



Role of Packaging Materials on Fermentation Technology in Milk Products

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DESCRIPTION

A food produced with milk or milk product that has been subjected to microbial action with a resulting pH drop is known as fermented milk, which plays a significant role in human health. There are several varieties of fermented milk, each with a unique fermentation process and microbial composition. Additionally, it is reasonably priced and accessible to customers in both small and large retail establishments. In the food sector, packaging is crucial to maintaining product quality and preventing food waste by preventing or inhibiting biological, physical, chemical, and biochemical changes, assuring a longer shelf life. If the packaging's primary function is to reduce food waste, yet the industry selects a design that primarily serves marketing needs, appeal, it could be contradicting this idea. Being able to sell them is another goal of packages. It is permissible in this regard for the packaging design to have a commercial appeal. Today's consumers, however, also want food packaging that doesn't cause pollution.

There is no denying the economic and social value that packaging provides to their products, but both food producers and consumers need to be conscious of the environmental harm that food waste causes. When a package wastes food, not only is the food itself wasted, but also the water required for the manufacture of milk and fermented milk, for site cleanliness, and for pasture growth; the electricity; and all the deforestation done for the management of the animals. In addition, there is more hunger in the globe now. The COVID-19 pandemic caused the Prevalence of Undernourishment (POU), which had been at 8.4 for the previous five years, to rise to about 9.9. By reducing food loss and waste, one may help end world hunger.

The reduction in edible food mass "along the food supply chain from harvest up to but excluding, the retail level" is referred to as food losses. Food that is wasted includes that which is thrown out by customers, food services, and retailers. Food losses and

waste are an issue that affects the entire world, and in order to solve it, producers and consumers must work together to establish policies that will improve the situation. This situation is a result of either a lack of food packing or poor planning. In order to allow for full consumption of the product's contents, the packaging must also allow for bundling, preserving, and transporting the product. The purpose of this study was to ascertain how package design affected fermented milk waste. In addition to practicality, ease of use, comfort, safety, and product protection are taken into account while developing a package, along with the visual effect as a sales booster. Packaging design is crucial to the Characterisation of a product since it serves as the means of distinction and identification, enticing the consumer and creating an emotional connection. However, at this time, it is impossible to imagine a packaging design without taking the environment into account. There are several different fermented milk packaging designs that affect how much fermented milk is drunk. These designs vary in terms of material (plastic and carton), bottleneck, and edge. The package design that generated the least waste (0.73%) features a curved outward edge that makes it easier to completely remove the liquid. In contrast, the package design that promoted the most waste (2.14%) contains an edge, bottleneck, and embossed printing (drawing) where fermented milk accumulates.

As a natural outcome, the amount of waste generated by fermented milk is influenced by the extent of residue retention. When compared to a package with an inward edge, the one with a bottleneck edge that curves outward reduces the buildup of soured milk, hence minimising waste. Additionally, the amount of fermented milk waste produced increases with the height and depth of the inwardly curved edges and the number of right angles in the package. We must be aware of how dangerous fermented milk waste is globally and that businesses may create packaging that maximises product consumption overall by designing bottles with protruding edges.

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