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Extended colostrum feeding: Could it benefit your dairy calves?

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Farm news

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Colostrum, that liquid gold, is amazing stuff. We're (hopefully) all familiar with the basics of colostrum management – the 5 Qs, the importance of getting enough good quality colostrum into the calf to transfer those vital antibodies in the first few hours of life, the hygiene – but there's increasing interest among the farming community in the benefits of feeding it well beyond the first 12 hours, or 'extending' it.

Colostrum is a rich source of energy, protein and fat, but it doesn't end there. It's packed full of IgG antibodies that help the calf fight disease. It contains enzymes and other molecules that kill bacteria. It contains insulin and growth factors which may promote gut health. It contains proteins (casein and peptides) which promote tissue repair and reduce inflammation. It contains sugars, fatty acids and anti-oxidants which regulate the immune system, improving gut health and reducing systemic inflammation.

Colostrum also contains micro-RNAs that are important for the intestinal development, and which may be important in the development of the complete immune system. White blood cells (neutrophils, macrophages and leucocytes) abound, as do cytokines, hormones, vitamins and minerals.

We know that in the first few hours of life, antibodies in colostrum are absorbed through 'pores' in the calf's gut and transfer into its bloodstream. Calves are born without antibodies as the placenta is too thick for them to cross to the calf from the dam, so early colostrum is the only way calves can get antibodies into the blood.

What we perhaps haven't appreciated though, is that even at 12-24 hours of age and beyond, after the gut pores have closed, colostrum feeding is still worthwhile, not least because the antibodies stay in the gut and provide 'local' immunity against the viruses and bacteria that can cause scour.

So what exactly is 'extended colostrum feeding'?

Basically, it means feeding colostrum for longer, but it's not an exact science. 'Colostrum' may refer to true colostrum (from the first milking) or to 'transition' milk (from the second to the sixth-to eighth- milking).

It may mean supplementing milk replacer or whole milk with true colostrum, or it might mean feeding transition milk for an extended time, or it might mean supplementing milk replacer with colostrum powder for up to a fortnight. Colostrum powder can be a 'supplement' or a 'replacer' – take care here, as these

are not the same thing ('replacers' have to meet minimum standards in terms of the IgG antibody levels they deliver to the calf).



Potential advantages of extended colostrum feeding...

- Increased energy provision
- Increased serum IgG concentrations
 - Although it's vital to get enough colostrum into the calf early on, before the gut pores close, and while feeding colostrum beyond 24 hours won't increase the calf's blood antibody levels any further, it's possible that calves' guts may still have some permeability to IgG molecules beyond 12 hours of life, so a second (or third) feed at 12-24 hours can further increase the transfer of passive immunity.
- Reduced calfhooood morbidity (illness) and mortality (death)
 - A number of studies have shown reduced disease (especially scour) and death rates in calves given extended colostrum feeds. As well as the colostrum helping to provide the extra energy that a sick calf needs, the antibodies it contains bind to bacteria and viruses in the gut, providing local immunity. Feeding colostrum to scouring calves for up to 2 weeks of age can be one aspect of their treatment – think of it as a medicine!
- Reduced antimicrobial use
 - Healthier calves, fewer antibiotics.
- Increased immune protection for specific dam-vaccinated pathogens

- Improving intestinal development
 - Feeding colostrum or transition milk may have beneficial effects over whole milk on the metabolic and hormonal profiles of neonatal calves, and it may promote gastrointestinal development by increasing intestinal villi height and therefore the surface area for absorption of nutrients.
- Improved average daily weight gain
 - As well as improved health outcomes, some work has shown improved pre- and/or post-weaning average daily gain in calves fed colostrum for two weeks, resulting in greater final bodyweight.
- Improved reproductive and lactation outcomes.
 - There are some indications that the knock-on effect of extended colostrum feeding could last into adulthood.

... and the downsides

- Disease transfer
 - It may be difficult on farm to feed extended colostrum to calves from their own dams, and so pooling colostrum may be the only practical solution. This increases the risk of disease transfer of (for example) Johne's, mycoplasma and salmonella. Pasteurisation of colostrum may help but it won't eliminate the risk (please do not compromise your Johne's control!).
- Practicalities
 - It might be hard to manage!
- Availability
 - There may not be enough first-milking colostrum available on farm to spare. There are a couple of ways round this, though, using either powdered colostrum replacer or transition milk – see below.

Practical ideas for extended colostrum feeding

The ideas below are ideas to extend colostrum feeding. They are not designed to replace the initial feeds, and they assume that calves already have adequate passive transfer through proper colostrum management during the first six hours of life.

- Add two or three large (50ml) ice cubes of frozen first-milking colostrum to each milk replacer feed for at least 5 days. This will provide at least 7.5g IgG per feed, assuming that the first-milking colostrum is >50g/l IgG.

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Ruminant Population Health Group Knowledge Exchange Day

Join us for an interesting day detailing current ongoing research & clinical activities, including updates on artificial intelligence & VetVision, dairy lameness, herd health and flock health topics.

Enjoy a grazing lunch and chance to network with the group and industry partners, followed by an optional tour of the flagship Centre for Dairy Science Innovation farm.

When? 2nd July at 10 am (for 10.30am start) until 3.30pm

Where? School of Veterinary Medicine and Science, University of Nottingham campus, Sutton Bonington, LE12 5RD

RSVP to your practice by 27th June to secure your place and receive free campus parking vouchers (otherwise £8/day).

- Add colostrum replacer (providing at least 100g IgG) to each milk replacer feed for at least 5 days.
- Mix first-milking colostrum into whole milk in a 1:1 mix and feed for at least 5 days.
- Feed transition milk for 3-5 days.

Preservation

If you're going to use true colostrum or transition milk for extended colostrum feeding, you either need to feed it fresh, as soon as possible after collection, or you'll need to preserve it. Otherwise, bacteria will quickly proliferate and you'll end up with a bacterial soup which will do more harm than good!

There are essentially three methods of preservation:

1.Low temperature

Store colostrum in the fridge for 2-5 days or freeze it for 6-12 months. Don't microwave it to defrost it, or you might destroy the antibodies.

2.Chemical preservation using potassium sorbate

Potassium sorbate is used in wine and cheese manufacturing. It's pretty safe to handle and use and is easy to source online. Mix exactly 50g potassium sorbate with 100ml (mains) water to make 100ml of 50% potassium sorbate solution. Add 10ml of this solution to every 1L of colostrum. Use this solution to preserve colostrum for up to 5 days at ambient temperatures.

3.Chemical preservation using acids

Citric, formic and propionic acids may also be used to preserve colostrum, although they can cause colostrum to coagulate and can be caustic, so should be handled with care and according to the UK safety guidelines.

This article is based on the September 2024 In Practice article 'Benefits of extended colostrum feeding in dairy calves and how to implement it on farm', by Katie Denholm. Volume 46, Issue 7, pages 380-387.

BLUE TONGUE

ASSESS YOUR RISK PROTECT YOUR BUSINESS DEFEND YOUR STOCK

Although the data sheets for the BTV-3 vaccines that are currently available say to give a single dose of vaccine to sheep, the current thinking is that sheep will respond better to two doses (as is the case for cattle / camelids). If sheep haven't been vaccinated before, give them two doses 3 weeks apart, and if they have been vaccinated in the last few months with a single dose, give them another single dose top-up now. Please speak to one of our vets if you have any questions about Bluetongue vaccination.

Changes to restricted zone

Please note that the bluetongue virus (BTV) restricted zone is being extended on 1st July 2025 to cover the whole of England, ending movement restrictions for animals within England.

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