Consumer’s willingness to buy ω-3 eggs in the Greek market

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Summary
The aim of this pilot study was to investigate the consumer’s willingness to buy ω-3 eggs in the Greek market as related to the consumer beliefs about the ω-3 eggs and the importance given by the consumers in various ω-3 egg attributes. A random of 45 egg consumers was interviewed using the face to face questionnaire interview method.

Mean weekly purchase was found at 6 ω-3 eggs per family. The majority of the respondents always take into account the packaging and labelling of ω-3 respectively. Furthermore, the majority of respondents always take into account the shell colour and shell clarity. Egg size is also a quite important criterion for the 66.7% of consumers, who buy ω-3 eggs. Moreover, the vast majority of respondents always check the ‘best before’ attribute when buying eggs. The 48.9 % of respondents reported that they take into account the price, when buying the ω-3 eggs, while the 51.1% of them never consider the price in their purchase. On the contrary, the brand name seems to be a very important criterion when purchasing ω-3 eggs by the 71.2% of the respondents.

One of the principal reasons for buying ω-3 eggs by the Greek consumers is their ‘health value’ since the 93.3% of the consumers believe that the ω-3 eggs are healthier than the regular eggs. However, when the consumers are asked to give their opinion about specific health attributes of ω-3 eggs, many of the respondents ‘do not know’.

Concluding, the principal reasons for buying ω-3 eggs by the Greek consumer are a) the belief that ω-3 eggs are healthier than the regular eggs, and b) the importance of packaging and value attributes of the ω-3 eggs.

Introduction
Eggs have long been an important contributor to the nutritional quality of the European consumer’s diet. While eggs provide only 1.3% of the average caloric intake, their nutrient density is rather provide in nutrition than calories: 6% of RDA for riboflavin, 5% of folate, 4% of vitamin E and vitamin A, and almost 4% of protein. Furthermore, eggs have been associated with creation, fertility and new life since ancient times. Many cultures believed that eggs have powers of renewal and rebirth and their round shape has been considered as the symbol of the cyclical and continuous nature of life. They are consumed by every generation from childhood to later life and, given their nutrient density, are especially valuable for the elderly, as energy expenditure and intake decline.

In spite of all the above health attributes of the eggs, for many years, eggs have been included in the forbidden food list because of their cholesterol content. The mere mention of cholesterol conjured up fear and was enough to banish eggs entirely from the diets of many consumers. No cholesterol was the most important benefit trumpeted in advertising and on the labels of many food products.

Recent food crises in Europe undermined consumer confidence in the livestock industry, and poultry industry as well. Consumers are increasingly concerned about the origin and means of production of their food. In Greece, consumer standards seem to have changed in the last twenty years, due to the above crisis and also due to socio-economics changes, including the improvement of level of living, the entry of women in the labour market, etc. (Yannakopoulos et al., 1994). During the last ten years, some trends in food consumption became evident: increasing fruit, vegetable, milk, cheese and fish consumption on the one hand and decreasing sugar and egg consumption on the
other. Reasons for these trends are increasing health concerns, less demand for caloric intake, etc. In 2001 the per capita egg consumption was 240 eggs. As consumers become increasingly health conscious the world’s food producers have developed new and innovative products to meet these new demands. The new trend in the egg industry is the move towards nutrient or ‘designer’ or ‘enhanced’ eggs. The most popular nutrient-enhanced eggs are those that are low in fats and high in Omega-3 fatty acids and possibly in Vitamin E than regular eggs. These eggs sell at a premium price compared to the regular eggs. Omega 3 is a fatty acid that is naturally found in deep water fish such as herring, trout, tuna and sardines, but is also found in vegetable seed oils such as flaxseed, linseed, soybean and canola. Possible benefits of Omega 3 include the decreased risk of heart disease, the increased development of brain tissue in pregnant women and children, improved oxygen supply, increased brain function, and some relief of rheumatoid arthritis, inflammatory disorders, and other miscellaneous ailments. As consumers became more informed about the healthy benefits of ω-3 fatty acids, the popularity of the enriched (functional) eggs became more widespread. It has been estimated that nutrient-enhanced eggs now account to five percent of eggs consumed in the European market. Clearly, there is a growing market for nutrient enhanced eggs (Rich, 2003). Furthermore, this trend, often known as the trend towards functional foods, may spread to other food items such as milk and fruits and vegetables.

In the Greek market, the enhanced eggs available in big supermarkets, are mainly the following:
- ‘Omegga-3 eggs’, produced by the AMERICAN FARM SCHOOL in Thessaloniki (Pa. No 1002989)
- ‘Eggs + plus’ and ‘Vi-omega 3 eggs’ produced by MEGA FARM company in Athens (Pa. No 1004395)
- ‘Every Day Eggs’ and ‘Baby Eggs’, produced by GOLDEN EGGS company in Athens
- ‘Achyrona Eggs’ produced by VLACHAKIS company in Athens

The aim of this pilot study was to investigate the consumer’s willingness to buy ω-3 eggs in the Greek market as related to the consumer beliefs about the ω-3 eggs and the importance given by the consumer in various ω-3 egg attributes. The ultimate purpose was to identify any ignorance or misconception about the ω-3 eggs in order to better design our information and education campaigns and to measure the ‘importance’ of ω-3 eggs attributes in order to plan our further research and marketing strategy.

Materials and methods
The survey was undertaken in 2003, by the face to face questionnaire interview method. A random of 45 egg consumers was interviewed inside big supermarkets of Thessaloniki city. Consumer behaviour was studied and classified when buying hen eggs.

The questions asked covered the attribute beliefs for the ω-3 eggs and the importance given by the consumers in various criteria when buying ω-3 eggs. Respondents were also asked several questions concerning the demographic characteristics of their household (sex, family income and educational level).

The data collected was analyzed by the statistical software SPSS using descriptive statistics, and bi-variate analysis and all statistical hypothesis was accepted or rejected at the level of significance a=0.05.

Results and discussion

DEMOGRAPHIC CHARACTERISTICS
The majority of the respondents were women (75% vs. 25% men). These proportions are related to the Greek traditional lifestyle, in which women are responsible for the household shopping.

The family income for the majority of respondents (73.4%) was from 601,000 to 800,000 drs (1 euro=340.75 drs) that is above the medium income status of the Greek consumer.

Furthermore, the educational level of 53.4% of the respondents was at the University Degree level. Thus, the sample consists mainly of well-educated respondents with high family income, which represent the prevalent consumer profile in the big supermarkets of the Greek cities.
FREQUENCY AND PLACE OF PURCHASE
The mean number of weekly purchase per family was found at 6 ω-3 eggs. This high mean value is associated to the high educational level of the respondents, thus their knowledge about the health benefits of the ω-3 eggs.

The majority of the respondents (84.4%) declare that they always buy the ω-3 eggs in big supermarkets, where they were interviewed under the present study. This is probably the reason why the 73.3% of the respondents do not mention any problem when asked about the availability of the ω-3 eggs in the Greek market.

QUALITY ATTRIBUTES
The preference for eggs, especially, may be profoundly affected by consumer preference for product attributes (Tzimitra-Kalogianni, 1997). Quality perception is affected by different types of attributes that can be defined as intrinsic or extrinsic (Luning et al, 2002).

Here the taxonomy used is part of the Caswell taxonomy (Caswell, 1998) and lists four broad groups of food quality attributes: 1) package, 2) value, 3) price and process, and 4) safety and nutrition attributes.

Package attributes
The package is an extrinsic cue, which is related to the product and contains information/labels, price, origin, etc. Also, packaging is usually positively related to the possibility of choosing and buying a product (Tserveni-Goussi, 2002). In Greece, eggs are generally labelled according to the EU regulations (No 2295/2003) by the name of the variety, i.e. barn eggs, free-range eggs, etc.

The results of the analysis demonstrated that the majority of the respondents (73.3% and 71.1% of consumers) always take into account the package and the labelling of ω-3 eggs respectively. Except to the respondents’ profile, this result is probably associated to the attractive packaging material that differentiate these products among other in the Greek market.

Value attributes
Consumers’ attitudes towards ω-3 eggs value attributes, such as shell colour and clarity, egg size and ‘best before’ time are illustrated in Figure 1.

The results demonstrated that the majority of respondents (62.2% and 80% respectively) always take into account the shell colour and the shell clarity of the ω-3 eggs.

Egg size is also quite an important criterion for the consumers who buy ω-3 eggs with the majority of them (66.7%) preferring medium sized eggs.

Moreover, the vast majority of respondents (84.4%) always check the ‘best before’ when buying ω-3 eggs. This important consumer perception, which is also of paramount importance for public health, could be applied to support the decision making process relating to the EU regulations (Goussi and Tserveni-Goussi, 2004).

Price and process attributes
The 48.9% of respondents reported that they take into account the price when buying the ω-3 eggs while the 51.1% of them never consider the price in their purchase. Thus, as being expected, the price is not the most important quality factor according to the consumer profile studied here.

On the contrary, the name of producer (brand name) seems to be a very important criterion, when purchasing ω-3 eggs by the 71.2% of the respondents.

Egg safety and nutrition attributes
Table 1 summarizes the frequency of answers given by the consumers for ω-3 egg safety and nutrition attributes. It is resulted, that one of the principal reasons for buying ω-3 eggs by the Greek consumers is their ‘health value’ since the 93.3% of the consumers believe that the ω-3 eggs are healthier than the regular eggs. This result is in accordance with previous studies that have shown ‘safety and nutritional value of the eggs’ as being key elements according to consumer’s perception (Hernandez, 2004).
However, when the consumers are asked to give their opinion about specific health attributes of ω-3 eggs, many of the respondents ‘do not know’. More analytically, 44.4%, 35.6%, 40%, and 48.9% of the respondents have ignorance regarding the composition in ω-3 fatty acids, cholesterol, bacteria or hormones and antibiotics respectively.

Ignorance of the ω-3 eggs properties in relation to children and elderly resulted also from the survey for the 26.7% and the 24.4% of the respondents respectively. Furthermore, the ω-3 eggs properties in relation to sight, blood cholesterol level and heart pressure are unknown for the 81.4%, the 55.6% and the 84.4% of the respondents respectively.

These findings strengthen the view that omega 3 eggs have been proven to provide health benefits, although their specific health attributes are not widely known in the Greek market. Therefore, it is important to promote ω-3 eggs consumption with diffusing more knowledge about the specific health benefits of these eggs and target a large number of potential consumers.

In Figure 2, other results related to nutritional value of ω-3 eggs are illustrated. Taste is an important criterion when buying ω-3 eggs. The 48.8% of respondents believe that this type of eggs have a better taste than regular eggs. Finally, more than half of the respondents (60%) reported that the rearing methods of hens, which produce the ω-3 eggs are better than those used for the production of regular eggs. These results strengthen the ω-3 egg consumer’s belief for a ‘special’ product in the Greek market.

RESULTS FROM THE STATISTICAL ANALYSIS

No statistical associations have been found between all the above consumer perceptions and the sex, educational level or family income status, except for the cholesterol level and the effect the ω-3 eggs have to elderly, which are significantly associated to the educational level of the respondents.

Conclusions

Concluding, the principal reasons for buying ω-3 eggs by the Greek consumer are:
1. the belief that ω-3 eggs are healthier than the regular eggs, and
2. b) the importance of packaging and value attributes of the ω-3 eggs

It is important to promote ω-3 eggs consumption in Greece by diffusing more knowledge and promoting public awareness on the specific health benefits of these eggs.

References

Table 1  Omega 3 egg safety and nutrition attributes: Frequency and percentage of respondents.

<table>
<thead>
<tr>
<th>In comparison with regular eggs, Omega-3 eggs :</th>
<th>AGREE</th>
<th>DISAGREE</th>
<th>DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are healthier</td>
<td>42 (93.3)*</td>
<td>-</td>
<td>3 (6.7)</td>
</tr>
<tr>
<td>Contain more ω-3 fatty acids</td>
<td>25 (55.6)</td>
<td>-</td>
<td>20 (44.4)</td>
</tr>
<tr>
<td>Contain less cholesterol</td>
<td>24 (53.3)</td>
<td>5 (11.1)</td>
<td>16 (35.6)</td>
</tr>
<tr>
<td>Contain less bacteria</td>
<td>23 (51.1)</td>
<td>4 (9.9)</td>
<td>18 (40.0)</td>
</tr>
<tr>
<td>Contain less hormones and antibiotics</td>
<td>17 (37.8)</td>
<td>5 (11.4)</td>
<td>22 (48.9)</td>
</tr>
<tr>
<td>Are healthier for the children</td>
<td>29 (64.4)</td>
<td>4 (8.9)</td>
<td>12 (26.7)</td>
</tr>
<tr>
<td>Are healthier for the elderly</td>
<td>29 (64.4)</td>
<td>5 (11.4)</td>
<td>11 (24.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In comparison with regular eggs, Omega-3 eggs improve :</th>
<th>AGREE</th>
<th>DISAGREE</th>
<th>DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sight</td>
<td>2 (4.7)</td>
<td>6 (14)</td>
<td>35 (81.4)</td>
</tr>
<tr>
<td>Blood cholesterol level</td>
<td>16 (35.6)</td>
<td>4 (8.9)</td>
<td>25 (55.6)</td>
</tr>
<tr>
<td>Heart pressure</td>
<td>1 (2.2)</td>
<td>6 (13.3)</td>
<td>38 (84.4)</td>
</tr>
</tbody>
</table>

* Figures in parentheses indicate percentage (%) to total
Figure 1  Value attributes of ω-3 eggs.

Figure 2  Safety and nutritional attributes of ω-3 eggs.