or 3 L of this colostrum every day (more is better) for the first 4 days to enhance the development of the GIT.

What do you mean by DOA? Dead On Arrival (in reference to newly born calves)

What is meant by ME's? Mature Equivalent

Does the addition of an acidified product to milk (citric acid) destroy any of these "good non IgG " factors? Not that I am aware of, but I'm not sure anyone has measured it. I think as long as the acidification was done correctly so you don't coagulate all of the proteins, the bioactives should be intact. But, someone should probably evaluate that just to be sure.

Are the bioactive concentrations different between heifer colostrum and cow colostrum? There appears to be little difference between heifers and mature cows and these factors other than the heifers might not have quite as high a concentration depending on diet and environment, but still quite adequate for the outcome.

Do these bioactives effect the brix reading of the colostrum? Good question. I am not sure anyone has evaluated that. I believe that the brix is a good proxy for all proteins and solids in the colostrum, so the higher the brix, the greater the concentration of all the good stuff in colostrum - barring some mastitis.

Would heifer growth benefit from amino acid balancing? Yes, we believe so and just finished two studies evaluating amino acids and methionine balancing during the transition period. It is pretty clear that methionine is first limiting in heifers, but we haven't worked out the absolute requirements yet. We will have some numbers later this year, I hope.

Freeze colostrum or do not freeze colostrum? Freezing is the best option. Depends on how fast you will feed it. If you feed it within an hour of milking the cows, then no need to freeze. The bioactives are stable in frozen colostrum as long as it is not frozen for a long period and not in a frost-free freezer. A frost free freezer cycles temperatures to melt ice so the colostrum doesn't preserve well under those conditions.

Can you speak to the efficacy of a colostrum replacer in providing necessary things like Relaxin? We have not had the funds available to analyze colostrum replacers for bioactive factors. If the colostrum replacer is from intact/whole colostrum, there will be some levels of hormones and growth factors, but I am not sure of the bioactivity after being dried and processed.

Mature Jersey cows seem to have significant seasonal variation in colostrum quantity with lower quantities during the winter. Have you seen any ways to offset this seasonal trend? Unfortunately, I have not. My suggestion to Jersey herds is to make sure you vaccinate the heifers similarly to the dry cows and feed them correctly up to calving so you can harvest their colostrum and make use of it to take pressure off the mature cows and then bank/freeze as much as possible for the fall months. Heifer colostrum can be a partial solution if you are not making good use of that.

General question: You have shown that feeding Replacer+ Colostrum Extract has positive effects for calves. Is this effect limited? Or could it be that this positive effect could become negative after a certain point of time (age of the calf)? I know of no data that indicates a negative effect to feeding colostrum for the first 5 to 8 days of age when considering these bioactive factors. I do know from some work that Jurg Blum conducted years ago that if we feed first milking colostrum for long periods, the only down side is the calf never starts or is slow to start producing their own antibodies and they are deficient at the time of weaning and that can have a negative effect on calf health.

Were the University of Florida transition cow trials conducted under heat stress conditions? The University of Florida transition cow trials where ReaShure was fed were started in October and cows finished calving in April, so calvings did not take place during the most severe periods of heat stress, but there was heat stress through much of the trial. However, milk production was measured throughout the year which would have included severe heat stress.

Where would you say is the sweet spot for serving heifers, Height/Weight/Age? There is no "sweet spot" however, what works to optimize first lactation milk production is to breed the heifer once she achieves 55-60% of herd mature body weight and then make sure she continues to grow at a rate that allows for at least 82% herd mature BW post-calving or 94% mature BW pre-calving.

When I replaced anionic salts with Anion Booster (in the diets the same quantity of MP) the Brix in the colostrum rose from 26 to 31-34. Your opinion about it. That is an interesting observation and I'm not sure anyone else has reported that. It would suggest that the cattle might be consuming a little more dry matter and producing more VFA's and microbes along with just consuming greater nutrients. It could also be that acid-base balance impacts how IgG's are sequestered into the mammary gland.

What do you recommend as an optimal amount of milk per calf up to weaning? Similar question about amount of calf starter up to 3 months of age? The amount of milk or milk replacer is dependent on your objectives for growth. If your objective is to more than double the birth weight by 60-70 d, calves will require at least 700 g DM milk powder in the first 7 to 10 days and then 900 to 1,100 g/d DM for days 11-49. Starter should be offered on day 10 and on day 50 reduce the milk by 50% and reduce the number of feedings to encourage starter intake. The calf starter should be at least 23% CP DM, 21% starch, and at least 8 to 10% sugar. The protein source for the starter should not be all soybean meal. A mixture of protein sources should be included.

You mentioned influence of being in calf with a bull or heifer on lactation yields. Does breed have any effect? If the heifers or cows are in calf with a beef breed as opposed to a dairy breed? Good question, however, there is not enough data available to make an evaluation in a structured manner.

Will a calf treated 4 or 5 times ever reach her full potential or are you better off culling them at an early stage? If you have to treat a calf multiple times, I would have her very high on a cull list. Weight gain over the preweaning period could help with the decision. If the calf still gained weight, like doubling birth weight, then she has a chance to remain in the herd.

If at the 2nd and or 3rd feeding of colostrum the calves do not want to drink out of bottle, would you tube them knowing how important it is for the calves to receive that colostrum? I would not tube calves that were initially tubed 4 qts of colostrum at birth. They will consume feed as soon as they are hungry, so be patient.

Is there a pre 1st calving cull rate to evaluate the overall heifer rearing program? What should the target/goal be? A good non-completion rate from birth (post 48 h) to calving is less than 10%. That would include reproductive culls, weaning problems, random injury, etc.

Most people feed only two days colostrum to the calves here in the Netherlands, so far this is the advice of our animal health organization. The protocol is feed the first day 5 to 6 liters of colostrum and the second day three times 1.5 liter per feeding so in total 4.5 liter of colostrum from the second day is fed. I prefer to advise to increase the feeding of colostrum to four days but this is of course against the advice of milk replacer sales people. What can be the advantage in terms of growth or health if you change this protocol of feeding two days colostrum to four days of colostrum? I think it makes perfect sense in terms of growth and health but is it also a bit quantifiable? In our experience, the benefit is lowering the variation around average daily gain, enhancing feed efficiency, increasing feed intake and reducing overall health challenges. Some of this can be seen in studies that have been published, and the rest are our observations of dairies that have adopted this approach. The data we have indicates about 100 to 150 grams per day increase ADG in calves consuming similar amounts of milk replacer. In a pilot study, we observed up to 200 g/d increased ADG with increasing colostrum for 4 days.

What is colostrum extract? Colostrum extract is usually created by centrifugation or it can be produced by ultrafiltration. The extract will contain the lower molecular weight fractions like hormones and growth factors.

Are there any benefits to calves of feeding a source of highly bio available calcium in calves? I do not know of any data on calcium or minerals and have assumed the bioavailability in milk and milk replacer is quite high.

How do you store third and fourth colostrum to avoid bacteria growth? If you feed it within an hour of milking the cow, then no need to store it. Otherwise, the best way to do it is freeze it in one gallon freezer bags and then thaw it as needed. You can hold it in a refrigerator, but it is difficult to get the temperature down to a point fast enough where bacteria won't grow.