

Palestine Milk Powder Preparation

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ABSTRACT

This study explores the preparation of milk powder with a long shelf life on a small scale. In Pakistan, milk powder production is low because dairy industry faces significant challenges including high cost, inefficient supply chains, complex methodology etc., and it has become difficult for local producers to compete with imported milk powder brands. As a result, the country relies heavily on imported milk powder to meet domestic demand, which not only increases dependency on foreign products but also places a significant burden on the national economy. The goal of current project is to develop locally produced milk powder which should not only compete with foreign brands but also has low cost. Milk powder in current project is prepared by using stabilizers, emulsifier, food additives, minerals and preservatives in such proportion that enhances both quality and shelf life. It is important to mention here that present manufacturing of milk powder is without using spray dryer.

Keywords: Milk Powder, Local Product Promotion, Shelf Life, Preservative, Quality Enhancement.

INTRODUCTION

Milk powder, also known as dried milk, is a versatile dairy product made by evaporating liquid milk to remove 90-95% of its water content. This extends the shelf life of milk without refrigeration, and preserves most of its nutritional contents. The resulting fine, powdery substance can be easily reconstituted with water to make liquid milk. There are two principal methods used for drying in dairy industry, roller drying (dairyconsultant.co.uk/pdf/milk-powder-productdfion.pdf) and spray drying (Asmar, *et al*, 2021). Roller drying is a method for making milk powder that involves applying pasteurized and concentrated milk to rotating drums heated with steam. In spray drying, the milk is first concentrated by evaporation and then dried in a spray tower. Evaporating liquid milk produces a dehydrated form that is convenient to store and transport, making milk powder a multipurpose dairy product. The production of milk powder involves several critical processes designed to preserve the nutritional quality and flavor of the milk while ensuring a long shelf life (Sagdiyev, *et al*, 2024). Further, sophisticated instruments for preparation as well as packaging processes are also required.

OBJECTIVE

The prime objectives of current project are to promote local industry, reduce dependency on foreign products and save economy four beloved Country Pakistan. Specifically, quality enhancement of local milk powder and producing dry milk powder compatible to imported brands with all-time availability in stores at least possible price, are the key motives of present work.

METHODOLOGY

The milk production process involves cream separation, standardization, pasteurization, preheating, evaporation and drying. Fresh milk is pasteurized by heating at 70-90 °C for 30 minutes to eliminate bacteria. Then milk was concentrated by evaporation to reduce water content reaching 30 to 45% prior to drying (www.rotrotronic.com/media/news/files/1466670855_FF-Milk-Powder.pdf). Then it was cool to 40°C and minerals (calcium citrate, zinc gluconate), emulsifier (Carrageenan, soy lecithin), preservatives

(sucrose, ascorbic acid), stabilizer (maltodextrin) and food additives (lactose) were added separately. At this stage, spray dryer/drum dryer was required for dryness but due to high cost it was not available. Hence, after addition, concentrated milk was further evaporated to reduce water content at 50°C in open pan with constant mechanical stirring. Thick mass of milk thus obtained was spread and dried by air at room temperature to convert into milk powder.

RESULT

50g milk powder has been produced by using one liter of milk. So far shelf life observed is 60 days (under progress). However, for large scale production spray dryers are essentially required.

CONCLUSION



Locally made milk powder has a number of significant advantages:

- **Economic Impact:** It creates jobs and stimulates the local economy by providing help to dairy producers in the area.
- **Quality Control:** Since items may be processed closer to the source, local production offers superior quality control and fresher products.
- **Food Security:** By lowering reliance on imported goods, increasing local milk powder production improves food security.
- **Price Stability:** Local production can contribute to price stability and increase accessibility to dairy products.

By focusing on local milk powder production, our country can foster economic resilience, enhance food security, and promote sustainable development. Local manufacturing of Spray dryers should also be taken into consideration by Institutions like PCSIR.

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