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Milk Study During September 28, 2007 Through February 11, 2008

Objective

The objective of this study was to determine the efficacy of the "IN√*Check*™" Refrigerator Life Card (September 2007 Optic Fiber Model) on the microbiological shelf life of pasteurized 2% milk when stored at a refrigerated temperature.

Materials and Methods

Test Device. The "IN√*Check*™" Refrigerator Life Card (September 2007 Optic Fiber Model) used in this study was produced by Victor De Franco Levi and Raphael Gallardo on September 08, 2007 in Greenwood, Indiana. This clear laminated card had one square emulsion chip (with an optic fiber set diagonally across it) inside it.

Milk Samples. Two units of ½ gallon 2% milk (Prairie Farms brand; plastic containers) were purchased by Jeff Risinger at the Target store in Fishers, Indiana on September 28, 2007. The lot number and "Sell By" date of each container was:

Sell By Oct 9
18373 01 : 19T9

The study was initiated on September 28, 2007.

Sample Analyses. One of the plastic containers of milk served as a negative control. This "Control Container" was placed, unopened, in refrigerator #1 by Mr. Risinger on September 28, 2007. The other plastic container of milk had the "IN√*Check*™" Refrigerator Life Card taped to the bottom of the container (the "Test Container"). The Test Container was placed, unopened, in refrigerator #2 by Mr. Risinger on September 28, 2007. The refrigerators were located in Fishers, Indiana.

Mr. Risinger observed the Control Container and the Test Container daily. Neither container's appearance changed until November 1, 2007 (23 days after the "Sell By" date of October 9). On November 1, 2007, the Control Container was bulging noticeably and there was an air pocket at the top of the Control Container. The Test Container's appearance had not changed at November 1, 2007. See Figure 1 (Test Container / Control Container Comparison Picture at November 1, 2007) and Figure 2 (Control Container Picture at November 1, 2007) below.

At November 1, 2007, no odor was detected from either the Control Container or the Test Container.

Figure #1

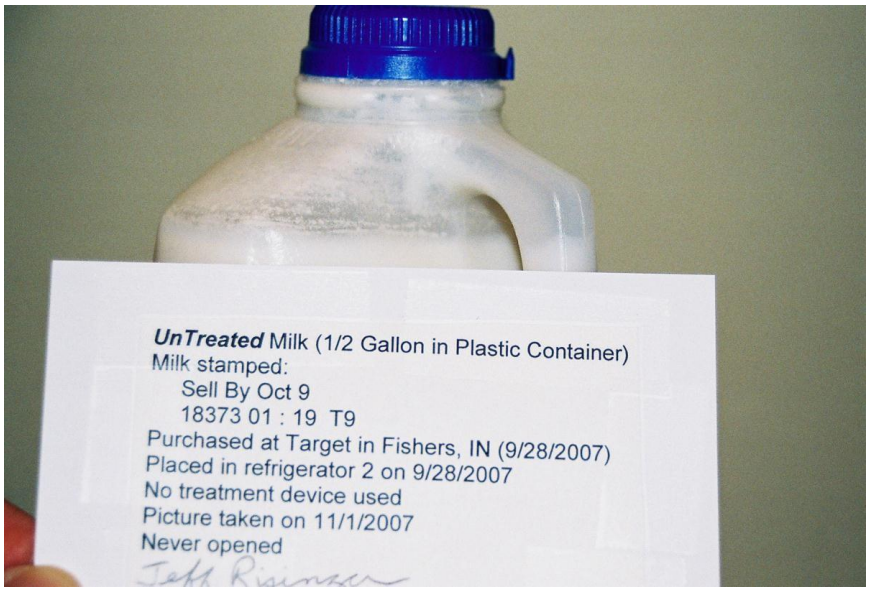

Figure #2

On November 5, 2007, the Control Container was bulging more noticeably than it was at November 1, 2007, and there the air pocket at the top of the Control Container was larger at November 5 than it was at November 1, 2007. The Test Container's appearance had not changed at November 5, 2007. See Figure 3 (Test Container / Control Container Comparison Picture at November 5, 2007).

At November 5, 2007, the odor coming from the Control Container (still unopened) was so bad that Mr. Risinger removed the Control Container from the refrigerator and discarded it. No odor was detected from the Test Container.

Figure #3

In continuing this study, Mr. Risinger moved the Test Container to refrigerator #1 (the refrigerator where the Control Container had been stored before.

Mr. Risinger continued to observe the Test Container on a daily basis. Mr. Risinger took the last picture of the Test Container on December 10, 2007 (62 days after the "Sell By" date of October 9, 2007). At December 10, 2007, the Test Container had not changed appearance relative to its appearance on the start date of the study (September 28, 2007). There was no odor coming from the Test Container at December 10, 2007. See Figure #4 below for a picture of the Test Container at December 10, 2007.

Figure #4 (above at prior page)

On December 14, 2007 (66 days after the "Sell By" date of October 9, 2007), Mr. Risinger observed that the Test Container had not changed appearance relative to its appearance on the start date of the study (September 28, 2007), and there was no odor coming from the Test Container.

On December 14, 2007, Todd Schnitzius arranged for HML, Inc., to draw samples of milk from the Test Container and analyze the samples for:

- Total Aerobic Plate Count
- Psychrotrophic Aerobic Plate Count
- Lactic Acid bacteria
- Yeast & Mold Total Count
- pH

HML, Inc., is a microbiological and chemical testing laboratory located in Muncie, Indiana. One area of HML's expertise is the testing of dairy and other food products. HML is certified by the United States Department of Agriculture and

other federal and state agencies. HML's website is at:

http://www.hml.com/hml_index.php

On December 14, 2007, Mr. Risinger placed the Test Container (with the "IN√*Check*™" Refrigerator Life Card taped to the bottom of it) in a cooler with ice that covered about the bottom 1/5 of the Test Container. Mr. Risinger delivered the cooler with the Test Container to Mr. Schnitzius on the afternoon of December 14, 2007.

Mr. Schnitzius delivered the cooler with the Test Container in it to HML, Inc. on the afternoon of December 14, 2007. Dustin Smith, Chief Microbiologist at HML, received the cooler and Test Container on December 14, 2007. Upon receipt, Mr. Smith placed the Test Container in a refrigerator at HML (4°C). The Test Container had the "IN√*Check*™" Refrigerator Life Card taped to the bottom of it.

On December 15, 2007, Mr. Smith observed that the Test Container had not changed appearance since its arrival on December 14, 2007. On December 15, 2007 (67 days after the "Sell By" date of October 9, 2007), Mr. Smith opened the Test Container and drew samples for testing. After drawing the samples, Mr. Smith replaced the lid on the Test Container and returned it (with the "IN√*Check*™" Refrigerator Life Card taped to the bottom of it) to the refrigerator.

On December 15, 2007, Mr. Smith commenced the 5 analyses (listed above) of the milk samples he drew from the Test Container. The results are set forth in the below copied report from HML, Inc.

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912 W. McGalliard
Muncie, IN 47303

Phone:
800-551-5217
765-288-1124

Fax:
765-288-TEST

December 21, 2007

Mr. Todd
Schnitzius
Engeenuity, LLC
PO Box 50891
Indianapolis, IN

46250 Dear Mr.

Schnitzius:

The following are the results of the tests performed on the milk sample received at HML, Inc. at 11:37 AM, 12/14/2007.

Milk: sell by date October 9,
2007 Ph = 5.78

Sample was received in sealed condition, and the laminated device was attached to the bottom of the milk container. Sample arrived in cooler on ice and was refrigerated at 4°C with laminated device attached until sample was tested.

Sample: 177851
Multiple Analysis Report

Test	Method	Result	MDL	Date
Aerobic Plate Count	FDA	840,000 cfu/mL	1 cfu/mL	12/17/07
Psychrotrophic Aerobic Plate Count	FDA	160,000 cfu/mL	1 cfu/mL	12/21/07
Lactic Acid Bacteria	FDA	200,000 cfu/mL	1 cfu/mL	12/18/07
Yeast and Mold Total Count	FDA	<1 cfu/mL	1 cfu/mL	12/21/07

*MDL is Minimum Detection Level

This testing was completed by

D.S.
Please feel free to contact us if we can be of further service to you.

Sincerely,

Dustin Smith
Chief
Microbiologist
dsmith@hml.com

Discussion of HML Test #1 Results. The taste, odor, and appearance of a food (organoleptic qualities) are the ultimate criteria used by consumers to judge a food's acceptability. These qualities begin to change as the microflora - bacteria, yeast, and mold- in the food grow and metabolize available nutrients. Organoleptic changes are generally not detectable until the microbial population is high. The number of organisms required to cause spoilage varies with the food item and the type of microorganism growing in it. Generally, however, the end of shelf life is defined as 10,000,000 colony forming units ("cfu") of bacteria per ml, or 100,000 yeasts per ml or visible mold. The microbiological shelf life of the milk in the Test Container may be discussed according to these criteria. The result of the testing is that the milk in the Test Container, as of December 15, 2007 (67 days after the "Sell By" date of October 9, 2007), was very substantially below the level of cfu's that cause spoilage. In addition,
the milk from the Test Container (at December 15, 2007) had a pH of 5.78. Pasteurized fresh milk has a pH in the range of 6.4 to 6.8. Acid production can reduce the pH of milk to 4.5, when curdling takes place. No curdling was observed in the milk from the Test Container at December 15, 2007. No bad odor was observed coming from the milk from the Test Container (at December 15, 2007).

Follow-Up Test by HML. On February 11, 2008 (122) days after the "Sell By" date of October 9, 2007), HML observed that the opened (and re-closed) Test Container did not have a bulging appearance and did not have an odor. On February 11,2008, HML drew additional samples from the Test Container and completed the same 5 analyses as set forth above. The results of this follow-up test are:

	Method	Result (cfu/mL)	MDL (cfu/mL)
Aerobic Plate Count	FDA	450,000	<1
Psychrotrophic Plate Count	FDA	1,520,000	<1
Lactic Acid Bacteria	FDA	420,000	<1
Yeast and Mold Total Count	FDA	<1	<1
pH: 5.72			

The result of the follow-up testing is that the milk in the Test Container, as of February 11, 2008 (122) days after the "Sell By" date of October 9, 2007), was very substantially below the level of cfu's that cause spoilage. In addition, the milk from the Test Container at February 11, 2008) had a pH of 5.72. Pasteurized fresh milk has a pH in the range of 6.4 to 6.8. Acid production can reduce the pH of milk to 4.5, when curdling takes place. No curdling was observed in the milk from the Test Container at February 11, 2008. No bad odor was observed coming from the milk from the Test Container (at February 11, 2008).