A Field Topic

Pinpointing Post-Pasteurization Contamination

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ABSTRACT

Post-pasteurization recontamination is the main factor in determining shelf-life. The chief source of such contamination is a neglected filler, which can be readily pinpointed by holding a sample from each filler each day at 7 C (45 F) for 7 days before plating.

Nowadays, when milk is often many days old when consumed, shelf-life is of cardinal importance. Since microbial spoilage at refrigeration temperatures results from growth of psychrotrophic organisms, post-pasteurization recontamination with these organisms must be reduced to a minimum. Experience has shown that the filler is the chief source of contamination. This is clear from the data in Table 1, where Samples 3, 4 and 11 came from the same filler, while the remaining samples from other fillers all had counts below 1,000/ml after being held at 7 C (45 F) for 7 days. This plant had previously been holding samples for 5 days (1) before plating, and the management was satisfied with the results. But when persuaded to re-plate samples after 7 days they got quite a different picture! Unfortunately, the records of these comparative tests were discarded 5 or 6 years ago. However, experience with a number of other plants has convinced the writer of the necessity of extending the pre-incubation period from 5 to 7 days. The latest edition of Standard Methods (2) allows 5 or 7 days for the Keeping Quality Test. It is believed that the next edition should call for 7 days.

As LaGrange has recently reported, considerable multiplication of psychrotrophs occurs between the farm bulk tank and the pasteurizer (4). This points to the importance of keeping the numbers of psychrotrophs to the minimum in the raw milk, since their heat-resistant enzymes survive pasteurization and continue their attack on the proteins and fat, thus shortening shelf-life and adversely affecting quality and quantity of product. This is best done by emphasizing the vital importance of thorough cleaning and sanitizing of all milk-handling surfaces immediately after every milking.

For the benefit of those still doing routine coliform tests on 'fresh' products in the belief they will adequately reflect post-pasteurization contamination, it should be mentioned that none of the products shown in Table 1, nor in numerous others tested by the writer, gave a positive test for coliforms in 1-ml portions. Which makes one wonder about the value of a standard which allows 0.1/ml (6) for detecting post-pasteurization recontamination.

REFERENCES