

EFFECT OF THERMODURIC BACTERIA ON SHELF-LIFE OF MILK AND IMPROVEMENT OF PASTEURIZATION PROCESS

WPCG Weerasinghe¹, S Hettiarachi^{1#} and MPK Jayarathna²

¹Department of Biological Sciences,
Rajarata University of Sri Lanka, Mihintale, Sri Lanka

²MILCO Dairy Factory, Narahenpita, Sri Lanka

#sanath.hetti@gmail.com

Pasteurization is a means of increasing the shelf-life of milk. This study focused on identifying thermophilic bacteria that decrease the shelf-life of pasteurized milk and finding a solution to minimize their presence in pasteurized milk. The study was carried on site of MILCO dairy factory in Sri Lanka. Aseptically collected milk samples were used for the determination of total colony count of bacteria in silo, balance tank where milk was sampled just before pasteurization and just after passing pasteurization unit at different times of the day to check the possibility of process line contaminations between silo tanks and pasteurization unit and the effect on the efficiency of pasteurization. *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Bacillus cereus* were identified as resistant bacteria to pasteurization. Since bacteria under stress are more tolerant to

harsh environmental conditions, it was assumed that providing bacteria with more favourable conditions would make them more vulnerable to pasteurization. Based on this assumption, a new pasteurization process is proposed where milk is held at 30°C for 17-20 min prior to pasteurization. The shelf-life of milk, pasteurized by simulating these conditions in the laboratory, was increased up to eight days in comparison to five days with regular process. This process is yet to be tested for its practicability, by setting a plate system for heating the raw milk up to 30°C after the silo and store milk at 30°C in the balance tank for the desired time.

Keywords: Pre-Heat-Treatment, *Staphylococcus*, *Bacillus Cereus*