

## KEFIR YOGURT FREEZE-DRYING, PROBIOTIC FACTOR RETENTION UNDER DIFFERENT OPERATING CONDITIONS.

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Currently, the population seeks to take care of their diet, opting for foods with a high nutritional level. Fermented products such as kefir promote intestinal health and strengthen the immune and digestive systems. However, they are highly perishable foods, leading to the search for alternatives to preserve their positive characteristics and extend their shelf life. Dehydration is one of the most used methods for food preservation and shelf-life extension since it reduces the water activity in them. Within dehydration technologies, freeze-drying emerges as a striking alternative where its main characteristic is maintaining the food's organoleptic and nutritional properties.

The objective of this research is to study the kefir yogurt freeze-drying process to obtain a probiotic product with an extended shelf life.

The standardization of the fermentation process for the elaboration of kefir yogurt was carried out. This consisted of the inoculation of milk with kefir grains at two concentrations (5 and 10% w/v) and the quantification of *Lactobacillus* at different times (1, 2, 3 and 4 days). From this, the process that generates a product with a concentration of microorganisms greater than  $10^7$  CFU/ml was selected. This product was freeze-dried, evaluating two operating conditions (0.3 mbar, 20°C and 0.3 mbar, 30°C) to establish the primary drying times. In addition, the concentration of microorganisms was determined for both conditions and the one that maintains the concentration was selected. of microorganisms higher than  $10^7$  CFU/mL and minimize the process time.

Finally, we concluded that it is technologically feasible to obtain a freeze-dried kefir yogurt product that maintains a concentration of microorganisms greater than  $10^7$  CFU/mL, using a fermentation process with 10% p/p inoculum at room temperature for 4 days and a freeze-dried process at 0.3 bar and 30°C for 5.8 h.