



Assessment of microbial contamination and quality parameters in packaged cow milk: A comparative study across different brands

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Abstract: Ensuring microbiological safety and quality of packaged cow milk is a critical concern for both the dairy industry and public health. This study investigated the sources and extent of microbial contamination in packaged cow milk, alongside evaluating key quality parameters. By using physical and chemical methods, bacterial contaminants in pasteurized milk samples were identified and quantified. The present study indicated that contamination could be found even in branded packaged cow milk which claims to be pasteurized. The findings emphasized the need for stringent hygienic practices,

improved processing technologies, and continuous assessment to ensure the safety and quality of packaged cow milk. This study advocates for the development of better industry standards and practices, thereby reducing health risks associated with microbial contamination and ensuring high-quality milk products for consumers.

Keywords: Microbial contamination, Packaged cow milk, Pasteurization, Quality parameters, Food safety, Hygienic practices.

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Introduction:

Milk is an important part of our diet due to its rich nutritional value, yet its perishable nature makes it prone to microbial contamination (Hanna et al., 2019). Despite undergoing pasteurization, packaged cow milk can still contain harmful pathogens such as *Escherichia coli*, *Salmonella* spp., and *Listeria monocytogenes*, as well as fungal spores that survive the process. These contaminants pose health risks and negatively impact the sensory and nutritional properties of milk (Silva., 2010).

Milk has long been considered as one of nature's most complete foods and remains a dietary staple for over 6 billion people worldwide. In India, bovine milk constitutes a significant portion of the nation's dairy production, contributing greatly to the nutritional needs of its vast population. Over the past three decades, India's milk production has seen substantial growth, aligning