

**THESES OF A  
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**Connections between dietetics, consumer habits and agrarian  
production**

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# 1. PRELIMINARIES AND AIMS OF THE RESEARCH

The science of nutrition is just as old as humanity. At the very beginnings, humans already had some knowledge about nutrition. This knowledge passed on through generations, expanded and got reformed continuously in line with mankind and the changes of human cultures. Hippocrates said, that „Our food should be our medicine.” Later on, several other mottos were added to this important remark, such as „You are what you eat”, „You become what you eat”, „Eat well, be well”, etc.

Therefore, nutrition is one of the most important factors of our survival; besides, it is also a source of pleasure, a social- or family event, a feast, a daily need, the basic condition of health, either promoting or damaging it and also becoming an object of growing concern nowadays.

The medicine has always been concerned about healthy nutrition. It defined the contents of nutrition and formulated recommendations and pieces of advice, which people try to follow as far as their knowledge, purse and taste allows. On the basis of the recommendations of dietetics, there was also a slow change in consumer habits. However, there is a rapid change within the frameworks of developed market economy.

Nowadays, it is not easy to find ones way around the shelves of food stores, as ten or twelve years ago we could buy about 5000 types of foodstuff in the stores, while today there is a range of more than 50.000 products. If one lived 100 years, having different kind of food on the table, we would not get to the end of the list of the products.

The representatives of dietetics keep informing people about the latest results; among which however, both scientifically supported pieces

of information and information based on negligent research can be found. The consumers often receive advice in proportion with the lobbying force of particular branches; therefore they always promote or omit different foods or ingredients in their diets.

Nowadays, most of the population is not yet able to judge the truthfulness of the received information, which is quite obvious, as it is quite common that great nutritionist engage in heated debates about certain types of food or the presumed and real advantages or harmful effects of certain ingredients.

However, both the creditable and the false pieces of information take part in the formation of the consuming and shopping habits of people and these preferences usually reflect the effect of the communication of popular media.

The food industry has no choice but to adapt to the consumers' demands in order to keep up on the long run. Accordingly, it has to produce foodstuff which meet the demands of the domestic population, for which the most reliable raw materials of the sufficient quality produced under the sufficient circumstances and other ingredients are needed. Therefore, the agrarian production has to supply these transformed consumer demands.

During my research, I have set the following objections.

1. Investigation of the connections between changes in dietetics and the consumers' habits.
2. Investigation of similar connections and tasks between the agriculture and the food industry.

3. Presentation of the growing role of cereals in health preservation on the basis of domestic and foreign statistic data and the results of representative surveys
4. Investigation of the Hungarian population's food consumption habits and knowledge of healthy nutrition with the help of primary means of investigation.

In order to meet these objections, I was trying to find an answer for the following questions.

1. Whether the relevant domestic and foreign statistic data and the results of representative surveys prove the shift towards a health-conscious behaviour?
2. What positive or negative changes can be detected in people's nutrition, which may have an effect on their state of health?
3. What effects the regular consumption of cereals has on health preservation?
4. Do the food industry and the agriculture take the recommendations of dietetics into account? What answers do they give for the changes in nutrition habits?

## **2. MATERIAL AND METHOD**

In order to meet my objections, I applied not only secondary, but also primary means of investigation.

During the secondary investigation, on the basis of the domestic and international literature in this topic, I reviewed the characteristics of food consumption, the most important factors having an effect on the consumer behaviour and the role of cereals in health preservation and development of health.

During the primary investigation, I applied the quantitative method, as it enables the researcher to answer the research questions in figures and as reliably as possible.

The research is based on a survey done with the use of self-prepared questionnaires. Questioners (high school, university and PhD students) participating in an preliminary training had the questionnaires filled in, and there were inquiries made through the Internet (Appendix 4.), as well.

I focussed most of the questions on the food consumption, and a smaller proportion of them on the knowledge concerning healthy nutrition. While compiling the questionnaire, I paid attention to include the habit of consumption of all types of food, which are included in the nutrition recommendations and support a health preserving or health development attitude.

The questionnaire includes mostly closed questions, which later on made the evaluation much easier. However, there were questions, where the answerers could mark more than one answers. My aim with this was to have the opinion of certain individuals surfaced.

The data concerning the population in 2007. included in the Statistical Yearbook of Hungary published by the HCSO formed the basis for compiling the sample. The sample was defined by the number inhabitants of Hungary and not by age groups and habitation.

All seven regions of Hungary were represented among the participants filling in the questionnaire. (The citizens of Debrecen, Nyíregyháza, Eger, Miskolc, Kecskemét, Szeged, Békéscsaba, Budapest, Kaposvár, Pécs, Zalaegerszeg, Veszprém, Sopron and Győr and people from the precincts were included in the sample). It is outstanding, that not only consumers living in the cities were included in the investigation. 1000 questionnaires suitable for evaluation were processed. The interviewees were chosen randomly and asked one-by-one in food stores. The distribution of the questionnaires according to regions is included in Table 1.

**Table 1: Regions included in the investigation and the size of the sample**

<b>Region</b>	<b>Questionnaire (pc)</b>
Southern Great Plain	160
Southern Transdanubia	135
Northern Great Plain	162
Northern Hungary	158
Central Transdanubia	133
Central Hungary	117
Western Transdanubia	135
<b>Total</b>	<b>1000</b>

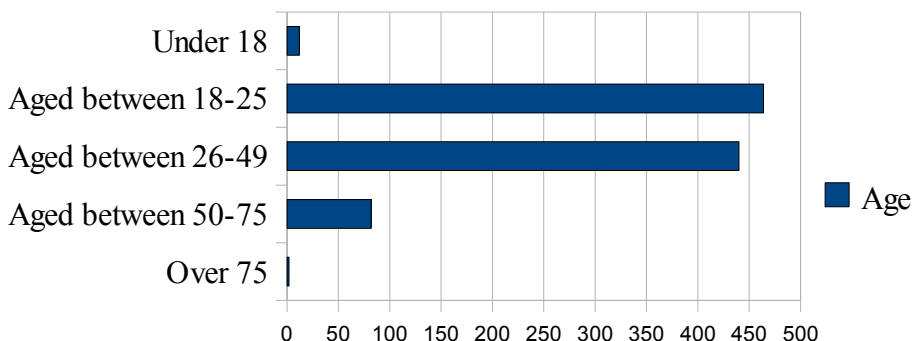
*Source: HCSO, Statistical Yearbook of, 2007*

The distribution of the interviewees on the basis of their gender is the following: 51% female, 49% male. The nearly equal proportion of male and female participants is explained by the fact, that there are more and more

males among the potential customers, who, just like women, is aware of the prices and the product range and have standard shopping and gastronomic habits.

Concerning the distribution according to age (Figure 1.), the questionnaire is focussed on the age group between 18 and 50 years, because I suppose, that the most confident remarks concerning conscious nutrition can be made on the basis of the knowledge or shortcomings of this group of age. I can give recommendations on the informing and knowledge widening work in reflect of the knowledge of the age group between 18 and 25 since this is the group that will bring up children soon. The age group between 26 and 49 is keeping up a home already therefore their knowledge will also be authentic in the definition of the facts.

I encoded the received answers and the resultant data is recorded in the chart of SPSS 10.0, a mathematical statistical program for Windows. The evaluation is also made with the help of this program. I used descriptive statistics and comparative analyses for the evaluation of the received data and information.



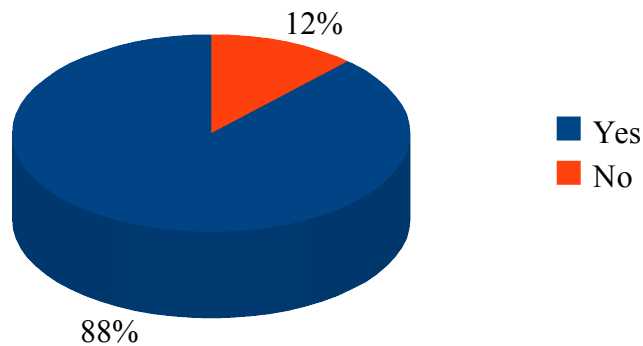
**Figure 1: Distribution of the interviewees in the ratio of age**

### 3. RESULTS

#### 3.1. *Health as a value*

Health is a value-category to be protected. It can often be heard that „health is the most important thing”, or „nothing matters more than health”. Still, my survey done among people revealed the presence of a way of life labelled as unhealthy on the basis of several different aspects. We our more or less responsible for our illnesses through our lifestyles and nutrition. The healthy nutrition is a very important factor in our physical-psychical well-being.

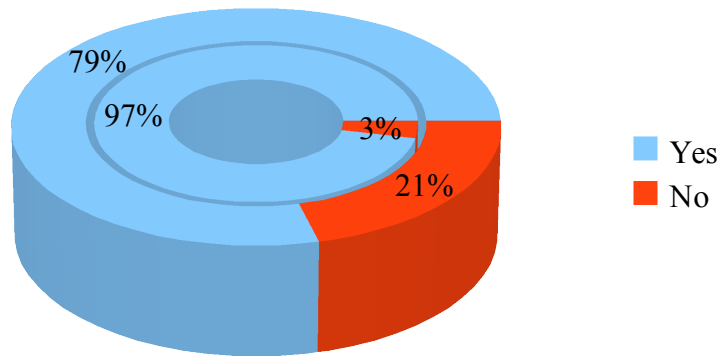
During the investigation, 88% of the interviewees said that healthy nutrition is important for him or her, and 12% of the interviewees thought that it is of no importance (Figure 2).



**Figure 2: Is healthy eating important to you?**

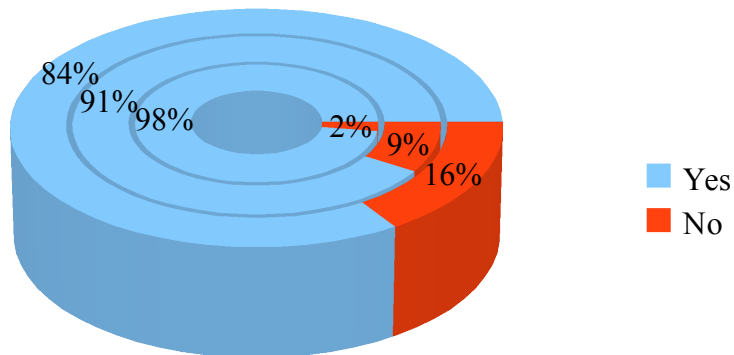
Taking the proportion of genders into account, one can establish that for more than one fifth of the interviewed men consider healthy nutrition unimportant, while this proportion is only 3% in the case of women. (Figure 3).





**Figure 3: The importance of healthy nutrition in the ratio of gender**  
*outer ring: male, inner ring: female*

If we take age into account, healthy nutrition is unimportant for 16% of the youths, while this proportion is 9% within the age group 26-49, and only 2% among older interviewees. Consequently, the older the interviewees are, the more important healthy nutrition is for them (Figure 4).

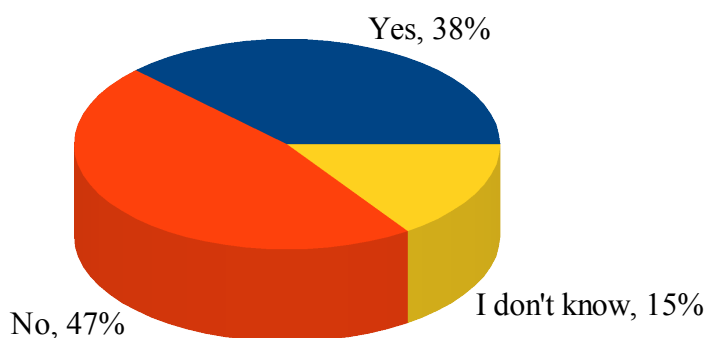


**Figure 4: The importance of healthy nutrition in the ratio of age**  
*outer ring: 18-25 year; middle ring: 26-49 year; inner ring: 50-75 year*

### 3.2. Followers of healthy nutrition

Most of the interviewees think that healthy nutrition is important; however, almost half of them think that he or she does not feed healthily, only 38% of them think that he or she feeds healthily and 15% does not know at all (Figure 5). Almost half of the interviewees claim not to feed healthily,

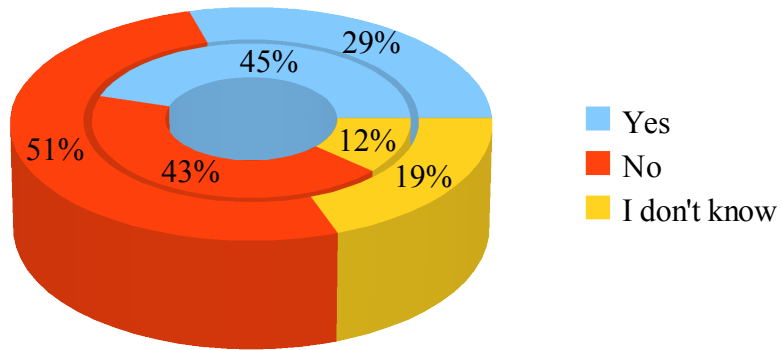
while only 12 % marked the healthy nutrition as unimportant. According to the data of the GfK Piackutató Intézet (2006), 13% of the population feeds consciously. In SZAKÁLY's (2008) survey on consumer behaviour 29% of the interviewees attends to healthy nutrition. Thus, according to my surveys, this proportion is higher among 26-49 year olds. The recorded data confirmed the fact that many people are aware of the principles of healthy nutrition and they also know that most illnesses can be prevented by a proper diet, still, they do not feed consciously in everyday life.



**Figure 5: Do you think you feed healthily?**

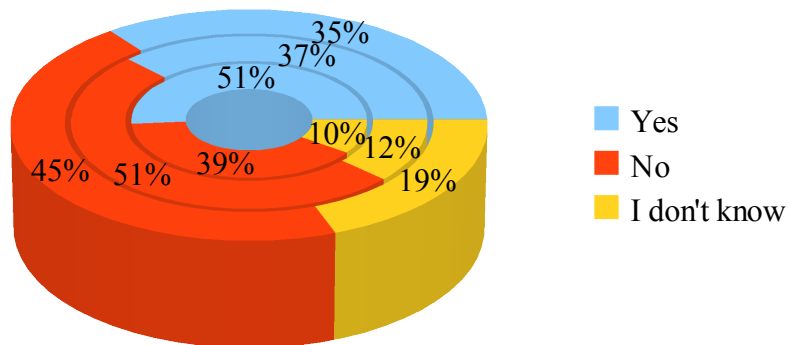
On the basis of the investigation of gender proportions, it can be established that more than half of the interviewed men claims that he does not feed healthily and this proportion is 43% concerning women. Roughly one fifth of the male interviewees cannot judge, whether he feeds healthily or not, which proportion is 12% with women. (Figure 6).

This data shows clearly that there are some great shortcomings in the field of health education. The subject Health was taken out from school curricula a long time ago, and the opportunity pass on the proper knowledge to youths decreased to a limited number of lessons (biology, master's lesson). Therefore, the colour territory programs (szintérprogramok) are of huge importance, and teachers need to focus on the age groups.



**Figure 6: Healthy nutrition in the ratio of gender**  
*outer ring: male, inner ring: female*

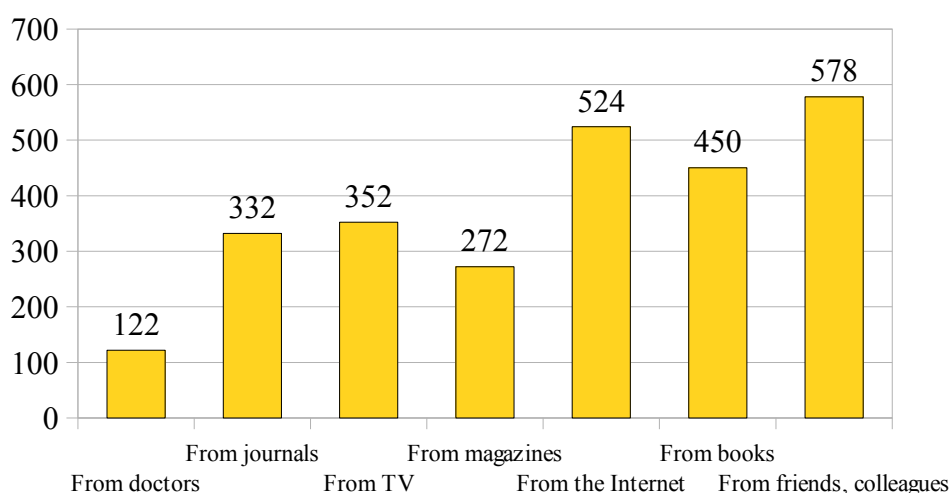
On the basis of age proportions, it can be established that more than half of those above 50 years think that he or she feeds healthily. This proportion is only 37% among 26-49 year olds and even smaller, 35% among younger interviewees. Consequently, the older someone is, the healthier he or she feeds and also the surer that his or her nourishment can be considered healthy (Figure 7).



**Figure 7: Healthy nutrition in the ratio of age**  
*outer ring: 18-25 years; middle ring: 26-49 years; inner ring: 50-75 years*

### ***3.3. Gaining information about recommendations concerning healthy nutrition***

Most people gain information concerning proper feeding habits from colleagues, friends and the Internet. The research done by PANYOR (2007) also proved that information about healthy nourishment gained from the doctor has much less weight than those gained from friends (Figure 8). Consequently, there are many pieces of false information still followed by people; who therefore, may damage their health.

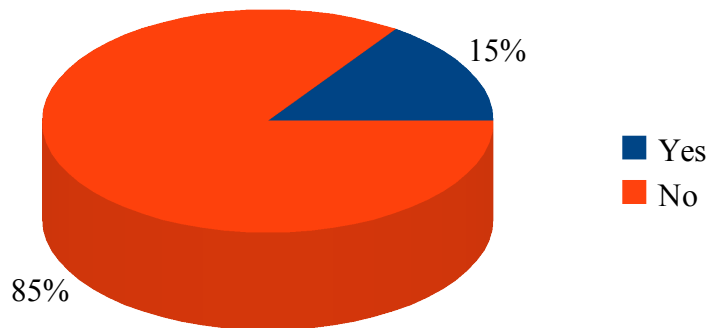


**Figure 8: Where do you gain your information about healthy nourishment from?**

### ***3.4. The proportion of those feeding irregularly***

Only 15% of the interviewees eat irregularly (Figure 9). It is either because owing to medical reasons, he or she is compelled to do so (e. g.: has diabetes) or because he or she is on some kind of trendy diet (e. g.: Atkins Diet, Blood type diet). Many people think that following the principles of some kind of a diet in their nourishment will help them preserve their health and weight; however most diets encourage deficient nourishment decreasing the daily carbohydrate, fat or protein input radically. If the above mentioned

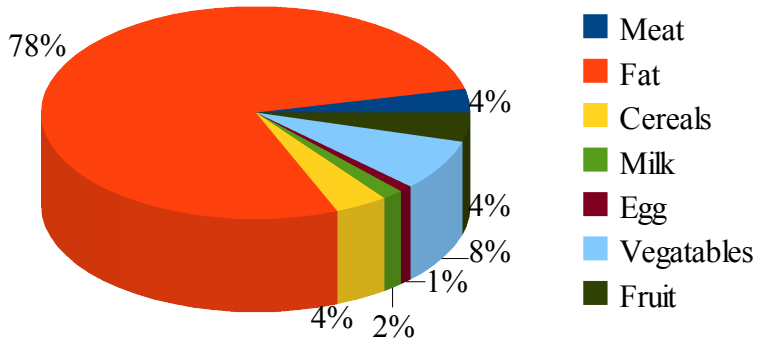
alimentary substances are not included in our daily meal in a proper amount and quality, then sooner or later deficiency diseases may occur and the energy balance of the organisation will be thrown off. If someone has a medical reason to avoid some kind of ingredient, the most practical way of achieving weight loss is to decrease the quantity of the taken mixed nutrition and increase the amount of time spent on exercise.



**Figure 9: Do you feed irregularly?**

### ***3.5. Range of „unhealthy” food-types***

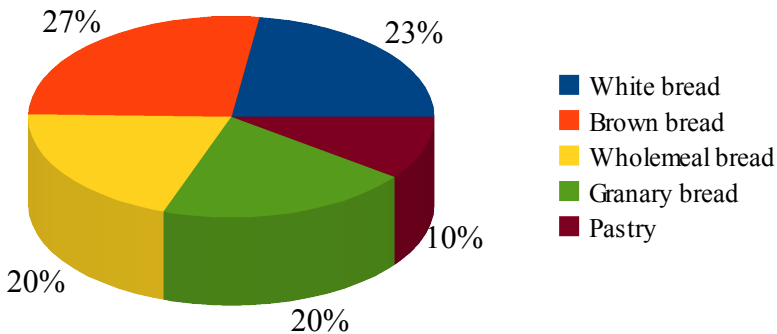
78% of the interviewees think that the „most unhealthy” type of food is fat (Figure 10). My aim with this question was to prove the hypothesis which states that most people has no scientifically supported knowledge about healthy nutrition. The latest trends claim that there is no unhealthy type of food, but only a poorly composed diet. Our organisation needs fat, as, among other things, fat is required as it is the vehicle for the vitamins dissolve in fat. To decide which one to consume out of fats and oils -whether to have vegetable oil or animal fat, butter or margarine- is now left to other researchers, as there were and are both trends and counter trends in this field.



**Figure 10: Which type of food do you think is the „most unhealthy”?**

### **3.6. Regularity of consumption of bakery products**

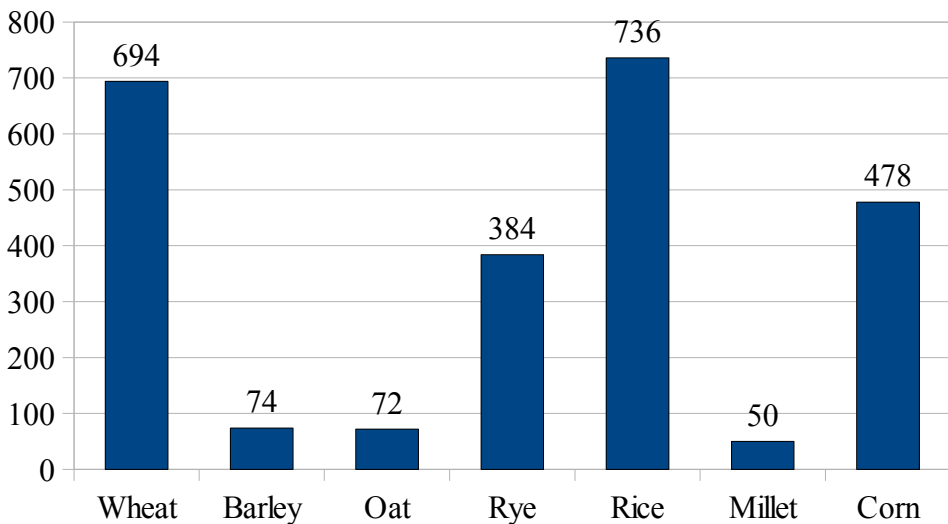
The consumption of bakery products shows a promising tendency (Figure 11). Most interviewees prefer brown bread (27%), wholemeal bread (20%) and granary bread (20%), while the consumption of white bread is pushed to the background with only 23%. These answers show a favourable change in the judgement of nutrition physiology and consumption of whole-meal cereals.



**Figure 11: Which bakery product do you consume most often?**

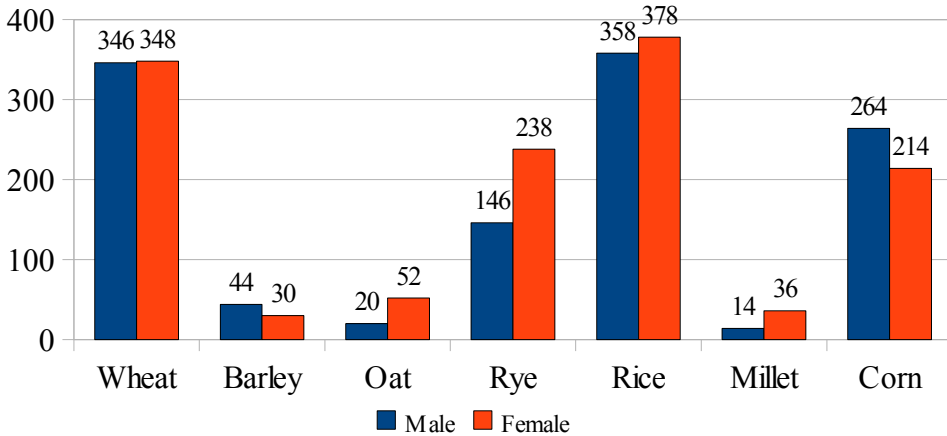
### 3.7. *The consumption of cereals*

The cereals consumed the most commonly by the interviewees are rice, followed by wheat, corn and rye (Figure 12). The oat, barley and millet, as former Hungarian public aliment food have only a minor role now. The low consumption of these may result from the fact that they belong to a less known product group. In line with the development of food industry and production of comfort products however, the consumption of these cereals is increasing. Fortunately, more and more people become aware of their positive effect on health and integrate them into their diets.



**Figure 12: What type of cereal do you consume?**

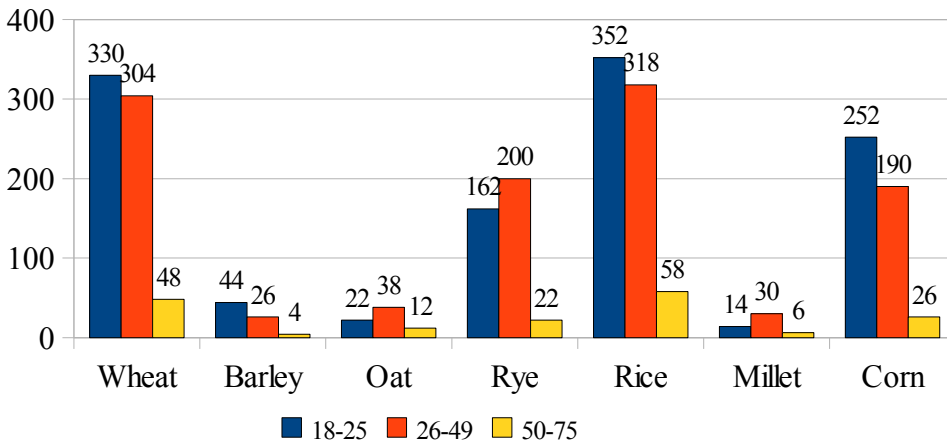
Investigating this question according to gender, we will have an even more detailed picture about the consumption of cereals (Figure 13). Both male and female interviewees prefer rice, but women consume a bit more of it. The gender proportion of wheat consumption is nearly equal. Men consume more barley and corn, while women consume far more oat, rye and millet.



**Figure 13: Consumption of cereals in the ratio of gender**

If we also take age into account (Figure 14), then we find that the cereals most commonly consumed by 18-25 olds are wheat, barley, rice and corn. The oat and millet consumption of the age group 26-49 is outstanding, while the cereal consumption of those older than 50 is at a minimum concerning all types.

This ratio proves that the members of the age group, which belongs to a more endangered group due to its age, do not consume enough of cereals.



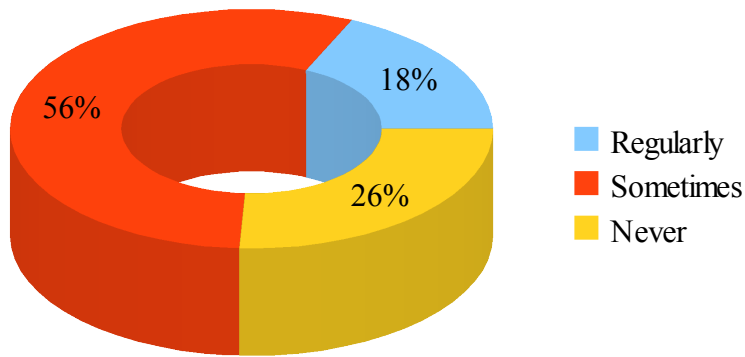
**Figure 14: Consumption of cereals in the ratio of age**



### ***3.8. The role of corn flakes and other cereals in healthy nutrition***

From the '90s on the different types of cereals have become more popular in our country and this was also proved by my research. 18% of the interviewees consumes it regularly, 56% of them consumes it occasionally and only 26% does not consume any cereals at all (Figure 15). There is such a wide range of cereals that everyone can find the one suitable for him or her. They are made of grains, mainly wholemeal cereal and has a low fat and a high carbohydrate and fibre content. They are enriched with vitamins (Vitamin A, Vitamin B6, Folic acid, Riboflavin, Vitamin E and Vitamin B1) and minerals (calcium, iron, manganese, copper, zinc). They contain both water solvable and fat solvable food fibres. The water solvable fibres enhance abdominal fullness and reduce the degree to which alimentary substances are absorbed. This characteristics has a great importance in weight management programs (LÓRINCZNÉ L. T., 2009).

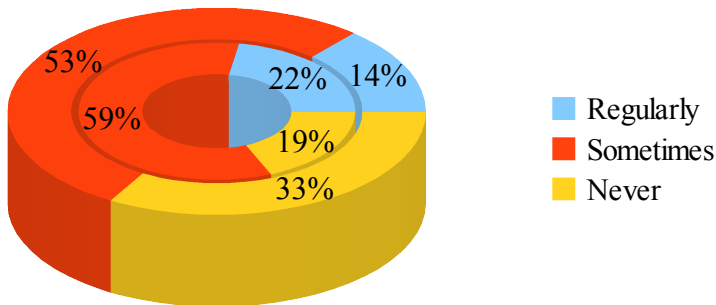
Natural grains contribute to our diet with a number of important alimentary substances, which is in strong connection with health preservation and prevention of illnesses. An important responsibility of food industry is to widen the range of products containing cereals available for customers. On the western part of Europe 82% of adults and 85% of children consume cornflakes regularly, mainly for breakfast. If, following the principles of healthy nutrition, we eat cereals every day, we can avoid the input of the too high and unnecessary amount of sugar, which leads to obesity (LELOVICS, 2007).



**Figure 15: Do corn flakes and cereals play a role in your nutrition?**

Considering the gender proportions, women are more willing to eat cereals and corn flakes (Figure 16). 22% of the interviewees consume cereals regularly, 59% only occasionally and 19% do not consume cereals at all.

14% of men consumes cereals regularly, 53% only occasionally and one third of the interviewed men does not consume any cereals at all.

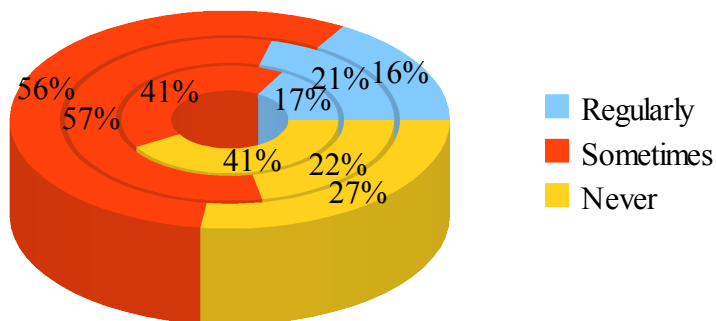


**Figure 16: Consumption of corn flakes and cereals in the ratio of gender.**

*outer ring: male, inner ring: female*

Considering the age this distribution is even more interesting (Figure 17). The proportion of those consuming cereals regularly is the smallest among the 18-25 year olds (16%), while more than one fifth of the age group 26-49 consumes cereals regularly. This proportion is somewhat big-

ger (17%) among 50-75 year olds than among the youngest interviewees. The members of age group of 26-49 integrate cereals into their diets in the highest proportion (57%). This ratio is nearly the same (56%) among 18-25 year olds, while 41% of those above 50 years consumes is occasionally. 41% of the oldest age group does not consume any cereals at all, while in case of other age groups, this proportion is between 22-30%.

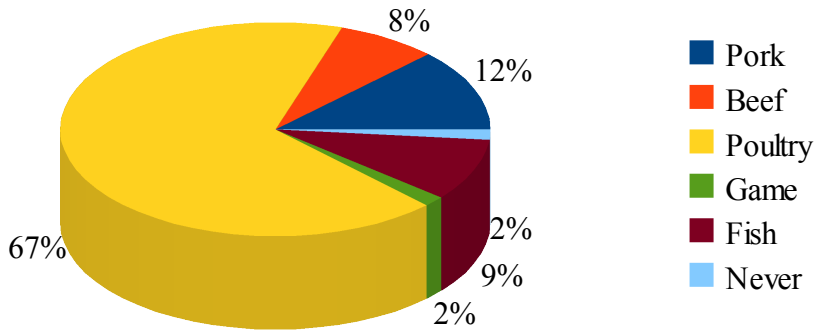


**Figure 17: The consumption of corn flakes and cereals in the ratio of age.**

*Outer ring: 18-25 y.; middle ring: 26-49 y.; inner ring: 50-75 y.*

### 3.9. The consumption of meat

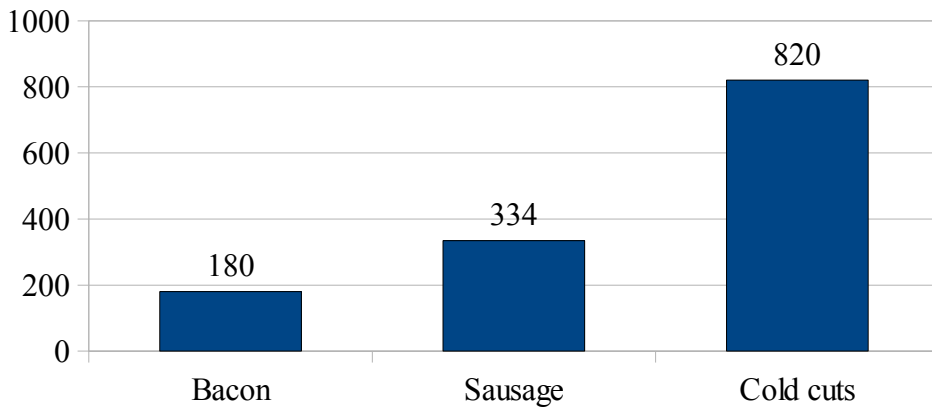
Among the basic types of food, I also investigated the consumption habits concerning meat and milk, as these are the two main sources of protein in dietetic recommendations. Out of different types of meat, the consumption of white meat is outstanding (67%). The consumption of pork is at an extremely low level (12%), and it is also interesting than even if with a minor level, the consumption of fish (9%) outran the consumption of beef (8%) (Figure 18).



**Figure 18: Which type of meat do you consume the most often?**

### ***3.10. Consumption of meat products***

Out of processed meat, the consumption of cold cuts has the best of the running. However, the sausage and bacon still count as significant public alimentation products (Figure 19).

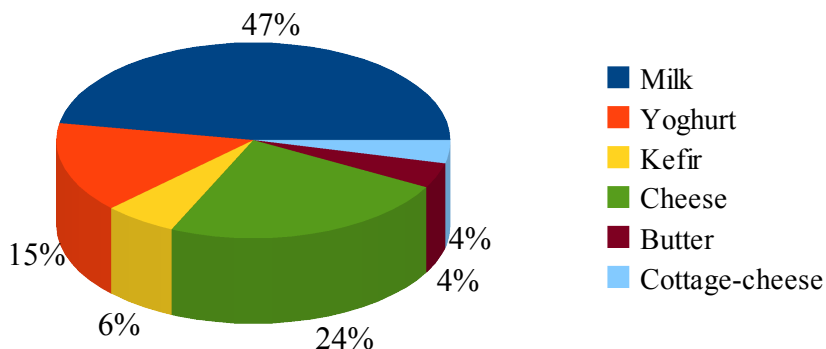


**Figure 19: Which type of meet product do you consume?**

### ***3.11. Consumption of milk and dairy products***

Among milk a dairy products, 47% of the interviewees consumes milk the most often. This data shows more than 10% decrease compared to a former survey (BEKE, 2003). This is followed by the preference of cheese, which is 24%. This amount however, shows a slight increase compared to

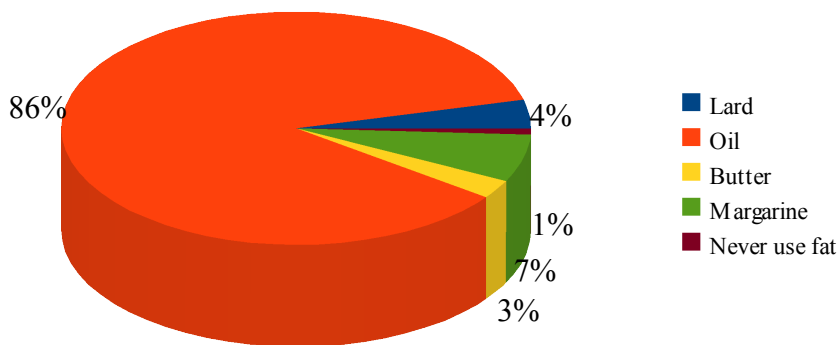
the above mentioned survey. 15% of the interviewees consume yoghurt and only 4-4% of them consume butter and curd cheese. Even in BERKE's (2003) survey, the butter has fallen back from its „distinguished” second place to the fifth or sixth place. The consumption of kefir (6%) is put aside iniquitously, even though its regular consumption is recommended due to its bacterial flora. It is a light, energy-poor food rich in B Vitamins (Figure 20).



**Figure 20: Which type of dairy product do you consume the most often?**

### 3.12. Fat consumption

The usage of fats shows great changes compared to earlier surveys. 86% of the interviewees use oil for cooking and only 4% of them use lard. The usage of butter and margarine is also very slight (Figure 21). A survey done by KSH in 2007 also proved this statement (oil 9,7 kg/cap/yr, animal fat 3.4 kg/cap/yr, butter, margarine 4.2 kg/cap/yr).

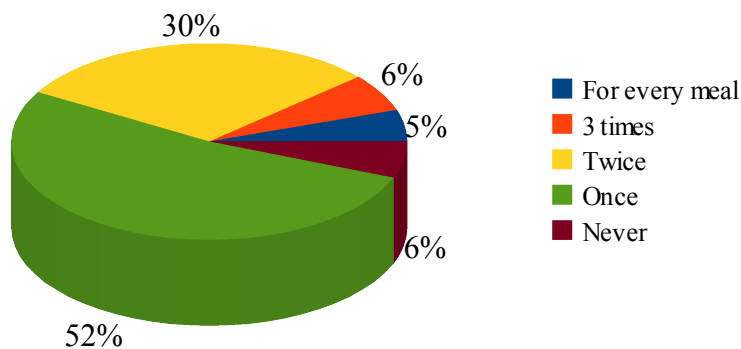


**Figure 21: What kind of fat do you use for cooking the most often?**

### ***3.13. Regularity of vegetable and fruit consumption***

Nutrition recommendations include consumption of vegetables and fruits three times a day. However, only 6% of the interviewees consume vegetables and fruits three times a day (Figure 22). 30% of the interviewees consume them twice a day, and 52% once a day. 5% include them in every meal, while 6% of them does not consume any fruits on a daily basis. The fruits and vegetables are available in our country in every season of the year. Sometimes the season fruits are rather expensive; therefore, those with a lower income of a bigger family cannot afford their consumption three times a day. This fact is taken into account in child catering, and the amount of meals made of vegetables of fruits has been increased recently. Raw fruits have to be present in the menu every day in child care institutes.

The Act on Healthcare of 2007 states that „In public catering – especially in public catering provided in medical, social or childcare institutes - food the quality and nutritional value of which is appropriate for the physiological needs has to be provided”.



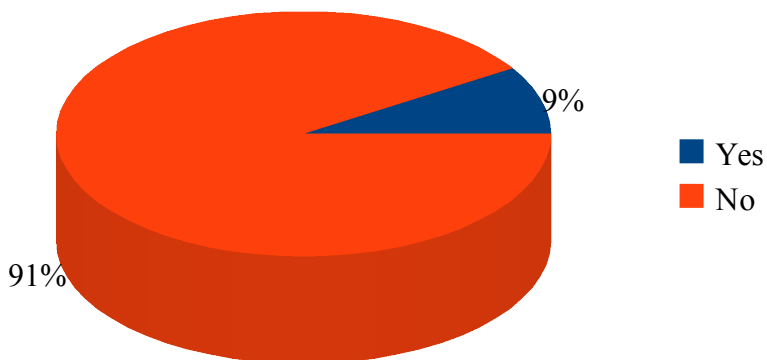
**Figure 22: How many times a day do you consume vegetables or fruits?**

### ***3.14. Soy consumption***

Soy, as an important source of protein, is consumed by very few interviewees; namely, only 9% of them. The rest of them does not consume it at all (Figure 23).

In the past few years soy consumption was charged with being a genetically modified product and as such, harmful for health. It is no wonder therefore, that the consumers cannot make their ways among the several reasons and counter-reasons in this question.

Still, soy is a legume, which can be utilised in versatile ways; in fact, it is the fifth holy plant besides rice, wheat, barley and millet. Among legumes, it is one of our most valuable plants, which is suitable for human nutrition due to its high biological inner contents. The soy bean contains 36-42% protein and 18-22% oil, different vitamins (A, B, E, K) and biologically active compounds ([www.harmonet.hu](http://www.harmonet.hu)).



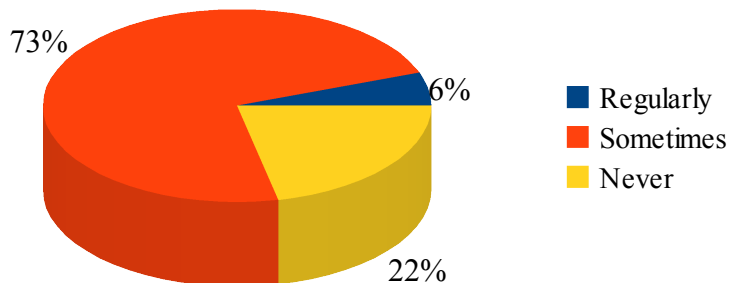
**Figure 23: Do you integrate soy into your diet?**

### ***3.15. Consumption of tinned food***

Tinned food belongs the category of comfort products. Many people know it and like it, as they are very practical for trips and holidays due to their mobility and long expiration dates. Their further advantage is that they do not require cooling. Besides the brands of long standing one can choose from several new tinned products nowadays. Still, many people are against the consumption of tinned food, as they believe that it contains too many preservatives, while the truth is just the opposite. With the development of the technological processes; namely the application of heat treatment processes, the keep ability increased significantly; therefore, there is no need for the application of preservatives. A survey done by TEMESI, BIACS and SZENTE (2008) shows, that customers want tinned food, which is GM free, preservative free and does not contain too many additives. The results proved, that being healthy, as a product characteristics is still one of the most important requirements. According to BÁNÁTI (2008) the consumers are very uncertain and distrustful in the judgement of tinned food. They require the name of the preservation technology to be marked and also the better sense perceptual characteristics, the preservation of vitamin and mineral content and also that the food be preservative free.



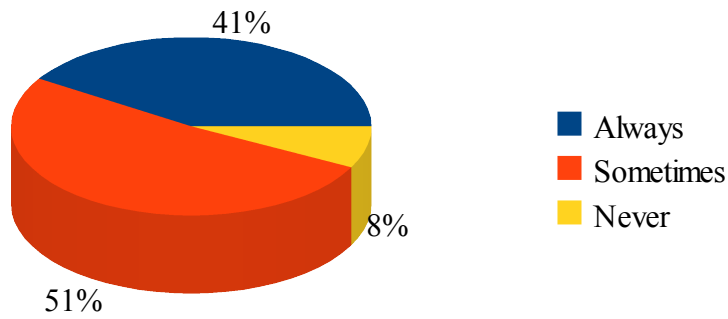
This distrust also surfaced in my survey, as more than one fifth (22%) of those asked by me never consume tinned food, 73% of them consume it sometimes and only 6% consume it often (Figure 24).



**Figure 24: Do you include tinned food into your diet?**

### ***3.16. Taking the information provided on the packaging into account***

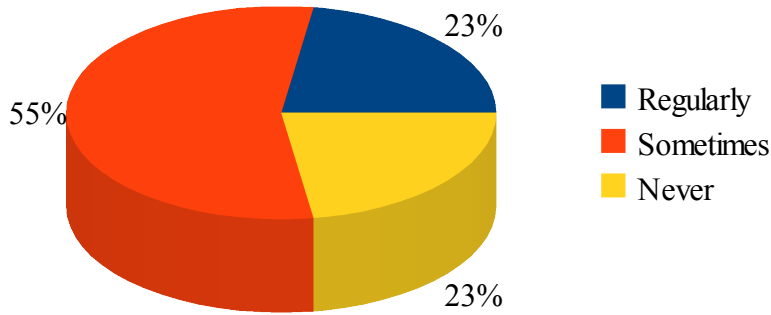
The above mentioned anomaly about tinned food is proved by the fact that most customers ignore the information provided on the packaging. Only 41% of the interviewees read the list of ingredients on the packaging, 51% of them read it sometimes and 8% of them do not care about it at all (Figure 25). The consumer protection and the EU both order that for the sake of providing correct information for the customers, the content and other pieces of information have to be marked on every product. Hopefully, more and more customers will read the content of the labels on the products, as conscious nutrition begins with the shopping.



**Figure 25: Do you take the information provided on the packaging into account when you buy a product?**

### ***3.17. Consumption of dietary supplement and vitamins***

The consumption of dietary supplements has become some kind of a trend nowadays. Many people hope that these will help them keep their fitness, strength and beauty and conceive them to be the secret of long life. Of course dietary supplements are necessary for those having deficiency illnesses or any other kind of illness, but only for medical recommendation. The several types of „cure-all” being available without prescription can be harmful for health on the long run, as when taking in minerals in a larger dose, the heavy metals may accumulate in the organisation, which can lead to different side effects. 55% of the interviewees consume dietary supplements occasionally, which may be all right, but 23% of them consume them regularly, which may be a cause of concern. Also, 23% of the never consume any dietary supplements (Figure 26).



**Figure 26: Do you consume any dietary supplements or vitamins?**

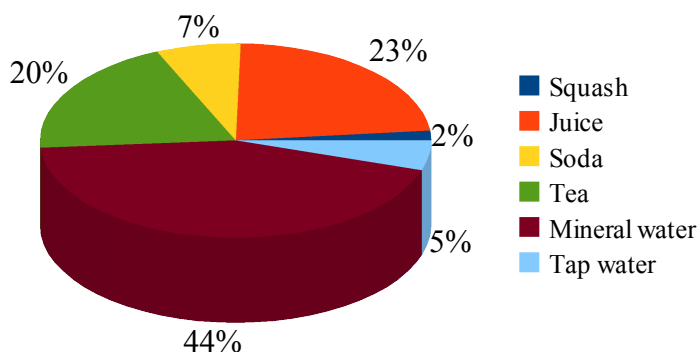
### ***3.18. Liquid consumption***

The importance of liquids – in order to keep the balance of the water balance of our organisation- has become into the foreground of research in the past few years. Our organisation feels hunger, as the hunger and repletion centres are located in the hypothalamus. On the basis of the received information, these two regulate the time and intensity of hunger and the feeling of having had enough to eat.

The feeling of thirst however, is an alert signal of our body, as it has no centre in our brain. By the time of the signal, our mouth is dry and our blood has already begun congealing; therefore it carries less oxygen. Consequently, the heart is exposed to a greater load and it might result in vascular lesions, so we become tired more easily. Therefore, we have to drink regularly even if we are not thirsty. It is important to know in case of children and elderly people, because by the time thirst is felt, their organisation have already begun to dehydrate the tissues.

What we drink also makes difference. 44% of the interviewees drink mineral water the most often, 23% drink juice, 20% drink tea, 7% drink soda, 2% drink different kinds of syrup and only 5% drink tap water (Figure 27).

The consumption of mineral water has increased drastically lately. It has several reasons. The water is getting more and more polluted in Hungary; therefore, there are several settlements where water is only available for people in a packed form. Commercials also play a great role in the increase of the consumption of mineral water. However, we have to be just as careful with mineral water as with the above mentioned dietary supplements, as a monotonous mineral water consumption may lead to the minerals accumulating in our organisation, which may endanger our health. Therefore, it is important that we keep count of the ingredients and change the type of water we drink from time to time.



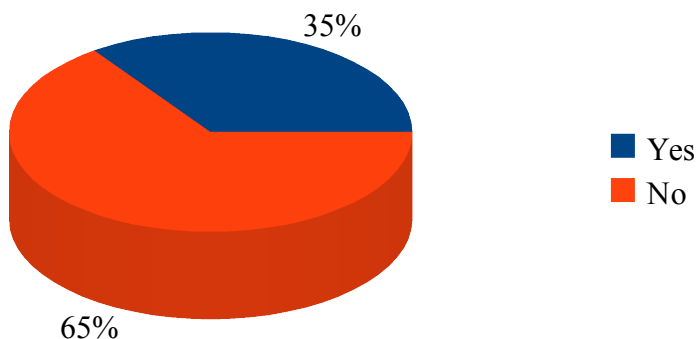
**Figure 27: Which type of liquid do you drink the most often?**

### ***3.19. Wine consumption habits***

According to the data of KSH on the year 2007, wine consumption also shows a decreasing tendency. 35% of those asked consume wine on a weekly basis, but 65% of the does not (Figure 28). Nowadays, the culture of wine consumption is beginning to gain ground even in our country.

A French gourmand talked about the art of drinking wine to the Prince of Wales. „In case of high level wine let’s see its play in the glass, we take its smell than... we drink! – said the Prince. No Prince – continued the gourmand – before that we will talk about it (Grimod de la Reyniere).

Maybe, this is where all begins: it must be done properly. In order to be able to appreciate wine, we have to know as much about it as possible. The highbrow wine consumption is usually strongly connected to the meal and the flavour of the wine can also prevail the best this way. „Wine needs a fine bed” - says an old proverb.



**Figure 28: Do you consume wine at least once a week?**

### ***3.20. Choosing between different types of wine***

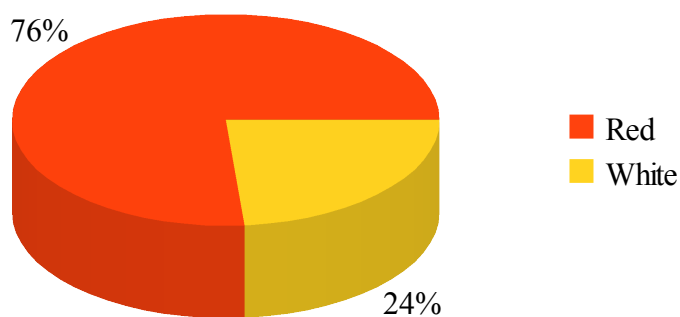
76% of the interviewees prefer red wine, while 24% of the interviewees rather drink white wine (Figure 29). „Fine wine good health”. As part of a healthy diet, 1-2 dl wine is recommended on a daily basis. Its positive effect on the prevention of cardiovascular disease has already been proved, as the acid content of wine has a fat decomposing effect; therefore, it prevents the deposition of fat in the veins.

Besides its modest alcohol content, the wine also contains poly phenols due to its origin from grape. The poly phenols bind the harmful free radicals due to this antioxidant effect; therefore they decrease the risk of thrombosis, arteriosclerosis and certain tumorous diseases.

The research showed that those who drink 1.5-3 dl dry red wine every day, are 50% more likely not to die of cardiovascular diseases and on the

average, live 10-12 years longer than those who do not drink red wine at all. The poly phenol content of red wine is much higher than that of white wine.

On the other hand, it is important to note that more than 1.5-3 dl wine a day is not recommended because of the harmful effects of alcohol. Moreover, the energy content of alcohol is another telling argument for temperance. Many people do not know that 1 gramm alcohol contains more energy than the same amount of protein or carbohydrate.

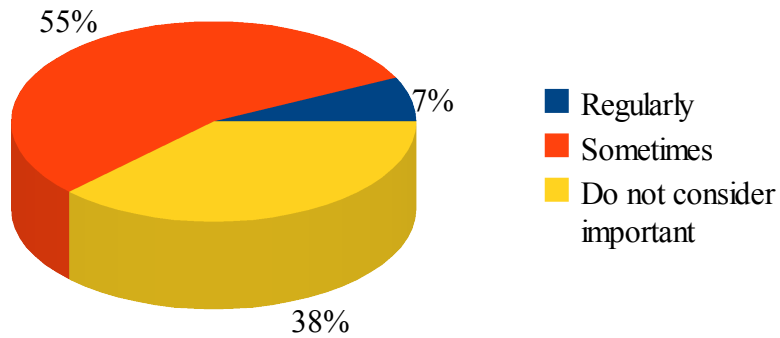


**Figure 29: Which type of wine do you prefer?**

### ***3.21. The integration of bio products into the menu***

The bio product or natural foods are consumed by more and more people. As a result of the fear from world epidemic and the effort to boost the immune system, more and more people are turning towards products not treated with chemicals, hormones and medicals. 55% of the interviewees consume these products occasionally, 7% consume them regularly, while 38% of them think that the consumption of bio products is of no importance at all (Figure 30).

More and more people engage in ecological farming in Hungary. This means hope for some decrease in the price of the presently quite rarely available bio products; therefore it will become available for more people. Presently, 80-90% of the Hungarian bio products is exported.



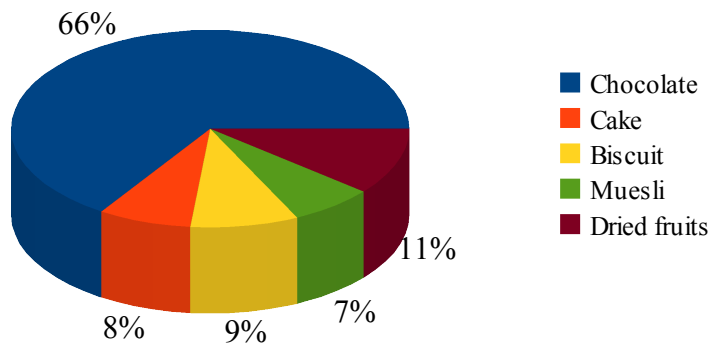
**Figure 30: Do you endeavour to consume bio products?**

### ***3.22. Sweet consumption***

As part of a balanced diet, sweets are necessary in a smaller amount, as the chocolate for instance, contains fat solvable vitamins (A, D), minerals (e.g.: copper) and antioxidants. It has a slight stimulant effect and last, but not least is a source of pleasure. In a reasonable amount, the products made of cocoa or cocoa powder, such as chocolate, are both sources of pleasure and food preserving health. Their consumption does not bring along the danger of obesity, is not problematic from a nutrition physiological point of view; on the contrary, it has several advantages if fitted in a cavalcade of varied meals of a healthy diet. The chocolate contains a lot of energy and valuable substances being absorbed easily and in a short time. Many people do not consume chocolate for its physiological importance, but rather for its taste and for the feeling.

My survey shows that 66% of the interviewees eat some type of chocolate when have desire for something sweet, 11% consumes dried fruits, 9% consumes cookies, 8% have cake and 7% eats muesli (Figure 31).

On the basis of a joint survey done in 2007 by the Association of Sweet Producers and the stop.hu internet portal, 77% those asked consumed some type of chocolate regularly.

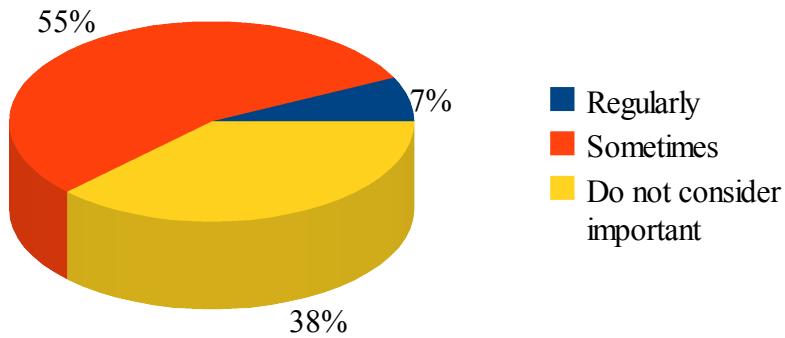


**Figure 31: What do you usually eat when you have a desire for something sweet?**

### ***3.23. The usage of herbs***

The salt, pepper and paprika are basic spices which can be found in most kitchens, while other herbs are likely to be kept at home, even though the usage the bay, basil, juniper, savoury, peppermint, balm, spearmint, hyssop, thyme, dill, sage, lovage, lavender, marjoram, chives, rosemary, parsley, oregano, tarragon, myrrh, verbena, celery, etc., may be fine substitutes for salt, which -as it is quite commonly known- endangers the health of our cardiovascular system. The different herbs have a high Vitamin A and mineral content, even when use only a pinch of them. Besides being tasty, they also enhance metabolism, the breaking down of fat and has a positive effect on circulation. Most of the above mentioned herbs can be grown at home either in a pot or in the garden. Still, 55% of the interviewees use spices only occasionally during cooking. 7% of them use spices regularly, while 38% think that they are not important. (Figure 32); though, due to their agent content, the herbs are important allies of health.

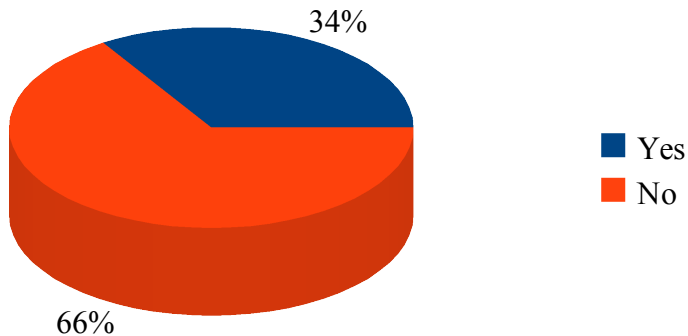




**Figure 32: Do you use herbs for cooking?**

### ***3.24. The role of herbs in nutrition***

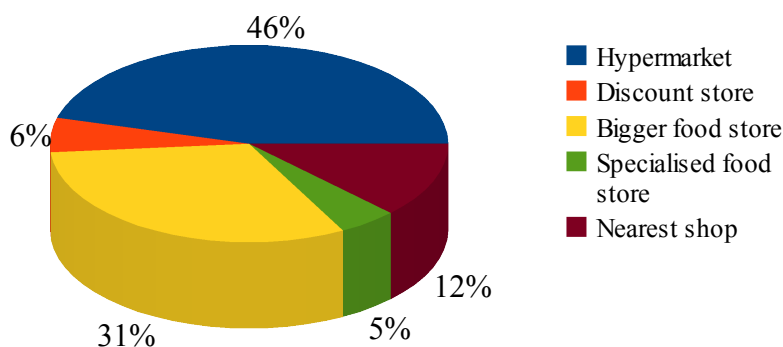
People use herbs from times immemorial. Many of them clean our organisation due to their flame retardant and detoxifying effect. Many spices are herbs at the same time. The licence for selling homoeopathic remedies brought along a continuously spreading point of view, according to which in case of an illness the problem is not to be treated locally, but the whole body has to be cured. Moreover, as „your food is your health”, it is worth integrating herbs into a healthy diet on a daily basis. 66% of the interviewees do not use any herbs for cooking, but 34% of them do (Figure 33). This data is very close to the number of those being on a healthy diet, which is 38%.



**Figure 33: Do herbs play a role in your nutrition?**

### 3.25. Shopping habits according to sites

The shopping sites have been surveyed in many ways by several people. In my questionnaire, this question is only included so that I can prove the responsibility of hypermarkets concerning healthy nutrition and their part to be played in forming the Hungarian society to be more health conscious. 46% of the interviewees go to hypermarkets, 32% of them go to bigger food stores and only 23% prefer smaller food stores and nearby shops (Figure 34). Consequently, hypermarkets have to take good care of purchasing, transporting, storing, packaging and selling safe foods. Our attention has been drawn to the fact several times that as a result of free turnover of goods, the products of indefinite origin arriving from abroad are getting directly to the shelves of hypermarkets and to the customers. It has also been proved that the customers are not properly and creditably informed about the state and quality of products arriving from abroad (TURI-KOVÁCS B., 2008).



**Figure 34: Where do you usually go shopping?**

The results of the primary investigation have proved that most of the Hungarians consider health as a value, still many of them admit not to feed healthily. There is however, some noticeable shift towards conscious nutrition, but due to the sometimes misleading sources of information, there may exist a number of disbeliefs. Consequently, the experts working on this field has a huge responsibility.

## 4. CONCLUSIONS

The secondary and primary research has revealed that the results of the research of the dietetics will discover more and more coherence which the Consumers try to follow. However, due to the con-influence of many effects – low wages, geographical location, difficulties of getting the right product – will not turn into a value and will not be traceable. The biggest obstacle to make the consumer behaviour more conscious is the low spending power in Hungary. In most part of the society the decision on purchase is based on price. Without the increase of the standard of living the spread of consuming good quality more expensive food is inconceivable. In contrary to that the related Hungarian and foreign statistical data and the results of representative researches proved the moving of people towards the more health conscious behaviour.

Those consumers who handle health as a value the consumption of grains, vegetables and fruits is increasing in quantity and in frequency and the consumption of sugar and fat is decreasing. It is an unfortunate fact that in Hungary as part of the balanced eating habit the consumption of milk, milk products and meat is not sufficient even with the more frequently consuming yoghurt products.

The incorrect medical and scientific statements do not effect the food industry and agricultural production favourably. We can mention as an example the consumption of animal fat, red meat, egg and butter. In the past years all four food types belonged to those products to be avoided. Today they are rehabilitated.

Investigating the present state of the alimentation at all 7 regions of Hungary I came to an astonishing result. Healthy eating is an important

factor among all those to be surveyed but only one third of them eats healthy food. All information on alimentation is gained by them from friends, acquaintances and from the internet. Small number of people asks related questions from their doctors. Therefore there are many incorrect ideas. Most people marked the fat as the „most unhealthy food”, however fat is inevitable for the vitamins dissolving in fat. Those being more health conscious the eating of poultry are the first in the consumption of meat, they eat more milk products, fruit and vegetables and brown bread, too.

The earlier research results proved that the efforts made for health conscious eating is only typical in those levels of society where people are educated and the standard of living is higher. It is a fact that the average consumption of one person per year is very variable. In Hungary the luxury consumption and the undernourished phenomena live together therefore the alimentation of the quarter of the inhabitants gives every reason to anguish.

Lately the emphasis on producing quality food is more than on quantity. The definition of quality is not easy since both the accordance of interest and the non-accordance is at present in this definition. The vertical integration is missing from the process of production of the food industrial products, however the knowledge is in disposition but no unequivocal answer can be given to the question how the product lines to be handled in order for the good quality.

The polarization of society also raises various quality related conflicts. The poor consumers can only buy the cheaper products. This demand has to be followed by the food industry. Frequently poorer quality belongs to cheaper prices but it is also true that there is significant difference in prices of the different products. In case of the cheaper products the used aggregates ratio is over the average. It is not unintentional that in Hungary and as well

as in the EU more and more efforts are made to stiffen the regulations and to improve the quality.

The quality and safety of the Hungarian grain products are in the front-line of the world. The gluten content of the Hungarian wheat is world famous. The grain industry must also make its products according to the most demanding standards. Based on this fact there were no food safety and quality problems in the last decades. But this does not mean that this area is without problems.

The changing of the consumption habits brought that better quality products have to be produced for lower price. The bakery industry must forestall the demands. Many things have happened in the production and also in the development of production since each consumer level finds the appropriate grain based products. It is correct that the consumer makes every effort to eat healthy, since – in low degree – the demand for the natural products is increasing which the bakery industry must be aware.

The customers find very important if the product was produced in Hungary or was imported. The Hungarian authorities make every effort to ensure that those products produced and sold in Hungary will meet all safety requirements of safety. In theory there are some technical processes which have some dangerous items but the industry is prepared to avoid such problems therefore no problems like this can occur. It is not only a sort of danger but rather enforcing confidence in customers to solve the informative kind of labelling on the bakery products. As a result of this all demanding customers will find every necessary information on the required products.

According to the researches in different countries people eat very small quantity of grains and there are several obstacles of the regular consumption. Nevertheless it is proven, that by eating the grain seeds, that is,

those products containing grains we can add more various nutrition, fibres in required quantity to our bodies. It is mostly important to convey this information to everyone in order to widen the knowledge on the role and approach of grain seeds for customers. One of the important tasks of the food industry is to widen the range of the foods containing favourable nutriment of grains for the customers. One of the most important target area of the incitement of grain consumption is the breakfast cereal products.

By the appropriate production and consumption of food we will not only preserve the microbiological state of our organism but we also serve the nutriment needs of it (amino-acid, vitamin, minerals, etc.). Families can achieve significant savings by changing consumption habits and instead of buying medicals, and nutriment supplement products they should regularly eat grains and food made of grains. Based on the increasing number of health conscious consumers the structural changes of the food industry and agricultural production can be predicted as well as the contact with our environment.

Due to the changing of the mill and bakery industry the whole grain products become more accepted. It might be not yet aware of the fact that by leaving out the process of hulling of the crop we can achieve energy and cost saving and also without any extra input we can achieve 5-10% relative product quantity increase, since this is the amount of the hulling loss. The range of the grains as everyday nutriment is widening, such as beyond the wheat, rye and barley, the oat, millet, buckwheat is also a demand and a new plant occurred in the Hungarian production which derives from Central America, the amaranth.

The supplementation of the imperfect knowledge puts much responsibility on the regulators and those professionals working in that area. There

is great need for a professional enlightenment work particularly for pupils. If we teach people for healthy eating habits in early child hood later it might become a form of living. However this is not as easy. Many years must come to achieve general health consciousness. Since the healthy eating is not important for the parents, perhaps the circumstances ties them to buy expensive and healthy food, then we cannot ensure for the next generation either a longer life time.

The „beneficial” foods will expectedly get into the focus of the food producers in order to differentiate their products. However, cereals with beneficial nutriments at the market at present – apart from the added vitamins and minerals – are strongly limited. The interest will be held and also be increased by the continuous widening of the information how to prevent and heal illnesses. It is also important to regulate labelling in order to protect the customers to buy products with unknown ingredients and decisive requirements.

In the last one and half or two decades due to the development of dietetics and the intensive health conscious behaviour of the customers the biological nutrition value, their quantity and rate (fat contents, fat-acid contents, cholesterol, vitamin and mineral contents, bioactive contents, etc.) become more significant. Beyond this fact the national traditions and origin protection come to front and become more significant from the point of view of production, environmental and animal protection related issues as well as the quality consciousness.

## 5. NEW SCIENTIFIC RESULTS

1. I was the first in Hungary who analysed embedded in regional area structure the connections of dietetics, the consumer habits and agricultural production.
2. It was stated that the results of the dietetics influences the structure of agricultural and food industry which influence cannot be proven from the other side due to the lack of any feedback.
3. Based on my secondary researches I demonstrated the health preserving role of the grain production and within those emphasizing functional products.
4. Based on my researches it was proven that the food consuming behaviour of the Hungarian inhabitants moved towards consciousness however both positive and negative tendencies accompany that. Therefore we need longer time to achieve that as a result of the correct alimentation lifetime in proper health will increase.



## 6. RECOMMENDATIONS

Considering the nutritional recommendation and latest researches among the functional alimentations the grain based products consumption must be emphasized since their vitamin and mineral contents as well as their fibre content play important role in the prevention of the public illness, the cardiovascular system disease and the tumour related diseases.

The EU recommendations must be kept in the grain growing. Following the principle of „from the soil to the table” the infection of the grain can be avoided. The agriculture must grow safe and good quality, healthy raw material for the production of ready made. The safety regulations must prevail at each point of the food production chain.

The safe-food phrase has become an item in the everyday vocabulary. The consumers expect the cheaper products, too, to be scruple free. It is the responsibility of the authorities to extensively investigate the Hungarian and foreign foods, deepening the food safety, the marking of the origin and regional origin of the products, the rigorous regulations of labelling, enforcing fair advertising in order to protect the customers from non proven ingredients or from decisive requirements. Therefore the authorized supervision of food safety must be more effective, solid and transparent.

An extensive national food safety program needs to be prepared in partnership with Public Health and Agriculture. Due to the free market we must be prepared for handling of the new chemical and microbiological risks. For the sake of this we need to ensure conditions of the training and coaching and the unified control and supervision.

The responsibility of the medical people and those working in the area of dietetics must be improved in order to publicize the new scientific results in due time and to introduce them in the education (in schools, television) The knowledge on alimentation, food safety and consumer protection must be widened among the inhabitants, putting much emphasis on the educating of children.

It is necessary that the representatives of dietetics make every effort according to jointly accepted principles for providing high level, not based on fashion and interest kind of information to society not knowing much about dietetics.

We must beware of unilateral solutions. The production to need cannot be left out of sight. However it must be ensured – and the authorities must be supervising that – that cheap products are also guaranteed to be safe. Further task is that the appellation, marking of cheaper products should be differentiated from the more expensive ones. This would be a correct consumer information which avoids abuse.

Bakery industry must always do more in the area of food safety and food quality. They should provide extra guarantee for consumers which must be communicated. It does matter if the Hungarian customer will take Hungarian, German, Austrian or Slovak product from the shelves.

It is also important to make people aware of the facts that producing Hungarian food will create Hungarian jobs and on the other hand Hungarian consumers should be convinced that products made in Hungary are safe even if they are cheap, they are good quality food and provides gastronomical delight while eating.

The impulsive communication for consuming different alimentation has a great significance therefore those researchers who convey the latest results to the consumers have much responsibility. Only well established scientific results can be revealed to consumers and semi truth information must be avoided. This is obligatory!

The results of the analysis must contribute to the realization of the complex prevention. In order to realise this, the activities, and standpoints of dietetics, the consuming society and agriculture must be harmonized.

## 7. PUBLICATIONS USED IN THE DISSERTATION

### *Foreign language presentation, poster issued in a National Conference publication*

1. **KONCZ K.** (2009) The determining factors of quality of life reflected in the eating customs of the undergraduates in Kaposvar II. Nemzetközi Gazdaságtudományi Konferencia Kaposvár, 2009 április 2-3.

### *Scientific Publications*

1. **KONCZ K.** (2004) Élelmiszertörvény. Tudományos Közlemények. (Nutrition Laws. Scientific Publications) Kaposvári Egyetem. In.: Dolgozatok a Gazdasági jog témaköréből. (Essays on the Economic Law) Kaposvár.
2. **KONCZ K.** (2004) Törvény a fogyasztóvédelemről. (Law on consumer protection) Tudományos Közlemények. (Scientific Publications) Kaposvári Egyetem. In.: Dolgozatok a Gazdasági jog témaköréből. (Essays on the Economic Law)

### *Hungarian article issued in Hungary*

1. **KONCZ K.** (2006) A táplálkozástudomány és a fogyasztó szokások összefüggései. (The connections of dietetics and consumer habits) In.: Az alternatív mezőgazdaság tőkeszükséglete. (Capital requirement of the alternative agriculture) Emlékkötet Széles Gyula professzor úr 70. születésnapja alkalmából. Kaposvár.

### ***Book issued in Hungary***

1. **KONCZ K., FEHÉR Á.** (2006) Szerkesztette (edited by) **KONCZ K.** Tippek, fortélyok az egészséges iskolai büfék kialakításához (Tips, Cunnings for developing healthy school buffets) (Issued by) Kiadja az Országos Egészségfejlesztési Intézet. ISBN 963 86672 4 9

### ***Presentations at National Conferences***

1. **FEKETE K., KONCZ K.** (2006) Együnk együtt egészségesen! (Lets eat together healthy) Országos fejlesztéspolitikai koncepció (National development political conception): az egészség, mint fejlesztéspolitikai prioritás. (health as priority of development politics) Országos Konferencia 2006. március 21-22-23. Budapest.
2. **KONCZ K.** (2009) Az életminőséget meghatározó tényezők a táplálkozási szokások tükrében. (The factors defining life quality in reflect of feeding habits.) A közoktatás és a közétkeztetés együttműködési lehetőségei. (The possibilities of co-operation of public education and public catering) Országos Szakmai Konferencia (National Professional Conference) Budapest, 2009. május 20.

### ***Scientific essay***

1. **KONCZ K.** (2003) Hungarian area structure. Kaposvári Egyetem.