**FOOD AND WELL-BEING UNDER A GLOBAL PERSPECTIVE**

**HRANA I DOBROBIT IZ GLOBALNE PERSPEKTE**

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**SUMMARY**

While a tremendous amount of human and financial resources have been put during the last decades into the production-end of food, aiming to improve safety, quality and productivity or minimize cost, the world today is increasingly suffering from food. Millions of people are literally killing themselves by making wrong use of food, leading to obesity and nutrition-related diseases. At the same time millions of people keep suffering from lack of food, leading to starvation and death before reaching adult age. Although the community of agricultural and food sciences has made great progress with respect to the production and processing, there is a score of major problems to be faced in the food consumption. Parallel to striving for better-safer-healthier food, the community of Food Sciences is faced with the challenge to help an average consumer on education how to select, handle, store and use food for safe and healthy eating. A crucial issue in this venture is production of effective teaching tools for each and every level of education, including education of the general public. A second crucial issue is to sensitize and train educators to carry out their invaluable task of diffusing this information throughout the entire educational ladder. The need to reshape and reform public education to accommodate this task is obvious. What is also obvious is the need for medical professionals to recognize “healthy eating” (and exercise) as the most valuable tool in preventive medical care. Unfortunately, the response of the medical community to this need has been rather slow and far from being systematic. This presentation will concentrate on challenges and opportunities for the Food Scientists/Engineers: to contribute towards a society of well-informed, self-protected, active and considerate citizens; to support public (food-related) education and actively participate in the fight against obesity and nutrition-related diseases; to intervene in decision making bodies and underline the importance of education on nutrition and food; to invent avenues and possibilities of contributing in the fight against world hunger; all in all, to contribute towards a healthier world, a world that will not be split between obesity and starvation.

**Key words:** food and well-being, consumer education, world hunger, nutrition-related diseases, starvation, food education.

**INTRODUCTION**

Food has always been the main concern of humans throughout the history of mankind. Our far ancestors struggled for food and shelter and this is still the case for millions of people these days. Thanks to the valuable input of thousands of dedicated researchers, Agricultural and Food Sciences have scored (and keep scoring) a tremendous progress in several rather challenging fields regarding the production, processing and handling of food. Despite this progress, however, in one-way or other food remains the number one problem all over the world. While millions of people in “developing” countries keep starving to death, millions of people in “developed” countries “commit suicide” through overconsumption or wrong use of food, leading to obesity and a long series of food related diseases.

At the very moment that our civilization is boasting for sending people to moon, we can morally accept living with such devilish problems, as the world hunger problem or even the obesity epidemic. It seems really strange and unbelievable that, while we can manage facing incredibly complex and challenging problems, yet we “cannot manage” to provide food and clean water to our fellow citizens on this planet.

This situation is putting a big question mark against the social benefit of great scientific achievements of our (food science)
community. If we are doing so well with production, processing and handling of food, why so many people keep suffering because of food? What exactly causes and sustains the world hunger problem? Where is our input as food scientists and fellow citizens? What are the main causes of wrong eating habits leading to the obesity “epidemic”? What is the share of responsibility for each and every “player” in this game? What is our share of responsibility and how can we better serve the fight against the world food problems? Can we all work for a new world, where food is not a problem, but a holy gift of life?

FOOD PROBLEMS IN DEVELOPING COUNTRIES

It is well known and - alas- well accepted that, large parts of populations in developing countries keep suffering for long periods of time from:

-Hunger,
-Malnutrition and
-Lack of clean water.

It is estimated that more than 24,000 people, mainly children below 5 years of age, die daily of hunger (www.thehungerosite.com); at the same time millions are suffering from malnutrition and/or lack of clean (drinkable) water.

What really causes and sustains the world hunger problem?

Is it lack of adequate food? No! “The world supply of food is sufficient to feed the world population; simply food is not where needed, when it is needed”(Amartya Sen, 1998 Nobel prize in Economics)


It seems that all the above are true to a certain extent. It is finally & simply lack of adequate care!

If the world leaders really cared, they would not use shortage of food as a means to manipulate and control Third World (TW) countries. If the world leaders really cared, they would not buy out the pollution rights of poor countries for food (Kyoto agreement). If the world leaders really cared, they would not buy out their land and waters to dump nuclear waste. If the developed countries really cared, they would manage to bring food where it is needed, when it is needed (as a short term, immediate response to a famine); thus they would manage to minimize the impact of famines. In the long run they would systematically, constantly and persistently help TW countries develop their own capacity to produce food; to become self sufficient and independent (as a long term, radical response)

What can we do to help? Among other possibilities, agronomists could work on developing plant varieties that are suitable for extreme soil and weather conditions as well as water preservation techniques and satellite surveillance of food crops in problematic areas to predict and prevent famines. A long-term approach should concentrate on ways to help develop their own production capacity rather than offering food during periods of famine. Food scientists/engineers could work on developing formulas and processes for nutraceutical-type products, to be used as “complete, balanced meals” (i.e. reconstituted drinks, stable dry meals). An open forum to discuss and contribute towards eradication of the hunger problem could also be established. Finally, systematic work is needed on raising public awareness, stressing societal responsibility.

FOOD PROBLEMS IN DEVELOPED COUNTRIES

The following food-related problems have to be faced in “developed” countries:

-Diet related diseases (i.e. obesity, CVD, cancer, etc),
-Food safety problems (food crises),
-Mishandling of food by the consumer,
-Oligopoly in food market control (globalization) and
-Low access to food due to increasing poverty (read hunger).

It is rather ironic that, while people in some parts of our planet die because of lack of food, others living in areas of affluence die because they consume too much food or because they fail to follow a balanced diet. In fact, “wrong eating habits” lead a sizable portion of population in developed countries to poor nutrition and diet related health problems. The so called “Western” style of eating results in high intake of: calories, sugar, salt, animal fat, trans-fatty acids and cholesterol.

All these have a negative impact on health, leading to a number of “western” type diseases, such as:

-Obesity,
-Diabetes mellitus,
-Hypertension,
-Cardiovascular diseases,
-Anemia and
-Cancer.

What is really obesity? In fact, obesity is a modern, “epidemic”, devastating disease. According to recent IOTF (International Obesity Task-Force) statistics (www.iotf.org), up to 35% of men and 40% of women in certain countries have a BMI (Body Mass Index) equal or above 30; thus they are considered to be obese (Fig. 1)
With the use of dangerous diet schemes, including absolute withdrawal from eating for long periods of time (read "starvation") and
- With easy belief in fake promises (by "slimming" centers), making themselves believe in easy, "miracle solutions".

What are the real causes for development of such an unhealthy and dangerous style of eating? Among other reasons, wrong eating habits may be due to:

- Lack of nutrition and food education,
- "Lack" of time for preparing a healthy meal; seeking convenience and easy solutions (fast food, TV dinners, etc); more often than ever people eat out and their diet largely depends on ready meal providers, such as fast food and regular restaurants or food companies offering precooked food (i.e. heat and serve meals).
- Seeking entertainment in place of feeding ("junk food", snacks, soft drinks, alcohol),
- Consumerism (over-consumption, wasting),
- Deterioration of the family fabric leading to abolishment of such institutions, as the "family table" (crisis of values),
- Devaluation of the importance of tradition, leading to lack of protection and eventual loss of valuable, healthy traditional dishes and
- Fashion and style (consumer "programming"); especially young people are vulnerable to media advertisements directing not only their food choices and style of eating, but also the way they should look (i.e. like models), which often leads to serious health complications (i.e. anorexia nervosa).

How can we correct our eating habits? This is a rather difficult and long time objective that needs coordinated actions. Among other measures we need to work on the following tasks:

- Improve Food and Nutrition Education at School (nursery, primary, secondary); school canteens may present a serious obstacle, as they usually offer a lot of junk food and soft drinks,
- Improve public awareness of the value of healthy eating and exercise (radio, TV, media),
- Improve preventive medical care with better training of medical doctors on nutrition and health (prevention vs. curing),
- Carry out clinical nutrition studies to recognize and prevent the development of unhealthy and dangerous nutritional (eating) patterns.
- Establish clear nutrition policy (State, European) and take effective measures to implement it,
- Apply easy to read, understandable nutritional labelling, not only on packaged food but also on restaurant served meals and
- Legislative and enforce corporate responsibility.

In fact "corporate responsibility" is a very important issue to be addressed. A recent study proved that companies fail to live up to their pledges to cut down on sugar, salt, trans-fat, cholesterol, serving sizes and calories. Researchers at City University (UK) reviewed the companies' policies on nutrition, research and development, marketing, labelling and other criteria relating to health. The world's top 25 food companies have not taken significant action to improve diets despite their claims (The Guardian, Tuesday April 4, 2006; www.guardian.co.uk/food/story/0,1746169,00.html).

Makers, retailers and restaurant chains were all accused, according to Tim Lang, one of the authors of the report "The Food Industry: Diet, Physical Activity and Health" – “Their performance is by and large ‘pathetic’”. The companies that appear to be doing the most are the ones under intense pressure because their product ranges are the unhealthiest, but there is a whiff of desperation about what they are doing rather than long-term commitment to better food.2 In short, the following responses were recorded:

- Five out of 25 companies reported acting on sugar,
- Four out of 25 reported acting on fat,
- Eight out of 25 reported acting on trans-fats,
- Ten out of 25 reported acting on salt,
- Two out of 25 reported acting on portion sizes and
- Four out of 25 had stated policies on food advertising.

In light of globalization and global food market control, "food safety" has acquired new dimensions. Intensification of production techniques have helped increase productivity and decrease production cost. At the same time this has taken place at an enormous cost in terms of food safety. During the last two decades the world has been faced with a number of food crises including BSE (Bovine Spongiform Encephalopathy or "crazy cow disease"), dioxins, acrylamide, growth hormones and antibiotics, all related to newly developed, highly intensified production methods. Food from genetically modified organisms (GMO-food) has raised enormous disputes with respect to safety, environmental impact, biodiversity, bioethics, food market control and consumer rights regarding free-informed choice of food (read obligatory labeling).

As food market control has been passing in fewer hands, with questionable respect to human values or the environment, there has been a dangerous shift in production priorities. Instead of focusing in production of food with high safety, satisfactory quality and acceptable (reasonable) cost, the new production priorities call for food of low cost, acceptable quality and question-able safety.

It is time to stop and think for a while: where are we coming from and where are we heading? In order to secure safe food, at production level we need to re-orient production schemes to sustainable methods, moving away from intensifica-tion-induced food crises (i.e. BSE, dioxins, antibiotics, growth hormones). At consumer level we need to help improve consumer awareness of real values in food (nutrition, quality, safety). We also need to support the consumer movement for better protection of consumer rights regarding:

- Consumer education, access to safe food for all,
- free, well-informed choice (i.e obligatory labeling of GM food) and informative (not misleading), adequate food labeling.

Consumer education is a basic consumer right and an absolute pre-requisite for consumer responsibility with respect to safe handling of food. Mishandling of Food by the consumer will easily cancel every effort and achievement of the Food Industry with respect to quality, nutritional value and safety; thus canceling the positive impact of valuable achievements in food research (that is, the impact of our own work!).

An importance analysis of the factors affecting milk spoilage showed that a better temperature control of domestic refrigerators is the most effective action for extending shelf life compared to a better control of hygienic conditions during production or a better temperature control in retail. "A reduction of °C in the mean temperature value of domestic refrigerators increased the percentage of cartons with shelf life longer than 8 days to 95% (up from 72%) and eliminated cartons with shelf life less than 5 days” (Koutsoumanis and Pavlis, 2006). The following scenarios were tested (using Monte Carlo Simulation) to identify effective actions for improvement of pasteurized milk shelf life in the Hellenic chill chain:

a) Improvement of initial microbiological quality (reduce mean level of Bacillus by 1 log cfu/ml),
b) Improvement of retail temperature conditions (reduce mean retail temperature by 2°C),
c) Excluding door shelf from domestic storage of milk and 
d) Improvement of domestic refrigerator temperature condi-
tions (reduce mean domestic storage temperature by 2°C).

Consumer education has been recognized as a main task for 
the ISEKI-Food Thematic Network (www.esb.ucp.pt/iseki). One 
of its main objectives has been to: “Establish communication 
with the general public and the consumers”. Within the first ver-
sion of ISEKI-Food, Working Group 3 worked on: “Food Sci-
ence/Engineering and the general public”. Later on, within 
ISEKI-Food 2, Working Group 3 started working on: 
“Developing teaching materials and methods in the field of Food 
Studies”. At the same time, Working Group 5 has been working 
on “Establishing communication with the general public and the 
consumers”. ISEKI-Food Association (IFA) – (www.iseki-
food.net) has also been established as a sustainable continuation 
of the ISEKI-Food Thematic Network. Among the first tasks to 
be accomplished within the framework of IFA has been a data-
base of Food Info for the average consumer in 12 EU languages 
(www.food-info.net).

Last but not least is the problem of food market control as a 
result of market globalization. The following conditions describe 
the environment within which the world food market has been 
developing:

- Tremendous power of world organizations (WTO, FAO, 
  Codex Alimentarius),
- Lack of democracy in decision making processes, 
- World citizens are left watching the drastic changes shaping 
  up their future,
- Food market control is passing in fewer hands; hands with 
  low respect to human needs, consumer rights or the environment 
  (GMO’s),
- Further shift of power from SME’s to large multinationals; 
  from poor to rich countries and
- Hunger is now a growing concern EVEN in rich countries.

EPILOGUE

Our society needs to meet a big challenge Access to safe food 
and healthy eating for all. Can the community of agro-food sci-
ences play a major role towards achieving this global objective?

CONCLUSIONS

The entire world is suffering from food. Developing coun-
tries are suffering from hunger and malnutrition, while devel-
oped countries struggle with obesity and nutrition related dis-
esees; they are also faced with a growing concern for hunger of 
their lower income classes. Obesity is a major health problem of 
modern societies with dimensions of an epidemic disease. Con-
sumer education is absolutely needed to promote food qual-
ity/safety and healthy eating. School teachers need thorough 
training, effective teaching tools and proper coursework design 
to efficiently teach today’s children and tomorrow’s parents how 
to secure high quality/safe food and how to live on a healthy diet. The community of food sciences should urgently develop 
such tools. Corporate responsibility is a major issue in combat-
ing obesity and food related diseases. Globalization is a threat to 
food market control. Our society needs to meet a great chal-
lenge; that is to secure access to safe food and healthy eating for 
all. In meeting this challenge the agro-food science community 
must play a leading role. Agriculturists, food scientists, food en-
gineers and nutritionists could all co-operate under ISEKI/IFA 
(or some other universal scheme) to contribute in systematic and 
effective ways towards meeting this humanitarian target. Estab-
lishing an open forum and a task-force on “World Food Prob-
lems” could be a reasonable approach in exchanging ideas and 
joining forces to combat hunger, obesity and food-related dis-

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Primljeno:18.03.2009.  
Prihvaćeno:25.03.2009.