Effect of Pasteurization of Colostrum on Absorption of Immune Globulins by Newborn Dairy Calves

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Intake of colostrum by calves soon after birth is the means whereby passive immunity to infectious agents is transferred from cows to their calves. However, the colostrum of some cows may be heavily contaminated with large numbers of different types of pathogenic bacteria due to infection of the udder. There is concern about the possibly detrimental effect of these bacteria on the health of calves, especially in large operations where the colostrum is frequently given to the calf by drenching or by nipple bottle. Dairymen are advised to pasteurize colostrum prior to feeding it to calves.

In research at this station and elsewhere, enteropathogenic *Escherichia coli* did not cause infection in calves when administered with colostrum. No information is available concerning the effect of administering other types of pathogenic bacteria in colostrum. Therefore, pasteurization of colostrum before feeding to calves is recommended by some as a method for prevention of problems that could arise from feeding colostrum heavily contaminated with bacteria.

Work is underway to determine the effect of pasteurization of colostrum on absorption by newborn calves of immune globulins contained therein. Several batches of colostrum from cows in the O.S.U. dairy herd were collected. After mixing, one-half of each batch was pasteurized by heating to 145°F and holding for 30 minutes. Then it was cooled, packaged and frozen until needed. The unpasteurized colostrum also was packaged and frozen.

Fifty-two calves were obtained immediately after birth, before nursing, for the experiment. These were assigned at random within "blocks" to receive either pasteurized or unpasteurized colostrum, with each "block" consisting of a given breed of calves fed a specified batch of colostrum. The calves were fed colostrum at the rate of 10 percent of metabolic body size ($W^{.75}$) per feeding soon after birth and at 12 and 24 hours afterwards. Blood samples were obtained from each calf before the first feeding and at 12, 16, 20, 24, 28, 32 and 36 hours thereafter. These will be analyzed for specific immune globulins (IgG and IgM) to determine whether pasteurization of the colostrum influenced the amount of absorption which occurred in the calves.