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FOOD AND HEALTH — A EUROPEAN PERSPECTIVE

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This article summarises the findings of a major study entitled *Technological Change in Agriculture and the Food Industry and Public Policy in Relation to Food Production, Nutrition and Consumer Safety*. The research was carried out under the FAST (Forecasting and Assessment in Science and Technology) programme of the Commission of the European Communities. The findings are applicable to most developed countries and, if implemented, could have a significant effect on human health and on food production and processing methods.

I. Introduction

In Europe at present there is unprecedented interest in food and health. This ranges from the concern of individual consumers in relation to healthy eating to that of government ministers who are faced with the enormous cost of health care and who are increasingly realising that the answer may be in preventive medicine.

In Europe, the prominent position of the common agricultural policy (CAP) has resulted in a major policy input at production-agriculture level, however, few, if any, corresponding policies have been applied to the downstream food areas and this represents a major deficiency in development/control of the European food system. The present study is therefore both timely and topical. It had three components (Table I) and was based on major reviews of the scientific, trade and popular literature. To this foundation was added the distilled views of international experts who were contacted personally or who took part in a project-steering workshop held in Dublin in March 1986. The extensive findings and recommendations of the project have been published and are summarised in the following sections.

<p>The project had three components:</p> <ol style="list-style-type: none"> (1) A critical review and assessment of key nutritional issues and of the criteria applied for determining the effects of foods of plant, animal and marine origin on human health. (2) An assessment of food and nutrition policies in developed countries. (3) An evaluation and assessment of agricultural production and food processing technologies with respect to their impact on human health, and consumer reaction to them.

Table I.
Components

highly desirable. Towards this end, the inauguration of an elite committee (at director or deputy director level) across Directorates General in the Commission of the European Communities (CEC) with responsibility for food, health and consumer issues is recommended.

Current Human Nutrition Thinking

Health is influenced by lifestyle, environment and genetic factors. Diet is often singled out unfairly as the major cause of many health problems. However, it must be put in context as it is only a component of lifestyle and an even smaller one of environment. Genetic factors may be quite important in predisposing humans to disease and an EC-wide family medical history study is proposed with the express aim of obtaining greater information on the causes of morbidity and mortality within and between families.

There is still disagreement, controversy and even confusion, among experts concerning some of the key nutrition issues of today — for example, recommended daily allowances for some nutrients, the cholesterol, fat and salt issues, the role of trace elements, the effects of mild overweight, the effects of dietary fibre. The CEC should, therefore, promote the formation of interdisciplinary groups together with informed public debate in order to reach a greater consensus on some of these issues. However, there may be some pitfalls associated with human nutrition research procedures and with the use of expert groups (see Table II) and care must be taken to avoid these pitfalls.

II. Summarised Findings

Concerns of Consumers

Food, health and consumer issues will continue to be a major challenge to all in the food production and food processing areas and also to policy makers, well into the next century. The consumer lobby in relation to food and health will grow in strength in Europe and will exert greater pressure on the food system. Therefore, a Community-wide opinion poll, linked to structured debate, should be conducted to define precisely the concerns of European consumers in relation to diet and health.

The CAP has dominated food production in Europe and the development of a "balancing" integrated European policy which will be concerned with the quality and safety of the food supply in human nutrition terms is

In human nutrition research procedures

- (1) extrapolation of results of animal experiments to humans;
- (2) extrapolation of results from "at risk" groups to whole populations;
- (3) use of small numbers of human subjects in human nutrition studies
- (4) research often funded by vested interests;
- (5) "overuse"/abuse of epidemiology

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 organ 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.

Table II.

Possible Pitfalls

- (1) Obesity (or overweight) is a predisposing factor in the development of many diseases and should be avoided.
- (2) As fat is a concentrated energy source and because a connection between fat intake and cancer and CHD appears likely, total fat intake should be decreased and saturated fat should be partially replaced by polyunsaturated.
- (3) Sugar (sucrose) is another concentrated source of energy which is a causative agent in the development of dental caries — its consumption should be reduced.
- (4) Dietary fibre is deficient in many daily diets and because of its demonstrated therapeutic role in certain diseases of the gastro-intestinal tract, an increased intake would be beneficial.
- (5) Salt has been implicated in circulatory disease development; intakes are currently in excess of biological requirements and should be restricted.

Points 1-5 are in accordance with the recommendations of expert groups in a number of countries which specify desirable intakes of protein, carbohydrate, fat and other nutrients.

Intake values for nutrients in relation to 1-5 above have not been defined because some of the goals for nutrient intakes are difficult to achieve in practice in a free-living population. There is also controversy as to what intake values should be; for example, why choose a figure of less than 35% of calories from fat, why not 37 or 38%? Instead, the idea of moderation in eating and a balanced diet is proposed. A modest shift towards a greater consumption of foods of plant (cereals, fruit, vegetables) and marine origin and modest reduction in the intake of foods of animal origin, especially in the more Northern European countries, would go a long way towards satisfying 1-5 above, especially if a greater proportion of the food consumed is fresh and unformulated.

^aBased on expert groups in a number of countries

Table III.

Consensus Statements
for European Nutrition
Policy^a

Specific Nutrients and Related Areas

Recent evidence that fish oils, certain vegetables and vitamins C and E may influence coronary heart disease warrants continuing in-depth scientific investigation. Rapid non-invasive techniques for examining the walls of blood vessels are required in order to enable routine screening programmes to be established. The possible synergistic effect of sodium and calcium in reducing blood pressure also needs further classification, as does

the effect of limiting sodium and calcium (via reduced dairy products) in the diet on this synergism.

Weight control for health and social reasons is a major aim for many people in developed countries. Continued research is essential on mechanisms of energy use/disposal in man via thermogenesis, exercise, so-called "bad converting", and through other routes.

Dietary Recommendations, Food and Nutrition Policy

The relative merits of promoting a European consensus on dietary recommendations should be explored; if such an EC-wide approach is believed to have advantages, a carefully composed group representing all member states and bodies (producers, processors, consumers, medical practitioners, etc) should be assembled for a significant time-period before issuing any findings. In the absence of such a step, a number of broad consensus statements (see Table III) could define nutrition policy in member states. These statements are compromised to some extent by the paucity of published information on dietary patterns in most member states. National food surveys are, therefore, desirable in most EC countries.

In relation to some of the statements in Table III, it is suggested that the practice of advocating certain dietary regimes for whole populations may be too extreme; those most at risk should be identified by screening procedures and comprehensive preventive medicine programmes should be introduced, co-ordinated and funded in part by the EEC.

Incentives to Dietary Change

In bringing about dietary change, consumers have to be convinced that they should change their diet, and producers and processors have to be encouraged to produce the required foods at a reasonable price. The report of this project advocates certain measures for this, including:

- Increased EEC support for producers and processors of foods and food products with reduced fat contents.
- Reduction in EEC-funded advertising campaigns for full-fat dairy products, and more emphasis on reduced-fat products.
- Modification of statutory compositional standards for sugar and fat-containing foods in EEC member states.
- A greater ability to predict the response of consumers to differential pricing in closely related products (eg. full-fat versus reduced-fat milk).
- Consumer subsidies to further stimulate poultry, fish and cereal food consumption.

Consumer Education in Nutrition

Dietary changes in populations are virtually impossible to achieve unless consumers are well educated in food and nutrition. Proposals in this area include:

- Setting up more comprehensive nutrition education programmes in EEC member states.
- Greater understanding between scientists and media personnel in order to ensure the dissemination of accurate nutritional information.

- Setting up a resource service embracing nutritional matters in each member state.
- Reduction in the major differences between the operating budgets of national health education organisations and the advertising expenditure of food companies.
- Greater use of retail outlets as purveyors of unbiased nutrition information.

Agricultural Production

Many consumers are concerned with some of the current agricultural practices. More information and research is required, therefore, in order to convince consumers that current practices are indeed safe. While the legal use of agrochemicals appears to pose few risks for consumers, the regulation of this area within the EEC is in some respects incomplete and uneven between countries.

It is desirable that a comprehensive harmonised regulatory system be put in place to cover farm use of antibiotics including standards of manufacture, control of distribution and availability, and effective monitoring of residues. The surveillance of use and the monitoring of residues of all agrochemicals should be extended sufficiently to assure consumers that they are being used safely at farm level. Opportunities for reduced use of agrochemicals need to be identified further and the use of integrated pest management systems should be encouraged.

Changes in breeds/cultivars used and modification of some husbandry practices could improve the nutritional quality of foods both in the shorter and longer term. For example, changes in animal breeds and husbandry practices could lower the fat content of animal products (encouraged through pricing policies under the CAP). Fundamental strategic research could be carried out on the deposition of selected nutrients in key plant and animal species, and on cellular mechanisms controlling this deposition in order to facilitate the desired changes.

The study recommends that more research and regulatory attention be devoted to the possible effects on human health of the low levels of toxins found naturally in some common plant species used as food. Due to lack of attention to this area in the past the significance of these toxins is largely unknown but the consensus among scientists is that they are underrated as a food hazard. In addition, the regulation of all chemicals in foods (naturally added, contaminating, formed) should be dealt with on an equal basis, distinguishing between large and small risks to consumers.

Food Processing

Overall, the loss of nutrients due to most methods of industrial food processing and storage does not appear to represent a nutritional problem for the majority of consumers. In general these losses are either not excessive or are compensated for by the greater availability and variety of foods which result from food processing, or by the fortification of some foods such as breakfast cereals. However, it is important that up-to-date nutritional methodology should continue to be applied to the evaluation of the composition and bioavailability of important vitamins and minerals in key foods resulting from novel food processes. The effects of processing on nutrient loss in foods designed for sub-groups of the population, such as infants, who consume

a limited range of foods, should also continue to receive special attention.

Some processed formulated foods, which contain high levels of refined ingredients, fats and sucrose, and low levels of dietary fibre, vitamins and minerals, can contribute to nutritional imbalance. It is important that the European Commission encourages industry to develop more, "healthier", formulations of novel products which better meet consumers' dietary needs. This could be done, for example, through support for specific R&D projects in this area. The Commission should also consider funding fundamental research to explore the possibilities for imitating the functional properties of, for example, fats and salt in food systems through the use of other ingredients considered to constitute less nutritional hazard.

In the area of toxicology, the evidence from chemical analyses and from decades of human experience indicates that most food processes do not appear to pose toxicological hazards for consumers. However, research attention should continue to be directed towards evaluating the limited number of chemical entities produced during processing which are considered toxic or require further safety assessment. These include products of browning and pyrolysis reactions; lysinoalanine formation due to heating of proteins and trans-fatty acids produced during hydrogenation (hardening) of oils. A protocol should be developed for the evaluation of novel food processes, focusing on important chemical changes in combination with animal testing at moderate levels of ingestion.

The risks to health from food additives appear to be exaggerated by consumers and some press comment. However, more attention should be given to the status of the limited number of food additives which cause allergic reactions or other possible acute effects such as hyperactivity in children. Second, the possible long-term effects of additives *per se* or from possible interactions between additives and other chemicals foreign to the body have not been adequately addressed.

Conclusions

The piecemeal development of the European food system since the inception of the EC has resulted in an imbalance between the needs of the producer, processor, retailer and consumer. This paper has identified some of the ways in which this disparity may be rectified. If there is one overriding requirement it is for co-ordination of effort on a scale not previously attempted in this area.

This study has been published as a book, *Food, Health and the Consumer* (by T.R. Gormley, G. Downey and D. O'Beirne), Elsevier Applied Science Publishers, London and New York, 1987, 317 pp. It is also available as FAST Occasional Report No. 107 (*Technological Change in Agriculture and the Food Industry and Public Policy in Relation to Food Production, Nutrition and Consumer Safety*) from the CEC (DG XII, FAST) 200 Rue de la Loi, B-1049 Brussels, Belgium.