To Be or Not To Be... *Refrigerated*

Loss Control TIPS

Introduction

The Food and Drug Administration has developed guidelines to help reduce the potential for food borne illnesses associated with *temperature abuse* (i.e., the failure to maintain foods at appropriate temperatures). Temperature abuse can result in the outgrowth of microorganisms that can result in contaminated foods. Temperature control – that is, refrigeration – is one key to controlling this growth. The lower the storage temperature, the lower the microorganisms' growth rate.

Other controls to slow the growth of microorganisms are:

- acidification (pH $\leq$ 4.6)
- preservatives (e.g., salt)
- low water activity ($a_w \leq 0.85$)

These measures can be used individually or in combination to reduce the growth of pathogenic microorganisms. However, even with any of these controls, refrigeration is considered to be the most practical measure.

Packaging Technology

The most familiar food packaging is a can or jar. For many years, these were thought of as the safest method to keep foods from spoiling, once they were processed and packaged. Foods in cans and jars were considered *shelf-stable* (that is, it was assumed they could be stored on the shelf without spoilage). In today's world of new technology, there are other packaging methods available that are considered shelf-stable. *Airtight liners* in flexible packages, often used with liquid or semi-liquid foods, are considered shelf-stable. Vacuum packed foods, and foods packed in *modified* (oxygen reduced) *atmospheres* are considered shelf-stable. Specialized packaging does a fairly good job of preventing the development of microorganisms. Problems arise when a package is opened and the food is not immediately consumed or refrigerated. This is *temperature abuse*.

Labeling

Reports to the Food and Drug Administration (FDA) indicate that some recent food poisonings can be attributed to temperature abuse. Investigation showed that the food packaging did have labels which indicated the need to "*keep refrigerated*" or "*refrigerate after opening*." Why was the food *not* stored under the recommended temperature control? The labeling on the packaging was evaluated. The conclusion was that the labeling did not *adequately* warn the consumer of the need to keep the food refrigerated or of the *health risk* associated with failure to follow the instructions. *Does this sound familiar?*

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Most consumers understand that foods which are refrigerated in the store should be refrigerated at home; that is, that refrigeration is necessary to keep these foods safe to eat. The confusion seems to occur when a packaged food is *opened but not refrigerated*, even with the appropriate instructions. Consumers generally do not associate *food safety* with the "*keep refrigerated*" and "*refrigerate after opening*" instructions.

Another important issue clouds consumers' understanding of the "what" and "why" to refrigerate. These labels ("keep refrigerated" and "refrigerate after opening") appear both on foods that are potentially hazardous and on foods that do not pose a hazard but that are refrigerated to retard deterioration in quality. Potentially hazardous foods include:

- food of animal origin that is raw or heat-treated
- food of plant origin that is heat-treated or that consists of raw seed sprouts
- cut melons
- garlic and oil mixtures

Food Classification and Labeling Guidelines

In an effort to draw consumers' attention to the hazards associated with temperature abuse, the FDA is recommending changing *food classification and labeling guidelines*. Recommended food classifications, with suggested labels, are as follows:

Group A Foods
Potentially hazardous foods, which, if subjected to temperature abuse, will support the growth of infectious or toxigenic microorganisms that may be present. Characteristics of Group A Foods include:

- pH > 4.6
- water activity $a_w > 0.85$
- *do not receive* a thermal process or other treatment in the final package that could adequately destroy food pathogens
- has none of the other barriers built into the product formulation

Fig. 1 *Suggested FDA Label, Group A Foods.*

IMPORTANT:
Must Be Kept Refrigerated to Maintain Safety

Group B Foods
Foods that are shelf-stable as a result of processing, but once opened, the unused portion becomes potentially hazardous unless refrigerated.

Characteristics of Group B Foods include:

- pH > 4.6
- water activity $a_w > 0.85$
- *do receive* a thermal process or other treatment in the final package that could adequately destroy food pathogens
- has none of the other barriers built into the product formulation

Fig. 2 *Suggested FDA Label, Group B Foods.*

IMPORTANT:
Must Be Refrigerated After Opening to Maintain Safety

Group C Foods
Foods that *do not pose a safety hazard* even after opening if temperature abused, but that may experience a more rapid deterioration in quality over time if not refrigerated. These are foods where the quality characteristics (flavor, color, texture, etc.) maximize the acceptance to consumers. Characteristics of Group C Foods include:

- pH $\leq$ 4.6
- water activity $a_w \leq 0.85$
- *have other barriers* built into the product formulation

Fig. 3 *Suggested FDA Label, Group C Foods.*

Refrigerated for Quality

Conclusion

The FDA guidelines further suggest that Group A and Group B labeling should not appear at any time on food classified as Group C. The focus of these guidelines is to increase public awareness of the hazards associated with temperature abuse, and the need to refrigerate potentially hazardous

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foods. The goal is that consumers will better understand the difference between "refrigerate for safety" and "refrigerate for quality."

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