

## Determinat□ on Of The Level Of Knowledge Of Consumers About Food Additives

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### **Abstract:**

**Object:** In this study, consumer awareness and safety perceptions of food additives have been identified through survey.

**Desing:** To investigate the level of information to consumers about food additives conducted the survey with 300 people in the center of Tekirdag province between the months of June and July 2015. Before the start of the survey in addition to mutual, it has been tested for clarity and validity of the questions in the questionnaire to make corrections with 10 people. Research data were analyzed using SPSS ver18 statistical package program with Chi-square ( $\chi^2$ ) significance test.

**Result:** There was a significant correlation between Having sufficient knowledge about food additives and the profession of respondents. Likewise, there was a significant correlation between having sufficient knowledge about food additives and the education level of respondents. Significant corrolation was determined between gender and to control the labels of food packaging during shopping of respondents. Food additives to control the rate of participants who are in the habit of reading the label has been 70,3%. The level of consciousness about food safety of women increased with increasing education and income level.

**Conclusion:** It is necessary the cooperation between consumer and goverment for proper usage of food additives according to the results of survey.

**Keywords:** Food additives, consumers, survey, food safety

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### **I. Introduction**

Food additives are an important part of our food supply; without food additives it would not be possible to maintain the current selection and quality of foods [1]. The use of food additives is subject to strict controls, underpinned by scientific studies to demonstrate their safety to human health. Their use brings many benefits including increased safety, and greater choice of food products [2]. Packaged and processed foods get many a family through the day. They're convenient, portable, and they stay fresh for a long time. Food additives are not natural nutrition for humans or their pets. Children are suffering the most from food additives because they are exposed to food chemicals from infancy, and human bodies were not meant to be exposed to the degree of chemicals and food additives that we are currently. These additives, may include side effects, food allergies, increased waist lines, decreased absorption of minerals and vitamins, cancer and more [3]. Food additives, such as food colours or sweeteners, play an important part in food supply. For a variety of reasons, some consumers might regard the use of food additives, especially artificial ones, with suspicion; food additives are considered unnatural, unhealthy or even a public health risk [4].

Many surveys conducted have established that the consumers are unaware of the function, role and advantages of such additives and that many of them perceived the additives to be unhealthy and that therefore they approach them negatively [5,6]. Studies have shown that participants' suspicion of food additives approved by the government was derived from insufficient information and misunderstandings of food additives, as well as a lack of clarity in risk communications among the stakeholders such as the government, industry, and consumers [6]. People with lower levels of education were more likely to purchase food with additives that follows government standards than those with higher levels of education. This suggests that consumers with lower levels of education are more likely to trust government institutions to regulate food additives [7]. The requirement of consumers to reduce additives in food products has led to the removal of artificial colors, flavors, and preservatives in many food categories so as to obtain clean-label products [8].

In this study, consumer awareness and safety perceptions of food additives have been identified through survey.

### **II. Material And Method**

To investigate the level of information to consumers about food additives conducted the survey with 300 people in the center of Tekirdag province between the months of June and July 2015. Before the start of the survey in addition to mutual, it has been tested for clarity and validity of the questions in the questionnaire to

make corrections with 10 people [9]. Research data were analyzed using SPSS ver18 statistical package program with Chi-square ( $\chi^2$ ) significance test.

### III. Results And Discussion

Of the subjects surveyed, 41% male, 59% are female. The age of the participants ranges, the ratios of sectoral distribution and educational status are given in Table 1.

**Table 1.** Age ranges of respondents, educational status and the sectoral distribution of rates.

Age Range	Participation Rate (%)	Education Status	Participation Rate (%)	Sectoral Distribution	Participation Rate (%)
20-30	15,7	Primary	13,3	Food	5,0
31-40	44,3	High school	28,7	Healt	13,0
41-50	30,7	Vocational	17,7	Education	23,0
51-60	8	Faculty	29,3	Housewife	20,0
61>	1,3	Graduate	11,0	Other	39,0

37% of respondents reported that they have sufficient knowledge about food additives, and 63% said the opposite. About having enough information about food additives with the sector studied it is observed that there is a significant relationship. ( $\chi^2=14.538$ ;  $P<0.05$ ). The sectoral distribution of those who have enough information about food additives was 60% in the food sector, 53.8% in the health sector, %43.5 in the the education sector, 30% in housewife and in 25,2% other sectors, respectively. It is observed that there is a significant relationship between education and enough knowledge about food additives. ( $\chi^2=15.825$ ;  $P<0.05$ ). 30% of primary school graduates, 39.5% of high school graduates 22.6% of vocational school graduates %36.4 of faculty, graduates and 63.6% of graduate stated that they have enough information about food additives.

Kim and Kim [10] found that Korea consumers expressed concern about preservatives and bleaching agent. Kjærnes [11] reported that women paid more attention to food safety issues than men because they take more responsibility for buying and preparing food. Young people were found to be less concerned about food safety than older people [12] and according to Zorba and Kaptan [13], knowledge of food safety issues increases with age.

Food additives to control the rate of those who are in the habit of reading the label has been 70,3%. The effect of gender in the habit of label reading were found significant statistically ( $\chi^2=7.732$ ;  $P<0.05$ ). 76.4% of ladies and 61.5% of gentlemen have the habit of reading the label. The vast majority of middle school students was unaware of the food additives used in processed foods and hardly recognized food additive information on product labels [14].

The percentage of participants who food additives easily understood was 13.3%. The ratio of those who understand difficult was 66.3% and 20.3% of respondents stated that they never understood labels of food packaing. The level of education and sector have a significant impact on the understanding of food additives. ( $\chi^2=21.341$  and  $\chi^2=20.437$ ;  $P<0.05$ ). The percentage of participants who food additives easily understood, respectively, was in primary school graduates 22.5%, in high school 10.5%, in vocational school graduates 3.8%, in faculty graduates 11.4% and in graduate 30,3%. Those percentages were in food sector 20%, in healt sector 25.6%, in education sector 20.3%, in housewife 11.7% and in the other sectors 5.1%. The additive names is sometimes difficult to pronounce for layman persons. This is caused by lack of understanding them and higher healt risk [15].

The rate of having enough information about E codes of food additives was 26.3%. The level of education and sector have a significant impact on the understanding of E codes. ( $\chi^2=26.574$  ve  $\chi^2=19.688$ ;  $P<0.05$ ). The percentage of participants who E codes easily understood, respectively, was in primary school graduates 15%, in high school 16.3%, in vocational school graduates 20.8%, in faculty graduates 33% and in graduate 57.6%. Those percentages were in food sector 26.7%, in healt sector 35.9%, in education sector 43.5%, in housewife 15% and in the other sectors 18.8%. The function of the additive (e.g., preservative, antioxidant, etc.) and the specific substance used either by referring to the appropriate E number or its name should be identified on product labels in the finished food in Europe [16].

3% of the participants have indicated that food additives are safe. %74 of participants said opposite. 23% of participants have not an idea about in this subject. The sector and age of participants have a significant impact on the food additivies safety knowlage ( $\chi^2=18.069$  and  $\chi^2=25.037$   $P<0.05$ ). The percentage of participants who said that food additives are not safe was in food sector 53.3%, in healty sector 74.4%, in education sector 87%, in housewife 71.7% and in the other sector 70.1%. Those percentages were in 20-30 age range 61.7%, in 31-40 age range 67.7%, in 41-50 age range 84.8%, in 51-60 age range 91.7% and above 61 age 75%.

The participants showed negative attitudes toward food additives in products [17]. There have been several surveys conducted to evaluate consumer knowledge, awareness, and responses toward food additives [18,19].

We asked the participants “is it safe to buy the processed foods that contain food additives?”. 4% of participants said no and 76.7% of participants said yes. 19.3% of participants have not an idea in this subject. The sector and age of participants have a significant impact on the safe to buy the processed foods that contain food additives ( $\chi^2=17.182$  ve  $\chi^2=19.071$ ;  $P<0.05$ ). The percentage of participants who said that to buy the processed foods that contain food additives are not safe was in food sector 53.3%, in healthy sector 71.8%, in education sector 82.6%, in housewife 78.3% and in the other sector 76.9%. Those percentages were in 20-30 age range 57.4%, in 31-40 age range 75.9%, in 41-50 age range 84.8%, in 51-60 age range 91.7% and above 61 age 50%. The level of consciousness about food safety of women increased with increasing education and income level [20].

Participants were asked the multiple-choice questions. One of them was “What is the reason for the use of food additives in foods?”. The answers of this question were to store the foods for a long time with 93.3%, to obtain good taste and aroma with 69%, to obtain shape and color with 63.7% and to increase nutritional value of foods, respectively.

The answers of “Why legally permitted food additives is not safe?” question were the cause of cancer with %56.3, the lack of trust to Food manufacturers with %49, the negative news in the media with %42, the lack of knowledge about food additives safety with 29.7% and the cause of allergy with 26.3%, respectively. Unusan [19] also reported 34.8% responded food additives influenced negative effects to human health in Turkey. Most of the respondents gave knowledgeable responses on the harmful effects of additives. Respondents stated they believe additives bad for health. This may be possibly due to their familiarity with additives.

The answers of “Why the information about food additives is insufficient ?” question were the lack of information by government or media with 68.7%, the lack of label information on food package with 55.3%, not to know purpose of usage of food additives with 41%, respectively.

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The answers of “Should be given information about food additives?” question were the purpose of usage with 55.7%, should be given content of food additives on label with 49.3%, the information of harmless mixture ratio of food additives on label with 44.7%, respectively.

The answers of “What are your expectations from the government about food additives?” question were the control of food additives rates in foods with 71.3%, the reducing of food additives rates in foods with 61.3%, easy-to-understand labels with 54% and the obligatory information about food additives on the label with 49%, respectively. A quality and safety certification mark with label on finished food had become an important policy tool for food quality information to consumers [21] .

The answers of “To retrieve information about food additives, which would you choose?” question were the brochures with 50.7%, internet with 47.3%, TV programs with 47%, sales assistants with 28% and newspaper 21.3%, respectively. Consumers use many sources for food safety information. Consumer perception of the reliability of convenient materials, like supermarket brochures, can be enhanced by including statements from reliable sources<sup>(19)</sup>. Television and internet were the most used channels for obtaining information about food-related hazards. In contrast with previous studies, where newspapers were more frequently used and the internet less so [22, 23, 24] .

The answers of “Which food additives do you know?” question were given in Table 2.

**Table 2.** The best known food additives

Food additives	%
Colorants	25.31
Sweeteners	13.27
Citric acid	8.71
Glucose	7.05
Flavorings	6.63
Preservatives	4.97
Nitrate and nitrite	4.97
Emulgator	4.97
Monosodium glutamate (MSG)	4.56
Antioxidant ingredients	4.14
Sodium benzoate	4.14
Ascorbic acid	3.73
SO <sub>2</sub> and sulfites	2.48
Viscosity-increasing substances	2.48
Sorbic acid	2.48

Shim et al.[6] showed that the respondents were very concerned about preservatives, colorants, and artificial sweeteners due to negative health effects such as toxicity and carcinogenicity.

#### IV. Conclusions

Food additives are among the safest chemicals in food due to their low toxicity, rigorous safety testing, and control of use by the law. It is important for everyone to be aware of the types of chemicals and food additives during consuming food [3]. Without food additives, it would be impossible to maintain the high standards of security, selection and convenience in our food supply [25,1] .

The results of this study showed that;

There was a significant correlation between having sufficient knowledge about food additives and the profession of respondents,

It is observed that there is a significant relationship between education and enough knowledge about food additives,

Food additives to control the rate of those who are in the habit of reading the label has been 70,3%. The effect of gender in the habit of label reading were found significant statistically,

The level of education and sector have a significant impact on the understanding of food additives,

The level of education and sector have a significant impact on the understanding of E codes,

The sector and age of participants have a significant impact on the food additives safety knowledge. The level of consciousness about food safety of women increased with increasing education and income level,

The sector and age of participants have a significant impact on the safe to buy the processed foods that contain food additives.

The healthy risks of food additives might be minimized. In addition, food manufacturers should pay attention to check food quality before offering it for sale in the all production stages, and consumers should be educated about food additives [26] .

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