

**A STUDY ON MICROBIAL CONTAMINATIONS,  
SOURCES AND PREVENTIVE MEASURES IN  
SALTED BUTTER PRODUCTION**

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by

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## Abstract

A study was conducted to find out microbial contaminations, sources and preventive measures in salted butter production in MILCO at Colombo milk factory. Preliminary study was carried out to identify possible sample collection points including swab sampling points during production process. Samples were collected from raw cream, before and after the pasteurization, after aging, during churning, final product, wash water of butter granules and the inside and outside of churner. Swab samples were collected from cream, aging vats, permanent worker's hands, and churner inside and outside. Quality of samples were assessed using microbiological (total colony count, *Coliform*, fecal *Coliform*, *E. coli*, yeast and moulds), chemical (free fatty acid level of the final products) and physical (foreign matter observed from naked eye) properties. Entire tests were conducted according to the analytical testing procedure-MILCO with modifications. According to the preliminary analysis, five batches among seven were contaminated with the *Coliform* during churning. Further analysis of contamination point showed that, there was *Coliform* in the churner wash water, swabs of the churner inside (after washing) and butter granules during churning in three batches among four. To prevent the contamination, hot water and steam cleaning was implemented before the production. After hot water (70-75 °C, 15 minutes) and steam (80-85 °C, 5 minutes) cleaning, samples of wash water, swabs and butter granules were negative in *Coliform*. However mould count of one batch was beyond the standards. After implementation of hot water and steam, free fatty acid levels were reduced to the standard level. There were no any physical contaminants observed in all batches tested. Hence, the study can be concluded that, microbiological and chemical quality of salted butter can be improved by using hot water (75-80 °C, 15 minutes) and followed with steam (80-85 °C, 5 minutes) cleaning of the churner, while maintaining the basic manufacturing steps.

Key words: Salted butter, Microbial contaminations, Sources, Preventive measures