

Project 4.2.5 Non-Thermal Exploration

Reduced Oxygen Packaging

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Thesis

Reduced Oxygen Packaging is a packaging technique that results in a reduced oxygen level in a sealed package, including vacuum packaging, to create an anaerobic environment preventing the growth of typical spoilage organisms.

Background

Throughout history, mankind has worked to preserve food from spoilage to enjoy longer than just when it is fresh. In more recent history preservation methods have been developed to greatly extend the life of food beyond the growth season. In the last few decades, ROP has been something that has become more popular among manufacturers as well as in the household.

Positives

Many of the microorganisms that cause typical food spoilage require oxygen. By reducing oxygen and freezing the items, the chances of those organisms spoiling the product are greatly reduced.

Negatives

Reduced Oxygen Packaging cannot be used on fully cooked meat, including lunch meat or fish, without the increased risk of botulism caused by *Clostridium botulinum*. If the fish is vacuum sealed and frozen it can be safe, as long as when it is thawed, the bag is opened exposing the product to oxygen. Fully cooked lunch meat can be vacuum sealed as well as long as it has a double barrier (kept in the store bag and then placed in the new bag, sealed, and frozen).

References

Cornell University, D. P. (2001, Fall). Vacuum Packaging (VP) and Reduced Oxygen Packaging (ROP) of Foods. *Venture*, 3, 3.

-This resource was great at explain the microbiological hazards. It explains how botulism is a major worry if used on the wrong type of food product.

United States, U.S. Food & Drug Administration, U.S. Public Health Service. (n.d.). *FDA Food Code 2017*. Retrieved June 13, 2018, from

<https://www.fda.gov/downloads/food/guidanceregulation/retailfoodprotection/foodcode/ucm595140.pdf>

-I chose this resource because it is the official publication released from the FDA on proper food handling. It goes on to explain the pros and cons of each packaging type.

What are the rules with Reduced Oxygen Packaging (aka Vacuum Packing)? [Pamphlet]. (2016). Oregon: Tillamook County Health Department.

-This source very plainly explains why reduced oxygen packaging is used, but also the safety issues that can arise from vacuum packaging fully cooked meats.