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FOOD AND HEALTH
SOME CURRENT ISSUES
AND FUTURE TRENDS

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Introduction

This paper deals with some of the many current issues and future trends in the area of food, diet and health in Europe. A complete coverage would be impossible in a short article in view of the extent and complexity of the food system and its major interaction with health. It is also important to stress at the outset that food/diet is only one component of health and other factors such as environment, overall lifestyle and genetics also play a major role. The genetic dimension is of particular importance as there is an increasing realisation that a person's genetic make-up plays a major role in their ability to 'deal' with infection or to 'cope' with certain foods or other agents, e.g. tobacco, which may be associated with various conditions such as atherosclerosis and lung disease.

Food is eaten for sustenance ('we eat to live') but also for pleasure ('we live to eat') and so in Europe overnutrition is often a problem and contrasts with starvation and famine sometimes found in Third World countries. As a result, the so-called diseases of affluence, and the accompanying enormous cost of health care, are major problems in most European countries leading to increasing pressure for more preventive and less curative medicine.

With the above backdrop it is not surprising that there is unprecedented interest by consumers in developed countries in food/health issues and while consumers of the 80s asked 'are there additives?' the consumers of the 90s ask 'is the food safe?' While microbiological food poisoning is a major problem in Europe today, the modern consumer often sees a more sinister dimension arising out of the use of agri- and veterinary chemicals/preparations in food production and the use of additives and a range of technologies by the food industry. As a result the quest by consumers for reliable information in this area is unprecedented.

This paper addresses some of the above issues and also the major role the Commission of the European Communities (CEC) can play in promoting an interdisciplinary approach in the solution of some of the current and future food and health issues.

Food production, processing, safety

Intensive agriculture usually means higher yields and lower production costs. However, consumer pressure is leading to more extensive agricultural production and the Common Agricultural Policy (CAP) is moving away from systems supporting maximum output towards those supporting small farmers which in effect means an increase in extensive production. Intensively produced crops and animals are often of lower sensory quality than those produced extensively and domestication has increased the fat content and/or the fat status of certain animals towards saturated and away from polyunsaturated. In the eyes of the consumer extensive production is safer and is associated with lower chemical inputs (fertilisers, pesticides, etc) in plant foods and reduced or zero use of growth promoters and antibiotics in animals. Hence integrated pest management systems and organic production are finding increasing favour. In the case of the latter opinions are divided as to the advantages in comparison with conventional production. Nevertheless a perceived quality is, indeed, a quality and organically produced foods will continue to find favour with consumers even though the systems required to produce organics on a large scale are unlikely to materialise.

Biotechnology will lead to better plant cultivars (more nutrients, reduced or zero natural toxicants) and animal breeds (leaner, improved fat status) but care must be taken not to introduce genes which confer harmful traits; for this reason the health and safety aspects of biotechnology must be kept under continuous review. Within the CAP there should be more emphasis on food quality, nutritive value and safety and less on yield/quantity. A balancing integrated European downstream policy in these areas and its implementation is, therefore, a major priority.
The industrial formulation of foods offers considerable potential for 'good' or 'bad' in human nutrition terms as formulated foods can be balanced or imbalanced. Foods tailored to the requirements of babies, athletes and geriatrics are now commonplace and there is a huge potential for producing formulated foods for individuals with intolerances\(^{30}\) or specific diseases. In the past these foods related to items like gluten free products for coeliacs and sugar free products for diabetics but the list is increasing dramatically as clinical and sub-clinical disorders related to diet are identified via better diagnostic procedures.

Food ingredients marketing\(^{50}\) is now big business with artificial, refined, modified and natural options available while the evolving area of fat replacers\(^{56}\) (products that have the sensory and/or the functional properties of fats but with reduced or zero calories) is of major significance to the food industry, nutritionists and consumers. There is a general shift away from artificial food additives towards natural\(^{56}\), or none, for reasons of consumer pressure. However, this could result in increased risk of microbiological spoilage (e.g. no preservatives); also, natural additives are often much more costly\(^{56}\). Food formulation also gives rise to the area of 'claims' (e.g. our product is fibre rich, or low fat, or vitamin enriched etc.) and every effort must be made by legislators to ensure that such claims are not misleading and are founded on proven facts.

Most of our foods today, whether fresh or processed, are subjected to some form of technology. For example, fresh foods are often chilled and then packed in a modified atmosphere (MAP) to prolong shelf life while processed foods are the result of the application of an individual or a combination of technologies. The safety of these and also the fate of nutrients in foods processed by these technologies is of considerable concern\(^{55}\). Some of the older technologies such as dehydration, canning, freezing and baking are well accepted but there is still some concern about the consequences of using some of the newer (or more newly used) ones, e.g. psychrophiles in chilled foods, bacterial survival and growth in MAP, the production of 'new' chemical compounds and the fate of nutrients in extruded\(^{56}\) or irradiated\(^{56}\) foods. Biotechnology is of major importance to the food industry\(^{58}\) but as outlined above its safety implications\(^{55}\) must be carefully reviewed on an ongoing basis. The concern for safety is reflected in the ongoing (1989-93) FLAIR (Food Linked Agro Industrial Research) research programme of the CEC\(^{29}\) which embraces 33 international research projects aimed at the food industry and consumers. Many of the projects are in the area of food safety/nutrition wholesomeness and include projects on rapid analytical procedures and hazard analysis. There is a specific project called FLAIR-FLOW EUROPE (the present author is the project leader) which disseminates information from the other 32 projects.

The developments in rapid analytical methods, hazard analysis procedures\(^{56}\), international quality systems (such as ISO 9000) and food regulations/legislation coupled with much improved techniques for assessing 'relative risk'\(^{56}\) within the food chain will go a long way to restoring consumer confidence in food production/processing and in ensuring that food products are safer than ever before.

Diet, food preparation

The core elements of current dietary recommendations seem set to continue\(^{56}\); however, some of the fringe elements will be subject to modification. There is no good reason to change the age-old concepts of a balanced diet and moderation in all things. However, the 'man-made' concentrates such as fat spreads, high fat cheeses, alcohol, sugar and salt should be used sparingly\(^{56}\) because they are more calorie dense (salt excepted) than foods as found in nature (with the exception of honey). It is proposed, therefore, that diets should be rich in complex carbohydrate (potatoes, cereals, vegetables, fruits) and fish but should also contain significant amounts of white and red meats and dairy products. Balanced formulated foods can also be included but imbalanced ones should be excluded. The importance of healthy cooking cannot be overstressed and the ease with which a low fat food such as coleslaw or steamed fish can be turned into a high fat food by the addition of mayonnaise/sauce is all too apparent\(^{56}\). Education programmes on healthy cooking are highly desirable, therefore, for caterers and householders.

Nutrition policy, dietary issues

The minimalist approach to a food and nutrition policy, as advocated by Downey\(^{59}\), seems the most appropriate procedure for Europe. The kernel of this approach is extensive consumer education on diet, food choice and healthy eating combined with EC incentives for dietary changes\(^{56}\); market forces are then allowed to apply. The consumer education element can be brought about via schools, the media, food promotion agencies and via literature distributed by food retailers; much of this type of information, which is currently available, is well presented and accurate\(^{56}\). However, a major difficulty mitigating against having a good education programme is the confusion\(^{56}\) which currently exists among professionals (and therefore among the media and consumers) regarding many of the dietary issues of today including salt/calcium interaction in hypertension\(^{56}\), cholesterol reduction vs mortality\(^{56}\), the current favouring of monounsaturates\(^{56}\) and disfavouring of polyunsaturates\(^{56}\), and the recent controversial study which showed that those consuming butter and milk suffered fewer heart attacks than those consu-
Role of the European Community

The EC can help overcome some of the current confusion noted above by diverting a portion of its extensive research funds (e.g. for a 3 years period) to coordination between appropriate Directorates General (rather than within Directorates General) thereby bringing food production specialists, food technologists, nutritionists, medical scientists and others together as interdisciplinary teams. This is seen as a major priority and is even more necessary when the question is asked who determines current human nutrition thinking (CHNT) as outlined in Fig. 1. (source: reference no. 2).

The left hand side of Fig. 1 (boxes A-D) represents the primary producers of information; these are the people most likely to influence CHNT. However, CHNT is also influenced by those on the right hand side of the diagram, i.e. industry and promotion agencies. The top of the diagram relates to government and other agencies including the complexity of the food-health area (Fig. 1) and also to some looseness associated with human nutrition research procedures and with the operation of expert groups (Table 1).

<table>
<thead>
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<th>Table 1 Possible pitfalls of human nutrition research procedures</th>
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<td>(1) extrapolation of results of animal experiments to humans;</td>
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<td>(2) extrapolation of results from 'at risk' groups to whole populations;</td>
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<td>(3) use of small numbers of human subjects in human nutrition studies;</td>
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<td>(4) research often funded by vested interests;</td>
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<td>(5) 'oversell' abuse of epidemiology</td>
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Associated with expert groups

| (1) there may not be sufficient information available as an input to allow a comprehensive output; |
| (2) an expert group may be influenced excessively by one or more of its members who have strong views and imposing personalities; |
| (3) an expert group may be the origin of, or may be unduly influenced by, a vested interest; |
| (4) an expert group may meet an insufficient number of times for a satisfactory consensus |

The EC can also help by providing increased funding for consumer education in diet and health and by establishing linked Relay Information Centres in EC states.

**Additional future trends/issues**

Major developments in food analysis and in sensors will continue and will give safer and better foods. The subdistances of food composition (including natural toxicants) and of the interactions between foods and certain diseases will be understood and so prudent diets will be more easily planned. Nutritional profiling at individual level will become standard practice and will result in individualised diets while advances in risk factor analysis will result in greater attention to currently emerging biochemical and physiological mechanisms of disease development. The benefits from 'natural complexity' in foods will be realised as will the protective effects of certain food constituents against specific diseases/disorders. These collective developments will lead to safer foods, more balanced food intakes and to greater consumer confidence.

**Conclusions**

This paper has highlighted a few of the very many issues in the food/diet/health area. Developments will continue in many directions but some of the most relevant may be in the areas of extensive food production, food biotechnology, human genetics, food formulation, food safety, clearcut information, consumer education, and in the role of the EC. If there is one overarching requirement it is for co-ordination of effort on a scale not previously attempted in this area.
References


