

## CONSIDERATIONS ABOUT CONSUMER'S ATTITUDE REGARDING THE SIGNIFICANCE OF COLD CHAIN OF PERISHABLE DAIRY PRODUCTS

Eugenia Pricop<sup>1</sup>, Ioan Tofan<sup>1</sup>

Faculty of Food Science and Engineering, „Dunarea de Jos” University, Galati, Romania

e-mail : m.pricop@ugal.ro ,

### **Abstract**

*The cold chain of food products, is an extension of good manufacturing practice of perishable dairy products, and contribute to maintaining the quality of both raw materials and finished products. For this reason, it conducted a pilot study to see whether or not consumers are aware of the importance of the dairy fresh product's cold chain. Data were collected from 160 consumers questionnaire in the stores of Galati City. The interview took place between April – June 2009. The questionnaire consisted of a total of 14 questions relating to cold chain and other 5 questions about the demographic characteristics of consumers.*

*The study wanted to emphasize the importance of the consumer in maintaining the quality of drinking milk and perishable dairy products to final consumption. Also the focus is on informing consumers about the risks associated with improper handling of perishable dairy products.*

*The role of the consumer in maintaining a cold chain is more important than is currently thought, and is greater than the importance attached to other parts of the food chain.[4]*

Keywords: cold chain, fresh dairy products, consumers, food safety

### **1. INTRODUCTION**

The chilled food sector - products that can eat fresh - is one of the sectors that grow the fastest. These foods require special temperature conditions during transport and storage until consumption. Maintaining a certain temperature required for perishable products is a key factor in preventing risks that may affect food quality and food safety.

The freshness and overall quality of food depends largely on the distribution and marketing system. Any mistakes of food handling throughout the cold chain may have a significant impact on its overall quality [2].

Low temperatures recommended by the manufacturer on the package must be maintained until final use, without interruption avoiding the development of remanent microflora and enzymatic activity that can degrade the product.

Cold chain is maintained, monitored only on a particular sector of the food chain between farmer / processor and the retailer. It is vital to maintain the cold chain over retailers and to continue until the consumer's home.

The handling methods of chilled foods by the consumers can have significant effects on quality and food safety [2].

Baar (2005) si James (2008) indicated that the household food storage process is perhaps one of the most critical parts of the cold chain, the importance of which is not recognized by other parts of the food chain[1,3].

### **2. MATERIALS AND METHODS**

Our study was conducted during May - June 2009, in Galati City area. The Data were collected using anonymous questionnaires. The study involved a total of 160 subjects aged between 20 and 65. The questionnaire consisted of a total of 19 questions structured in two parts, first part being carcater demographic questions (age, living, education), and in the second part had questions about the specific nature and importance of cold chain storage conditions of dairy products.

Each questionnaire took about 15 minutes.

Data were collected and processed in Excel 2003.

This article presents the results on certain questions, selected from the 19.

### 3. RESULTS AND DISCUSSION

The information about demographic data of consumers are shown in tab.1.

**Table 1. Demographic characteristic of consumers**

Characterisitc	N	%
<i>Gender</i>		
M	48	30
F	112	70
<i>Age</i>		
< 25 yrs	23	14.37
26 – 35 yrs	31	19.37
36 – 45 yrs	33	20.62
46 – 55 yrs	31	19.37
56 – 65 yrs	23	14.37
> 65 yrs	19	11.87
<i>Educational level</i>		
Primary school	4	2.5
Gymnasium school	11	6.87
High school	73	45.62
University	72	45.62
<i>Place of living</i>		
Out of country	4	2.5
City	92	57.5
Rural region	50	31.25

N - number of subjects

The questionnaire was completed for a total of 160 consumers, of which 70% was women and 30% was men. In general, the respondents had a level of training at least secondary school (45.6%) and equally with completed higher education (45.6%).

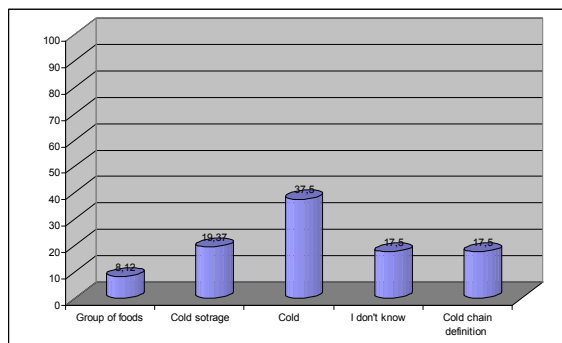
A percentage of 57.5% of respondents live in cities, 31.25% in the village and only 2.5% abroad.

One of the main questions in the interview referred to the notion of "cold chain of perishable milk products" (fig.1).

At the question "if they heard the notion of cold chain of perishable milk products", most consumers have no knowledge, or have not heard about the notion of cold chain.

A percentage of 37.5% made the association with the notion of cold, in general, but would not give a clear definition, and a percentage of

19.37% made the association only with the cold storage in the store.



**Figure 1. Consumer's opinion about "cold chain" terms**

**Table 2. The knowledge of the optimal level of temperature for milk products storage.**

The optimum temperature	N	%
< 0 <sup>0</sup> C	8	5
Between 1...8 <sup>0</sup> C	87	54.23
Over 10 <sup>0</sup> C	16	10
I don't know	20	12
<b>Total</b>	<b>160</b>	<b>100</b>

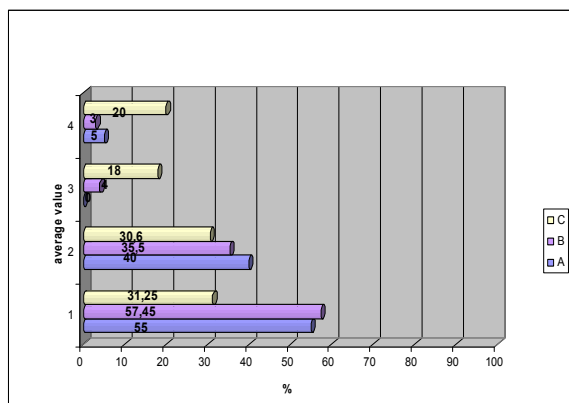
When we asked if they know what temperature should be kept fresh dairy products, over 55% of respondents didn't know to give a correct answer and only 54 % gives a correct answer, respectively , the perishable products must be storage between 1<sup>0</sup> and 8<sup>0</sup>C (table 2).

In terms of consumer's opinion about the importance of keeping perishable milk at refrigeration temperatures, the answers were quite varied.

As can be seen in Fig. 2, on a rating scale from 1 to 4, the question of whether it is important to know the temperature of the cooling showcases (question A), 55% answered negatively and only 3% answered that it is very important.

In question B, respondents were asked if they ever checked the correlation between the temperature registered by the producer on the milk product's pack and the temperature displayed by the cooling showcases. Over 57%

answered that no, never, and only 3% said they check every time.



**Figure 2. The consumer's opinion about the significance of maintaining the cold chain.** (the question was :On a scale to 1 – 4 , how often you..?) Result were evaluated using a 4 point type scale: 1 – never ; 2- sometimes, 3 – often; 4 – always. [5] The question was derived from Andrej Ovca et al. (2007), and partly modified.

In question C if they use insulated bags to transport perishable dairy products, over 31% answered negatively, and sometimes uses 30% and 20% use frequently insulated bags.

#### 4. CONCLUSIONS

Consumers have an important role to play in food safety assurance, especially in the area of maintaining a cold chain.

The consumers are not aware of the risks associated with interruption of cold chain of dairy products.

After the study conducted, it can be seen as maintaining the cold chain for dairy products to the store and up to final consumption it is not very important for consumers.

Over half of respondents do not know the thermal conditions that would be stored the perishable dairy products.

Also, a majority of respondents see no need to use insulated bags to transport milk products from the store to home.

Consumers were notified of what risks can occur during an interruption of cold chain of dairy products, especially about

microbiological risks and over 90% from respondents would like to know about more these risks.

An improvement of the current situation could be achieved by informing and educating consumers about important food safety issues.

Informing and educating consumers about the importance of cold chain could be done through the mass media, over 83% agreeing with this method.

Information concerning food-related hazards reaches consumers more effectively through magazines, newspapers and cooking books rather than brochures and leaflets [5].

Consumers were asked if they would be easier to identify a product that was not maintained in their storage conditions by thermosensitive labels affixed to the product.

Most respondents older than 55 years, believes it would be easier to check the quality of the product with these tags, because most times, they can't check the temperature of the cooling showcases and even the manufacturer recommended.

One of the important goals of consumer education (formal and informal) is stimulating consumers to think in terms of behavioural changes that result in positive influences on their quality of life.[5]

Romanian consumers must to know better the significance of maintaining of cold chain criteria over the period that elapses between buying and storing food in their refrigerator so as to avoid deterioration of perishable food quality.

This study was a pilot study, which can be extended to all branches of the cold chain .

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