

ATTITUDES TOWARD FOOD ADDITIVES IN HUNGARIAN CONSUMERS – PRELIMINARY RESULTS

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ABSTRACT

Consumer attitudes towards food additives were examined in a questionnaire survey. In our research it definitely shows up that consumers consider the use of food additives as rather dangerous. The main reason for this meaning is the unacquaintance: about half of the respondents could not even define either food additives or E-numbers. Consumers were also asked whether they were aware of the additive content of certain foods. Most people showed greater awareness on this issue than we expected, although we discovered some incredibly erroneous views, too. The consumers had various opinions of the technological necessity of additives, but most people think that some of these compounds are needlessly added to foods. The role of food additives in the decision process of the consumers is diverse: although most consumers do not care about this issue, many of them prefer products containing less additives among foods of same quality and price, and there are some who are willing to pay more for them. Vast majority of the interviewed people would support the introduction of an “additive-free food” mark.

Key words: human nutrition / food additives / food safety / consumer attitudes / questionnaires / Hungary

ODNOS MADŽARSKIH POTROŠNIKOV DO DODATKOV V HRANI – PREDHODNI REZULTATI

IZVLEČEK

S pomočjo ankete smo proučevali odnos potrošnikov do dodatkov v hrani. V raziskavi se je pokazalo, da so po mnenju potrošnikov dodatki v hrani precej nevarni. Glavni razlog za to je neznanje: polovica anketirancev ni zmogla opredeliti dodatkov v hrani ali E števil. Potrošnike smo tudi vprašali, če se zavedajo dodatkov v hrani. Večina ljudi je pokazala večjo stopnjo zavedanja, kot smo pričakovali, čeprav smo odkrili nekaj neverjetnih napačnih pogledov. Potrošniki imajo različno mnenje o tehnološki potrebnosti dodatkov, čeprav večina ljudi misli, da so nekateri dodatki po nepotrebem dodani hrani. Vloga dodatkov pri odločitvi za nek proizvod je različna; čeprav je večini potrošnikov vseeno glede tega, pa nekateri rajši izbereje proizvode z enako kakovostjo in ceno z manj dodatki, oziroma so nekateri celo pripravljeni plačati več za tovrstne proizvode. Velika večina vprašanih potrošnikov bi podprla vpeljavo nove blagovne znamke “brez dodatkov”.

Ključne besede: prehrana ljudi / živila / dodatki / varnost živil / potrošniki / odnos potrošnikov / ankete / Madžarska

INTRODUCTION

Food additives are defined in the Hungarian and European Union legislation as “any substance not normally consumed as a food in itself and not normally used as a characteristic ingredient of food whether or not it has nutritive value, the intentional addition of which to food

for a technological purpose ... results ... in it or its by-products becoming directly or indirectly a component of such foods.” (European Council, 1988; Rácz, 2002).

Food additives became one of the most important food safety issues in the recent decades. Health concerns regarding food additives are noticeably growing among consumers as well as in the media (Sohár and Domoki, 1997). The E-numbering system, which was originally destined for the health protection and proper information of consumers, appears in the consumers' thoughts as a mean to conceal the real composition of foods. The main reason for this misconception is that the list containing the substances and their E-numbers is not available to most of the consumers, therefore they cannot identify the certain ingredients, which leads to mistrust (Elmadfa *et al.*, 1996).

It can be definitely determined that media plays a dominant role in forming the consumer attitudes toward food additives. In the last decades the necessity and health risks of food additives became one of the most favoured topics of the media as well in Hungary as in the whole world. When analysing the appearance of food additives in the media it can be observed that the proportion of authentic, professional information is very low, whereas unscientific sensationalism has a free scope (Tarnavölgyi and Molnár, 2004).

Last year, we conducted focus group surveys in order to observe how food additives are considered in specified groups of consumers. The most important observation was that most consumers knew very little about food additives, and their judgement was basically negative. This aversion was, however, usually not reflected in the consumers' decision-making: other quality characteristics and the price played a much more significant role when choosing foods. Still, they required more detailed authentic information regarding food additives. Doctors and food industry experts, however, who could play a key role in providing the consumers with detailed information of food additives, were not interested in this issue at all (Tarnavölgyi, 2003).

On the basis of observations in above-mentioned focus group survey, we started a countrywide quantitative market survey focusing on the consumers' judgement of food additives. The goal of the research was to determine how consumers conceive of the necessity and health risks of the use of food additives, and how they are influenced by the additive content of foods when choosing products.

This research is a part of a PhD program aiming to evaluate food additives from the points of view of nutrition, economy and marketing.

MATERIALS AND METHODS

Considering our research goals, the questionnaire survey was chosen among quantitative market research methods.

The questionnaire contained 7 questions regarding the people's knowledge and opinion of food additives. Respondents were grouped by sex, age, level of education and income. Sector identifying questions were also included which will make possible to separate the different consumer groups.

In order to ensure the representativity for sex and age, quota sampling method was used on the basis of the census of 2001. 2 South-Transdanubian shire towns: Kaposvár and Pécs were chosen as locations for the survey. By this time 200 questionnaires were completed. 100 questionnaires were filled in each town in public areas.

Data were processed and evaluated using SPSS 9.0 for Windows software.

RESULTS AND DISCUSSION

Firstly, respondents were asked how dangerous do they think it is if foods contain the below-mentioned ingredients (Table 1). It deserves attention that most substances usually identified as food additives are thought to be even more harmful than cholesterol, which suggests that the cholesterol-hysteria of the 90s was replaced by the food additive panic. Low-calorie sweeteners were, however, considered to be less dangerous than the other additives, with similar health risk to that of sugar. This observation suggests that despite the fact that low-sugar or sugar-free, so-called light foods have been present on the Hungarian market for a long time, consumers still did not take a definite stand on the question whether or not these products are healthier than traditional foods. The E-numbers were considered to be the most harmful ingredients while of the expression ‘food additives’ a more favourable account was given. This suggests that most people do not know that E-numbers and the chemical names of food additives are corresponding marking forms.

Table 1. Dangerous nature of certain food ingredients according to the consumers’ opinion

Ingredients	Average
Vegetable fat	4.41
Salt	3.68
Sugar	3.47
Artificial sweeteners	3.44
Animal fat	2.85
Cholesterol	2.40
Food additives	2.24
Preservatives	2.18
Colours	2.15
Stabilizers	2.07
E-numbers	1.90

Note: 1 = very dangerous, 5 = not dangerous

Table 2. Rate of respondents being able to define food additives and E-numbers, %

	Level of education			Average
	Primary	Secondary	Tertiary	
E-numbers	33.3	44.5	59.3	47.5
Food additives	38.9	49.2	68.5	53.5

The fear of the food additives may be attributed to the unacquaintance: half of the respondents could not properly define in their own words either what food additives or E-numbers mean. The correctness of the answers was evaluated on the basis of the definitions in the Codex Alimentarius Hungaricus and the Hungarian Food Act (Magyar Élelmiszerkönyv Bizottság, 1995; Rácz, 2002). Table 2 shows that at the higher levels of education, the frequency of the right answers increased considerably. However, it deserves attention that no one gave us completely perfect answers, and there were only few people who knew that E-numbers identified food additives and the two forms of markings were equivalent. It is very interesting that there is a difference between the rates of the proper answers regarding the E-numbers and the food additives, fewer respondents were able to define the meaning of E-numbers than that of the food additives. It suggests that people still think of E-numbers as something unknown and mysterious.

Sorting by sex it showed up that women were more informed than men, which can probably be attributed to their stronger health consciousness and the fact that in the families women are usually responsible for shopping. On the other hand, young people gave us more proper answers than the older ones which suggests that the younger generations care about the issue of food additives much more.

The role of food additives in the decision process of the consumers is diverse. As shown on Table 3, most consumers do not really care about this issue, but the proportion of conscious consumers increases with their level of education. These observations suggest that the consumers' concerns of food additives are usually not reflected in the shopping habits, other product characteristics play a more important role when choosing foods.

Table 3. Impact of additive content on food choice, %

	Level of education			Average
	Primary	Secondary	Tertiary	
Does not affect	11.1	28.1	13.0	22.5
Usually does not affect	33.3	21.1	22.2	22.5
Moderately affects	44.4	25.8	20.4	26.0
Usually affects	11.1	18.8	31.5	21.5
Definitely affects	0.0	6.3	13.0	7.5

We also asked the consumers whether they are aware of the additive content of certain foods (Table 4). Most people showed greater awareness on this issue than we expected from our recent studies. Consumers were aware of the high additive content of pre-cooked foods, beverages and sweets, and on the other hand they classified mineral water and dairy products into the group of foods with low additive content. Butter, however, was thought to contain medium amount of additives, receiving the same points as margarine, while at the manufacturing of so-called basic dairy products, including butter, no additives are allowed to use at all (Magyar Élelmiszerkönyv Bizottság, 2000). Earlier studies by our department suggest that this misconception may be attributed to the fact that Hungarian consumers still cannot distinguish butter from margarine (Berke, 2003).

Table 4. Additive content of different foods according to the consumers' opinion

Product	Average
Desiccated soup	1.31
Sparkling beverage	1.38
Chocolate, sweets	1.50
Bottled vegetables	1.68
Sausage, salami	1.99
Margarine	2.19
Butter	2.22
Bread	2.50
Cheese	2.51
Yoghurt, kefir	2.63
Mineral water	2.83

Note: 1 = much, 3 = less or nothing

At the end of the questionnaire we asked the consumers' opinion of 15 statements regarding food additives (Table 5). The answers confirm the fear of the health impairing effects of additives, at the same time showing that compounds of natural origin are judged more favourably than the artificial ones. Most people think that the authorities do not provide adequate information about food additives. The respondents had various opinions of the technological necessity of additives, but most of them think that some of these compounds are needlessly added to foods. Consumers prefer products containing less additives amongst foods of same quality and price, and there are some who are willing to pay more for them. The vast majority of the interviewed people would support the introduction of an "additive-free food" mark.

Table 5. The respondents' opinion of statements regarding food additives

It would be essential to introduce "Additive-free food" or "Contains only natural food additives" marks.	4.43
I prefer buying products containing less additives amongst foods of same quality and price.	4.13
There are some additives that are needlessly added to the foods and could be avoided.	4.07
Food additives of natural origin are less dangerous to health than the artificial ones.	3.99
I am willing to pay more for foods containing less or no additives.	3.63
It disturbs me if I cannot find proper information regarding e. g. manufacturer, ingredients, etc. on the labels of foods.	3.59
The bad health state of the population can partly be attributed to the excessive use of food additives.	3.58
The long shelf-life of UHT milk can be attributed to the preservatives.	3.34
E-numbers serve the purpose of proper information and health protection of consumers.	2.88
Foods with artificial sweeteners are healthier because they do not contain any sugar.	2.80
It is essential to use additives because they improve the quality and sensory value of foods.	2.67
After joining the EU the Hungarian food processors will be allowed to use more kinds and higher concentrations of food additives than before.	2.45
If there are no E-numbers marked on the label of a food it means it contains no additives.	2.26
The authorities properly inform the consumers about food additives	2.14
Food additives are not harmful to health.	1.83

Note: 1 = do not agree, 5 = completely agree

CONCLUSIONS

Present questionnaire research confirmed the findings of our former focus group survey showing that the consumers judge the use of food additives rather dangerous and they are afraid of the health impairing effects of these compounds. Interestingly, the most unfavourable opinions were held of E-numbers originally serving for the information of consumers. Since food manufacturers can mark food additives by either E-numbers or chemical names on the packing of products, in order to win the consumers being afraid of E-numbers it may be worth choosing

the latter marking form. Although most consumers do not care for food additives when choosing products, it may also be an important aspect to the higher qualified stratum.

The main reason for the consumers' concern is the lack of reliable information: about half of the respondent could not even define what food additives and E-numbers mean. There is a strong need for the proper guidance of people, they should be informed of the technological necessity and the strict authorization system food additives, including the meaning of E-numbers. Additionally, the list of E-numbers should be more widely available to consumers to make them possible to identify the certain compounds. We regard the information as governmental task, with the active contribution of the media, family doctors, food processors and retailers, as a part of the project for propagating healthy nutrition.

Although people showed greater awareness on the additive content of different foods than we expected, we recognized some anomalies, too. Producers of foods with low additive content, particularly the dairy industry should lay greater stress on propagating the naturality of their products, this would provide them a market advantage as well against the competitors as the manufacturers of substitute products. Considering the consumers' requirements, the introducing of "Additive-free food" or "Contains only natural food additives" marks may be pondered.

In the immediate future, present research will be extended to the whole country, and further surveys are also planned in order to thoroughly study the consumer attitudes toward food additives.

REFERENCES

- Berke, Sz. The consumers' view on the components of functional quality of basic foods of animal origin. PhD thesis. Kaposvár, University of Kaposvár, Faculty of Animal Science, 2003, 7–8.
- Elmadfa, I./ Muskat, E./ Fritzsche, D. E-Nummern. München, Gräfe und Unzer GmbH, 1996, 4–19.
- European Council. Council Directive 89/107/EEC on the approximation of the laws of the Member States concerning food additives authorised for use in foodstuffs intended for human consumption, 1988. http://europa.eu.int/comm/food/fs/sfp/addit_flavor/flav07_en.pdf
- Magyar Élelmiszerkönyv Bizottság. Magyar Élelmiszerkönyv 1-2-89/107. számú előírás – Az élelmiszerekhez engedélyezett adalékanyagok általános előírásai, 1995. <http://193.224.162.52/ELELM/1/1289107.html>
- Magyar Élelmiszerkönyv Bizottság. Magyar Élelmiszerkönyv 2-51. számú irányelv – Tej és tejtermékek, 2000. <http://193.224.162.52/ELELM/2/251.pdf>
- Rácz, E. Az élelmiszerekről szóló 1995. évi XC. törvény, a módosítására kiadott 2001. évi LIV. törvény, a végrehajtásáról szóló 1/1996. (I. 9.) FM-NM-IKM együttes rendelet és a módosítására kiadott együttes rendeletek szövege és kommentárja, 2002. http://www.fvm.hu/elelmiszer/info2_a/elszi2.pdf
- Sohár, P./ Domoki, J. Az élelmiszer adalékanyagok E-számrendszere. Budapest, Országos Élelmezés- és Táplálkozástudományi Intézet, 1997.
- Tarnavölgyi G./ Molnár E. Consumer's opinions of food additives. In: International Conference "Within the European Union", Mosonmagyaróvár, 2004-05-06/07, Hungary. Mosonmagyaróvár, University of West Hungary, Faculty of Agricultural and Food Sciences CD edition (2004).
- Tarnavölgyi, G. Analysis of consumers' attitudes towards food additives using focus group survey. In: 11th Animal Science Days, Poreč, Croatia, 2003-09-23/26. *Agriculturae Conspectus Scientificus*, 68(2003)3, 193–196.

APPENDIX 1

QUESTIONNAIRE

Dear respondent,

We would like to ask your help for a scientific research conducted by the University of Kaposvár Faculty of Animal Science. We would like to ask you some questions about your nutrition habits.

1. How do you judge your state of health?

- | | | |
|-------------------|--------------------|------------|
| 1. Definitely bad | 2. Rather bad | 3. Average |
| 4. Rather good | 5. Definitely good | |

2. How dangerous do you think it is if foods...

Contain salt	Contain colours	Contain preservatives
Contain sweetener	Are smoked	Contain animal fat
Contain food additives	Contain vegetable fat	Contain stabilizers
Contain cholesterol	Contain sugar	Contain E-numbers

1. Definitely dangerous	2. Rather dangerous	3. Moderately dangerous
4. Less dangerous	5. Not dangerous at all	

3. Do you know what E-numbers labelled on foods mean?

.....

.....

.....

4. Do you know what food additives mean?

.....

.....

.....

5. To what extent does it affect your consumer decision if a food contains/additives/E-numbers?

- | | | |
|------------------------------|-------------------------------|--------------------------|
| 1. Does not affect me at all | 2. Usually does not affect me | 3. Moderately affects me |
| 4. Usually affects me | 5. Definitely affects me | |

6. How much additives/E-numbers do you think the following foods contain?

1. Much	2. Medium	3. Few or nothing
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Sparkling beverage	Bread, baker's wares	Mineral water
Yoghurt, kefir	Chocolate, sweets	Confectionery
Margarine	Cheese	Beer
Sausage, salami	Ice cream	Butter
Desiccated soup	Fruit juice	Tinned meat
Imitated sour cream	Bottled vegetables	Wine

7. How do you agree with the following statements?

- | | | |
|------------------------|------------------------|---------------------|
| 1. Do not agree at all | 2. Rather do not agree | 3. Moderately agree |
| 4. Rather agree | 5. Completely agree | |

1	It disturbs me if I cannot find proper information regarding e. g. manufacturer, ingredients, etc. on the labels of foods.	
2	If there are no E-numbers marked on the label of a food it means it contains no additives.	
3	Food additives are not harmful to health.	
4	The authorities inform the consumers properly about food additives.	
5	Food additives of natural origin are less dangerous to health than the artificial ones.	

continued overleaf

6	After joining the EU the Hungarian food processors will be allowed to use more kinds and higher concentrations of food additives than before.	
7	E-numbers serve the purpose of proper information and health protection of consumers.	
8	There are some additives that are needlessly added to foods and could be avoided.	
9	It is essential to use additives because they improve the quality and sensory value of foods.	
10	The bad health state of the population can partly be attributed to the excessive use of food additives.	
11	Foods containing artificial sweeteners are healthier because they do not contain any sugar.	
12	The long shelf-life of UHT milk can be attributed to the use of preservatives.	
13	I prefer buying products containing less additives amongst foods of same quality and price.	
14	I am willing to pay more for foods containing less or no additives.	
15	It would be essential to introduce an "Additive-free food" or "Contains only natural food additives" marks.	

8. How do you agree with the following statements?

1. Do not agree at all 2. Rather do not agree 3. Moderately agree
4. Rather agree 5. Completely agree

1	We should take better care for our environment.	
2	It is important to me what other people think of me.	
3	I believe in family traditions and values.	
4	I am usually among the first people trying new products.	
5	I am the leader in my circle of friends.	
6	In most cases, I buy branded, well-known products.	
7	I usually pay great attention to the prices.	
8	I plan all shoppings carefully.	
9	I like it when my life is eventful.	
10	I regularly go in for sports.	
11	I am very optimist about the future.	
12	I take care of my nutrition habits.	
13	I think it is important to eat tasty foods even they may be not beneficial to my health.	
14	I prefer oven-ready, convenience products.	
15	I am willing to pay more for the better quality.	

9. Sex of the respondent:

1. Male 2. Female

10. Level of education of the respondent:

1. Primary 2. Secondary 3. Tertiary

11. Age of the respondent:

- 1.

12. How do you consider your income?

1. Deep below the average 2. Below the average 3. Average
4. Above the average 5. High above the average

Thank you for helping our research!

Number:

County:

Place:

Date: