

Original Article

Survey on Consumers' Preferences Concerning Chocolate

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Abstract

By using and processing raw materials agri-food industry is to produce high quality food in terms of innocuousness, nutrition, sensory and aesthetic qualities. The survey was conducted during May – August 2016 in the most crowded 5 supermarkets from Cluj-Napoca, using the questionnaire methodology. A number of 400 individuals were interviewed. The preferred chocolate labels are: Milka, Africana, and Poiana. They have a variable content in substances included in those known as being part of E category. A number of 3 of them are included in preferred chocolate assortments. They are: flavour with content not mentioned by producer, lecithin from soy (E 322) and polyglycerol polyricinoleate (E 476).

Keywords: food, production, questionnaire, toxic agents.

1. Introduction

By using and processing raw materials agri-food industry is to produce high quality food in terms of innocuousness, nutrition, sensory and aesthetic qualities. Lack harmfulness, character toxic is the most important condition that must respond to a food, because otherwise the product useful body, it turns into a threat to the health and life of the consumer, but also for food security at all levels [2, 3, 5, 9].

The main condition of ensuring minimum health status of the population resides in the consumption of wholesome food, ie free of factors that could cause illness. The danger that a food to be potentially harmful to humans resulting from contamination or pollution or its bodies with chemicals. The main causes that influence the hygienic quality of food can be summarized as follows: natural toxicity, contamination or pollution physical, chemical or biological [1, 4, 6].

As closely linked to the individual system, representing its fundamental biological relationship with the environment, the food is "mediator" ideal that environmental perturbations reach the man [3, 12].

Initially, the wide range of factors aggression on food (soil, water, air, product recipes, processing techniques, packaging, bio-pests, industrial pollutants, radioactive emissions, etc.), research and

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turned their attention to packaging and rural spaces storage. As awareness of the complexity of the effect of bullying on goods, the scope of interest has expanded from the original to the ambient factors [2].

To undertake effective action to prevent, avoid or remedy, of particular importance is the knowledge of all the ways and moments where there is a potential risk of pollution or contamination (Fig. 1) [10, 4].

Food raw materials, constituting the first stage of environmental impact, can accumulate in nature or contain various toxic agents, which requires assessment of transfer mechanisms and their

persistence. The second essential step in where food may be exposed to the impact of such physicochemical and microbiological - the production - presupposes a more easily controllable as storage, conservation, transport, marketing, fundamental conditions for food security is establishing clear powers and responsibilities and the existence of techniques, technologies and tools required throughout the food chain [2, 7, 8, 11, 13].

Minimization of pollutants and contaminants load of food goods, irrespective of their degree of processing, can achieve only so far as toxic agents are discovered, controlled and limited.



Figure 1. General model of possible ways of food contamination [4]

2. Material and Method

The survey was conducted during May – August 2016 in the most crowded 5 supermarkets from Cluj-Napoca. A number of 400 individuals were interviewed. The experimentally products included different categories of chocolates, which are the first

in consumers’ preferences. In order to implement the survey a questionnaire was elaborated and piloted using the interview, as method for data collection. Face-to-face questionnaires were used. Respondents were randomly recruited from the target supermarkets. There were proposed 6 questions concerning the consumers, characteristics (gender,

age, civil status, children's age, income, and education), and a separate question asking respondents to mention their most preferred chocolate. The results were processed and as consequence, there were identified the most preferred

chocolate labels. For these products, specific additives are also depicted for each chocolate label. This was possible because they were monitored according to label content, concerning raw material and all other components.

Table 1. Characteristics of the consumers included in survey (n=500)

No.crt.	Characteristic	Number of participants, n (%)
1.	Gender	
	Male	180 (45%)
	Female	220 (55%)
2.	Age	
	< 14	20 (5%)
	14-20	40 (10%)
	21-50	200 (50%)
	50-65	40 (10%)
	> 65	100 (25%)
3.	Civil status	
	Alone	70 (17.50%)
	Married	330 (82.50%)
4.	Childrens' age	
	No	50 (12.50%)
	< 10 years	200 (50%)
	11-14 years	100 (25%)
	5-18 years	50 (12.50%)
5.	Income	
	<1,200 lei	150 (37.50%)
	1,200-2,500 lei	180 (45%)
	2,500-4,500 lei	45 (11.25%)
	>4,500 lei	25 (6.25%)
6.	Education	
	Elementary	50 (12.50%)
	Secondary	100 (25%)
	Higher education	250 (62.50%)

3. Results and Discussions

The Milka chocolate. It is a product that is part of sweets and is obtained from: sugar, cocoa butter, skimmed milk powder, cocoa mass, whey powder, milk fat, emulsifier: soy lecithin, flavour.

Lecithin from soy - E 322 - a mixture of phospholipids obtained from the manufacture of the soybeans, is used as an emollient or in the preparation of certain types of foods and food.

To obtain lecithin, soybeans are kept in an environment with high temperature and a higher degree of moisture for a week, time they may hydrate and at the same time lose their coating.

Thus, after a period not to exceed 10 days, soybeans will be separated from the shell, cleaned, and followed by a careful distillation process showing soybean oil.

Finally the lecithin is separated from the oil by means of centrifugation process.

Although lecithin has beneficial effects on the body, this nutrient is essential to maintain its health.

Otherwise, lecithin protect cell structure by facilitating the movement of fats, ions, nutrients and waste in and out of the cell.

It also helps to maintain the structure of the nutrients and the form of cells in the body.

More than a dietary supplement, lecithin is used in food industry as an emulsifier and can be identified by the logo on the label E 322.

Its chemical composition makes it suitable for forming emulsions; allows, therefore, the oil water mixture, preventing their separation in the same food.

The maximum daily dose for E 322 (lecithin) is unlimited.

Polyglycerol polyricinoleate - E 476 - emulsifiers and stabilizers are artificial. Are obtained by esterification with fatty acids, condensates of castor oil. Use only low fat foods or sweets cocoa (chocolate).

In laboratory animals liver and nephrotoxic effects. Not recommended for frequent consumption. Combination of polyglycerol and castor oil (olive tree, *Ricinus* sp.). Normal fat consists of glycerol and fatty acids, these products additional glycerol is coupled to the normal glycerol.

The product generally is a mixture of different components.

Acceptable Daily Intake: Up to 7.5 mg / kg body weight.

It is part of the "suspicious E labelled substances."

The African chocolate. It is produced from sugar, vegetable fat, whey powder, coconut flakes, cocoa, emulsifier - soy lecithin, polyricinoleate polyglycerol - E 476, skimmed milk powder and Africana chocolate flavour. Some used additives are identical to those described Milka chocolate.

The Poiana chocolate. Are products of aerated milk chocolate containing: sugar, cocoa butter, skimmed milk powder, cocoa mass, milk fat, soy lecithin emulsifier polyglycerol polyricinoleate and flavors. Additives used in this chocolate are the same as those described in chocolate milk.

Content analysis of additives in chocolate was referred to the three varieties preferred by consumers, according to questionnaires distributed in supermarkets, respectively: Milka, Africana, and Poiana chocolates. Fiecare dintre acestea au avut în conținutul lor aceeași trei aditivi, respectiv:

- Flavour with a content, which is not described by the producer.
- Lecithin from soy (E 322), which is a mixture of phospholipids obtained from the process of fabrication of the soy beans.
- Polyglycerol polyricinoleate (E 476), emulsifier and artificial stabilizers. It is part of E compounds considered as "suspect"

4. Conclusion

The survey conducted in our trial, which includes subjects characterized in greatest share by females, aged within the interval 21-50 years, married, with children under 10 years, with income under 1200 lei, and that graduated from a higher education institution emphasize that the preferred

chocolate labels are: Milka, Africana, and Poiana. They have a variable content in substances labeled as E substances. A number of three components identified in about mentioned chocolate labels are part of this category, flavour with content not mentioned by producer, lecithin from soy (E 322) and polyglycerol polyricinoleate (E 476), respectively. The last compound, meaning polyglycerol polyricinoleate, is included in category of E compounds suspect as carcinogenic ones.

References

- [1] Banu C, 2002, Manualul inginerul de industrie alimentara. Vol I. Ed. Tehnica.
- [2] Cowburn G., L.Stockley, 2005, Consumer understanding and use of nutrition labelling: a systematic review, Public Health Nutrition, 8, 21–28.
- [3] Jones G., M. Richardson, 2007, An objective examination of consumer perception of nutrition information based on healthiness ratings and eye movements, Public Health Nutrition, 10, 238–244.
- [4] Pamfilie R. 1996, Merceologia și expertiza mărfurilor alimentare de export-import, Editura Oscar Print, București.
- [5] ***, 2007, Daily Intake Guide useful, say consumers Food Magazine. http://www.foodmag.com.au/articles/Daily-Intake-Guide-useful-sayconsumers_z139003.htm.
- [6] ***, www.aditivialimentari.org.
- [7] ***, www.euri.ro/tag/acid-fosforic/.
- [8] ***, www.ro.wikipedia.org/wiki/Acid_citric.
- [9] ***, www.ro.wikipedia.org/wiki/Benzoat_de_sodiu.
- [10] ***, www.ertrag.ro/substante.htm.
- [11] ***, www.food-info.net/ro/.
- [12] ***, www.topsanatate.ro/euri.
- [13] ***, www.biotehnologie.scienceline.ro/ADITIVUL_E_412_G UMA_GUAR_EXTREM_DE_NOCIV_5622_586_1.html.

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