

# The latest on colostrum pasteurization

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Recent research studies have shown that the immunity benefits of colostrum can be altered by high bacteria counts. Thus, pasteurizing colostrum with now widely available on-farm pasteurization systems seemed a logical solution to preserving the quality and value of colostrum.

But heat treating colostrum is a different game than pasteurizing waste milk. Early attempts to process it using traditional Pasteurized Milk Ordinance (PMO) specifications of 62.5 to 73°C resulted in a thick, denatured product that clogged pasteurization equipment and was unacceptable for feeding.

A team of University of Minnesota researchers led by Sandra Godden refined the process, and found that colostrum could be successfully pasteurized by heating it to 60°C and maintaining that temperature for 60 minutes. This process significantly decreased or eliminated bacterial organisms including *Mycoplasma bovis*, *Listeria monocytogenes*, *E. coli*, *Salmonella enteritis*, and – of significant importance – *Mycoplasma paratuberculosis* (the bacteria that causes Johne's disease). At the same time, neither colostral IgG concentration, nor viscosity, were significantly affected. These "60/60" parameters have been evaluated in three other research studies with similar results.

However, all of these trials were conducted by university researchers under tightly controlled conditions, in individual dairy herds, and with 25 or fewer unique batches of colostrum per study. Godden and her colleagues wanted to explore whether the same outcomes could be achieved on commercial dairies, with colostrum processed by on-farm staff using batch pasteurizers. The results of this study are published in the May 2012 issue of the *Journal of Dairy Science*.

Six commercial Minnesota and Wisconsin dairy herds, averaging 1,617 cows each, were enrolled in the trial. Colostrum was split into "fresh" or "heat-treated" categories. All colostrum then was frozen and thawed later for feeding, to mimic typical practices in commercial herds.

Processing and handling were conducted by on-farm staff according to protocols designed by the researchers. A total of 266 unique batches of colostrum were evaluated.

Results showed that heat-treatment significantly reduced total bacterial plate count and total coliform count, with no significant change in IgG concentration. One interesting discovery was that IgG levels were lowered slightly more in higher-quality batches compared to low- or intermediate-quality batches. However, the colostral IgG concentrations in these batches remained high overall, and well within acceptable limits for feeding.

The researchers concluded that batch heat treatment of colostrum at 60°C for 60 minutes can be successfully conducted on commercial dairy farms by farm staff to decrease colostrum microbial counts while maintaining colostral IgG concentrations.