GAP Analysis Between Current Good Manufacturing Practices and Post-corrective Action at a Dairy Processing Plant

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Abstract

The Good Manufacturing Practice (GMP) in the dairy industry is the foundation to control the food safety hazards associated with the industry, which in turn ensure public health. The objective of this study is to determine whether microbiological risks were present in the factory and products before the pre-project, analyze GMP gaps using SLS 143 and close those. In the microbiological risk assessment (*Escherichia coli*, yeast & molds, coliform, and total plate count) for swab and product samples, 7 out of 16 test results were found to be satisfactory and 9 were unsatisfactory in the pre-project. A GMP checklist based on SLS 143 was then used to conduct an independent audit, which revealed flaws in primary production (40%), design and facilities (45%), control of operation (25%), maintenance and sanitation (44%), personal hygiene (40%), transportation (20%), product information and consumer awareness (40%), and training (50%) among other areas. Overall, the audit results revealed that 40% of them did not comply with SLS 143, while 60% of them did. Root cause analysis was conducted for the non-conformances, using the fishbone diagram, brainstorming diagram, 5Y technique, flow diagram, and mind map. Corrective action was taken for 32% of the gaps that were discovered. These actions included developing an appropriate waste management procedure, enforcing personal hygiene protocol and providing adequate training on food safety practices, etc. The results of the microbiological tests that were conducted to reevaluate the microbial hazards were all satisfactory. Moreover, chi-square analysis verified a significant difference ($\chi 2=12.522$, df=1, $p<0.001$) between the microbiology results obtained before and after the project. Research effectively addressed deficiencies discovered in a dairy plant with GMP implementation and certification. The industry must consistently uphold GMP standards to ensure dairy product safety and suitability.

Keywords: Correction, GMP, Hygiene, Root cause analysis, Safety

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