Laboratory for Udder Health Factsheet
University of Minnesota College of Veterinary Medicine

Colostrum Heat-Treatment Systems for Calves
Overview of Processing & Monitoring

Goal: Consistently deliver clean, high quality colostrum to calves.

Steps in the System:

1. **Harvest and store raw colostrum before heat-treatment**
   a. Udder prep / sanitation before milking
   b. Cleaning / sanitation of all colostrum harvest, transfer or storage equipment
   c. Process colostrum within 2 hours of harvest, or else chill (40°F) or freeze until ready to heat-treat
   d. Prevent fermentation: process all chilled raw colostrum within 2 to 3 days

2. **Heat-treat the colostrum**
   a. Use batch pasteurizer or Perfect Udder® system (validated systems)
   b. Use 140°F x 60 minute protocol (Do not allow temp to exceed 141.5°F)
   c. Agitate constantly through the entire heat-treatment & cooling process
   d. Transfer heat-treated colostrum to clean storage / feeding containers
   e. Cleaning / sanitation of pasteurization equipment

3. **Store colostrum until ready to feed to a calf**
   a. Feed heat-treated colostrum within 2 hours of processing or chill until ready to feed
      i. Refrigerate 40°F for up to 7 days
      ii. Freeze for up to 1 year
   b. Thaw / warm to feeding temperature of 100-105°F
   c. Do not overheat when thawing / warming (Keep hot water bath to 120-125°F)
   d. Feed 3-4 L within 2 hours (max 6 hours) of birth
   e. Cleaning / sanitation of colostrum storage and feeding equipment

Monitoring the Colostrum Heat-treatment System:

1. **Pasteurizer function**
   a. Monitor times / temps reached with every batch (e.g. use chart recorder)
      i. 140°F x 60 minute protocol (Do not allow temp to exceed 141.5°F)

2. **Adequacy of raw & processed colostrum handling, as well as pasteurizer function**
   a. Periodic (monthly) colostrum cultures for total plate count (TPC):
      i. Pre-pasteurized colostrum:
         Goal < 1 million cfu/mL
      ii. Post-pasteurized colostrum:
         Goal < 20,000 cfu/mL
      iii. In front of calf:
         Goal < 50,000 cfu/mL

3. **Colostrum quality**
   a. Total solids using Brix refractometer. Test raw colostrum (before processing)
      i. > 22% on Brix scale predicts high quality colostrum (> 50 g/L IgG)

4. **Passive transfer rates in calves** (Passive transfer is affected by quality, quantity, quickness and cleanliness of colostrum fed)
   a. Test serum total protein levels in ≥ 12 clinically healthy calves between 1 to 7 days of age.
   b. Serum total protein goals: ≥ 90% of calves tested should be ≥ 5.2 g/dL