PILOT SCALE PRODUCTION AND SHELF LIFE STUDY OF COMPLEMENTARY FOODS WITH FRUITS RICH IN ANTIOXIDANT USING HIGH-PRESSURE HIGH-TEMPERATURE (HPHT) EXTRUSION


BACKGROUND

Antioxidants are substances that prevent or delay some types of cell damage and health diseases. Tomatoes can be added to cereal-legume based complementary foods to improve the nutritional content of the product because of its antioxidant activity.

OBJECTIVES

The present study aimed to conduct pilot scale production and shelf-life studies of complementary foods with tomatoes using high-pressure high-temperature (HPHT) extrusion.

MATERIALS AND METHOD

Linear programming was conducted to determine base formulation of rice-mongo complementary food. Tomatoes were added to the base formulation to increase the antioxidant activity of the products. The antioxidant activity and nutritional content of the products were determined. Process was optimized, standardized and scaled up. The effect of packaging on the shelf life of the product was conducted. Product and production cost and feasibility study was also determined.

RESULT

The addition of tomatoes increased the antioxidant activity of snack curls and baby food blend from 73.4% and 78.26% to 88.86% and 88.36% respectively. Snack curls packed in laminated foil and PE packaging are shelf stable for eight and six months respectively. The proposed selling price of snack curls is P 7.80/30 grams. With a capital investment of P 12,809,244.00, the payback period of snack curls was estimated at 2.53 years with a return of investment (ROI) of 39%. For baby food blend packed in laminated foil or PE packaging, the shelf life is twelve months. The proposed selling price is P 5.20/30 grams. With a capital investment of P 10,577,798.00, the payback period of baby food blend was estimated to be 3.09 years with an ROI of 32%.

CONCLUSION AND RECOMMENDATION

Complementary foods with antioxidants were produced in pilot scale using HPHT extrusion. Snack curls packed in laminated foil and PE packaging were shelf stable for eight and six months respectively. Baby food blend was shelf-stable for 12 months, whether packed in laminated foil or PE packaging. The proposed selling price for snack curls and baby food blend is P 7.80/30g and P 5.20/30g respectively. Nationwide transfer of these food technologies to entrepreneurs and other food manufacturers for commercial production is recommended. In-depth studies on antioxidants are also suggested to identify and determine the amount of antioxidant present in the snack curls and baby food blend.