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Calf Note #13 – Freezing & Thawing Colostrum

Introduction. Colostrum is an excellent source of nutrients and immune proteins that convey protection to the neonatal calf. Because colostrum is so important to newborns, producers must often make provision to have a source of colostrum available if and when the dam doesn't provide enough high quality colostrum for the calf. Therefore, storage of colostrum is necessary. The two most common means of storing colostrum are refrigeration and freezing.

Refrigerating colostrum. Colostrum can be refrigerated for only about 1 week before quality (Ig concentration) declines. If you refrigerate colostrum, be sure that the refrigerator is cold (33-35°F, 1-2°C) to reduce the onset of bacterial growth. If the colostrum begins to show signs of souring, the quality of the colostrum is reduced. The IgG molecules in colostrum that convey passive immunity to the calf will be degraded by the bacteria, reducing the amount of immunity that the colostrum can provide. Thus, it is important that colostrum be stored in the refrigerator for only a short time.

Freezing colostrum. Colostrum may be frozen for up to a year without significant decomposition of Ig. One research report indicated that colostrum was stored for 15 years without serious deterioration of IgG content. Frost-free freezers are not optimal for long-term colostrum storage. They go through freeze-thaw cycles that can allow the colostrum to thaw. This can markedly shorten colostrum storage life. Freezing colostrum in 1 or 2 liter bottles or 1 quart (liter) in 1 or 2 gallon zip-closure storage bags is an excellent method of storing colostrum. We have had great success using the zip-closure bags. Use two bags to minimize the chance of leaking, and lay them flat in the freezer. By laying the bags flat, the rate of thawing can be increased, thereby reducing the delay between birth and feeding. The freezer should be cold (-20°C, -5°F) - it's a good idea to check your freezer occasionally.

Thawing colostrum. The main concern regarding thawing frozen colostrum is to thaw the ice without degrading the immune proteins. This is best done with warm (not hot) water (< 120°F, 50°C) and allowing to thaw. Alternately, colostrum can be thawed in a microwave oven with little damage to the Ig. It is important to microwave the colostrum for short periods on low power. Pour off the thawed liquid periodically to minimize heating. It is also important to avoid "hot spots" inside the frozen colostrum. Use of a turntable can help to minimize damage to Ig. Researchers at Cornell reported that this method can be quite effective in thawing colostrum with little damage to the Ig molecules.

The bottom line... Colostrum is an excellent source of nutrition and immune proteins for the calf. Treat it as a precious commodity. Protect the IgG molecules by freezing (for storage > 1 week) and gentle thawing. Your calves will thank you.

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