ABSTRACT

The primary goal of the Advanced Food Technology Project in the long duration exploratory missions is to provide the crew with a palatable, nutritious and safe food system while minimizing volume, mass and waste. The Mars missions could be as long as 2.5 years with the potential of being prolonged to the crew arrival. Therefore, it is anticipated that foods that are used during the Mars missions will require a 5 year shelf life.

For the thermostabilized food items, safety will be preserved as long as the integrity of the package is maintained. Nutrition and acceptability will change over time. Since the food can be the end source of nutrition to the crew, a significant loss in nutrition may determine when the shelf life endpoint has expired.

RESULTS AND DISCUSSION

Entrées

Grilled Pork Chops
- Vitamin B1 levels showed losses at higher storage temperatures.
- Dye was used in this study to determine when the shelf life endpoint has expired.
- Shelf-life projected to be 67 months at 72°F

Tuna Noodle Casserole
- Product failure was attributed to declining scores for hardness of noodles and darkening of color during the 36 month study.
- Shelf life projected to be 63 months at 72°F

Sweets

Starch (Homestyle Potatoes)
- Flavor decreased over time due to acidic aftertaste, off aroma and overall decrease in flavor.
- Shelf-life projected to be 63 months at 72°F

Vegetables (Carrot Coins, Sugar Snap Peas)
- Overall acceptability and specifically aroma scores decreased over time likely due to oxidation of the spices and lipids (cheese).
- Shelf life for both products projected to be 29 months at 72°F

Nutritional Evaluation of Food Processing, 3rd Ed

REFERENCES


Catauro

MATERIALS AND METHODS

Products stored at three temperatures, 40°F, 72°F and 95°F for an accelerated shelf life study.

Shelf life will be determined by:
- Visibly Safe
- YES
- Continue Shelf Life study
- NO
- Complete analysis of 36 month data for the last two products

CONCLUSIONS

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