The Status of FAO and Codex Alimentarius Developments on Vegetable Proteins

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ABSTRACT

The FAO is interested in increasing world protein supplies both by advising and assisting developing countries to increase their production of staple foods and by encouraging the development of technology to produce protein concentrates both from vegetable and animal sources to supplement diets which are low in protein content. Recent revisions of the amount of protein required in the diet in relation to total per capita energy requirements and the difficulties encountered in introducing novel foods into established dietary patterns has led FAO to concentrate on increased agricultural productions in developing countries as the primary means of combatting malnutrition. In the meantime, in North America and Europe, advances in the technology of processing vegetable proteins has given highly acceptable products simulating meats which are being used as meat extenders and meat analogues. The consequent increase in vegetable protein production has revealed a need for international agreement on standardization, and it has been agreed that this will be undertaken by the Joint FAO/WHO Food Standards' Programme. The program operates chiefly through the Codex Alimentarius Commission, an international governmental body, the purpose of which is to protect consumers against health hazard in food and against fraud. The Commission, which has 116 member governments, controls an intensive program of work covering the composition, labeling, additives, contaminants, pesticide residues, hygiene, sampling and analysis aspects of foods and has established a procedure which allows member governments ample opportunity to reach agreement on food standards and to accept them for incorporation into national legislation. The Codex Commission, at its 12th session, decided to establish a Committee on Vegetable Proteins with the following terms of references: "to elaborate definitions and world-wide standards for vegetable protein products deriving from soybeans, cottonseed, groundnuts, cereals and from other vegetable sources as they come into use for human consumption, and to elaborate guidelines on utilization of such vegetable protein products in the food supply system, on nutritional requirements and safety on labeling and on other aspects as may seem appropriate." The question of which country will host the Committee is still under discussion.

INTRODUCTION

Protein supplies for human foods are commonly classified according to whether they are present in foods which form part of the established staple diets in the main dietary regions of the world, or whether they are extracted and processed from biological materials which in general are not traditionally consumed.

Proteins present in traditional foods are known as conventional; those which are extracted from animal, vegetable or microbial material for use as concentrates in foods or feeds are known as semiconventional or nonconventional, or novel according to their source.

FAO is interested, of course, in proteins from both sources. The major part of FAO's program is directed to increasing production of staple foods in the seven dietary groups of the world. But there is also an action program aimed at the double benefit of reducing pollution and obtaining products with a higher protein content by recycling of waste materials (1).

The FAO has been active for many years in the field of protein concentrates. In the late fifties and early sixties, protein supplies fell short of the then recognized requirements in most developing countries, and FAO was aware that the use of other sources of protein should be investigated. In 1955 the Protein Advisory Group of the United Nations (PAG) had been created primarily to advise FAO, WHO and UNICEF on the safety and suitability for human consumption of new protein foods. PAG published guidelines for testing of such products (2) (3) and for their use as supplements in various kinds of protein-enriched foods to be included in the diet of vulnerable groups in developing countries (4).

Enrichment protein from both animal and plant sources were investigated at this time; fish protein concentrate (5), oilseed proteins (6), leaf proteins and later single cell proteins from microbiological sources were all the subject of research under FAO auspices.

Later revisions of protein requirements (7) indicated that in most cases where there is no adequate calorie supply obtained from staple foods, there is no longer a protein deficit at national level, and that protein intakes in malnourished groups could not be isolated from the total calorie requirements. In addition, practical experience has shown that there were difficulties of acceptability and distribution in the introduction of protein-enriched foods in developing countries. Action in FAO thus concentrated on increasing supplies of basic staple foods and on eliminating the enormous food losses (estimated at 20-40%) caused by pests and microbial spoilage.

During the past decade, however, there has been great technological progress in the processing of vegetable proteins. Soy proteins, once viewed in the '50s only as products in themselves, were not in general use because of unsatisfactory organoleptic properties. However, because the economic situation has changed and technology has developed to a point where vegetable protein products are appealing to the taste and can simulate the texture of meat products, there is greater acceptance today of vegetable proteins in the diet. In North America and in Europe, national regulations now allow the inclusion of vegetable proteins in meat and poultry products on an increasing scale.

It is now evident that the use of vegetable proteins in the food supply system will go on increasing, and that there is now a need for international agreement to control the use of such proteins. It has now been agreed that the Joint

FAO/WHO Food Standards' Programme should undertake the work of preparing standards for vegetable proteins to be used in foods.

CODEX ALIMENTARIUS

The Joint FAO/WHO Food Standards' Program was established by the two organizations in 1962 and operates chiefly through the Codex Alimentarius Commission and its Executive Committee. The Commission held its 12th session in April this year, at which time there were 116 member countries.

The purpose of the work of the Commission, which is an intergovernmental body, is to protect consumers against health hazards in food and against fraud; to ensure fair practices in the food trade; and to facilate international trade in foods.

The Commission has embarked on an extensive program of work covering the compositional, labeling, additive, contaminant, pesticide residues, hygiene, sampling and analysis aspects of foods. It has set out to secure international agreement on the substance of food standards and then to invite governments to accept them in various specified ways, as laid down in the General Principles of the Codex Alimentarius.

Implementation of the work of the Commission is achieved largely, but by no means exclusively, through the expertise contained in its subsidiary bodies which, like the Commission, are intergovernmental in character. These subsidiary bodies of the Commission – there are 26 apart from the Commission's Executive Committee which advises on the general orientation and program of work of the Commission – may be divided into three broad groups; namely, general subject committees, commodity committees, and regional coordinating committees. Most of the subsidiary bodies of the Commission are chaired and hosted by Member governments, which have undertaken this work at their own expense. The governments of Austria, Canada, Denmark, Federal Republic of Germany, France, Hungary, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States of America host 19 of the Commission's subsidiary bodies.

The four Regional Committees have been hosted by Austria (Europe), Ghana (Africa), India and Thailand (Asia), and Mexico (Latin America). Of the other three subsidiary bodies, one is hosted by FAO/WHO and two are hosted by ECE/FAO/WHO. One other committee, to which we shall return later, has yet to find a host government.

The general subject matters considered by the Commission include general principles of the Codex Alimentarius, food additives, pesticide residues, food hygiene, meat hygiene, food labeling, and methods of analysis and sampling. Commodities for which international standards have been or are being elaborated include milk and milk products, fruit juices, quick-frozen foods, cocoa products and chocolate, fats and oils, processed fruits and vegetables, meat, processed meat products, fish and fishery products, foods for special dietary uses, soups and broths, edible ices and natural mineral waters,and cereals and cereal products. Matters being considered by the regional coordinating committees in the developing regions include establishment of a model food law and regulations, ways and means of improving food control services and the consideration, for possible standardization, of products of particular interest to the regions. The African region, for instance, has begun to develop a regional standard for maize.

The Codex Alimentarius also elaborates Codes of Practice which are intended as advisory guidelines for use by governments as they see fit. These include codes of practice for antemortem and postmortem inspection of slaughter animals; codes of hygienic practice covering fresh meat, processed meat products, egg products and poultry processing codes of practice for a range of fresh and canned fish products and the processing and handling of quick-frozen foods. The Commission has expressed the view that these and other international codes of practice adopted by it might provide useful checklists of requirements for national enforcement authorities. They will also be useful as guidelines in countries where new food industries are being established.

Over 140 international food standards covering a wide range of foods and some 16 Codes of Practice and Codes of Hygienic Practice have now been established. All but those which were adopted at the Commission's 12th session in April 1978 have been sent to governments for acceptance and implementation in national legislation. The 13 international standards and two Codes of Practice adopted by the Commission at its 12th session will be published and sent to governments for acceptance in the near future.

The Commission has also adopted a large number of limits for pesticide residues taken on an individual food basis and specifications for the identity and purity of food additives.

At the present time, some 80 member governments have given some measure of acceptance to 114 international Codex standards.

Some of the Codex commodity committees have been long established and several have almost achieved their aim of establishing standards in their particular field. Such committees are usually adjourned until such time as changes in trade or technology justify their reconvening. Changes in trade and technology also cause the Commission to examine proposals for inaugurating new committees. At its 12th session, the Commission decided to establish two new committees, one of which was a Codex committee on vegetable proteins.

CODEX COMMITTEE ON VEGETABLE PROTEINS

Inclusion of vegetable proteins in foods, that is, as replacements for animal and milk proteins in traditional food products, had already been discussed in the Codex Committee on Processed Meat Products. Technology has developed to a point where vegetable protein products, the majority of them developed from soy protein extracts, are now more appealing in taste and texture and are more readily accepted in the diet and can, therefore, be used at higher levels in meat and poultry products.

The Committee had expressed its willingness to include in its future work the use of nonmeat proteins and asked the Commission to outline the course of action that Codex should take with regard to the use of vegetable proteins in combination with meat products.

At its 11th session in April 1976, the Commission decided that a comprehensive study and report should be prepared reviewing the sources – actual and potential (8) – of vegetable proteins, their application in the food supply system, the existing regulatory provisions governing the use of vegetable protein in food, and whether, under Codex criteria for establishing international standards, there was a need for a Codex committee on Vegetable Proteins.

In reviewing national legislation and uses of vegetable proteins, the document concluded that there were still views and interests in the extent to which vegetable proteins could be used and that this was reflected in national legislation. There was, therefore, a need for coordination and international agreement and a case for inaugurating work on international standardization through Codex Alimentarius, which would not only fulfill the purposes of the Commission, but would also contribute to agricultural development and international planning in optimizing available food resources.

In its discussions at its 12th session, the Commission (9) made the following points:

1. Vegetable proteins intended for human food, whether in developed or developing economies, have to meet definite nutritional requirements and be safe to use.
2. Vegetable proteins, to be used as food or food ingredient, have to offer economic incentives to both producer and consumer.
3. Use of vegetable proteins in improving the diets of populations at nutritional risk is of particular economic and social interest when protective foods such as milk, meat and fish are in short supply or are beyond the economic reach of such groups.
4. In most developing countries, edible fats and oils are generally in short availability and supply. Encouragement in the production of oil seeds in such countries offers the additional advantage that proteins of press cakes or extracted oil seed meals can add to the food supply of the country. To achieve this goal, it is necessary that regulatory provisions for safe use of the vegetable proteins be prepared and promulgated.

Because research and development of nonconventional sources of protein and high protein foods was in progress in many member countries of the Commission, there was strong opinion in favor of covering in the terms of reference of a new Codex committee the entire spectrum of vegetable proteins, including those derived from field peas, rapeseed, mustard, sunflower seed, fava beans and proteinaceous sources, such as lucerne and others generally described as nonconventional proteins. Although not specifically mentioned, "other sources" could presumably include proteins of fungal or bacterial origin which eventually may be cleared for human consumption and then may be used in foods in some of the forms of vegetable protein which would be considered by the new committee.

The Commission agreed that a Codex Committee on Vegetable Proteins should be established with the following terms of reference: "to elaborate definitions and worldwide standards for vegetable protein products deriving from soybeans, cottonseed, peanuts, cereals and from other vegetable sources as they come into use for human consumption, and to elaborate guidelines on utilization of such vegetable protein products in the food supply system, on nutritional requirements and safety on labeling and on other aspects as may seem appropriate." Hydrolyzed proteins were excluded from the scope of the Committee's work.

Under the mandate the Committee will be expected to include the following in its work: *definitions* for the basic forms of vegetable protein for use in food preparation; *standards* for these basic forms; *protein quality* (Protein Dispersability Index, available Lysine, Protein Efficiency Ratio/biological value); *microbiological specifications; methods of analysis* for the determination of antinutritional substances and/or toxic substances.

It is also expected that the proposed committee would prepare guidelines for the utilization, nutritional value, safety-in-use and labeling of vegetable proteins which would be of service to national legislators and to Codex commodity committees interested in products containing vegetable proteins. In this respect, although work has already begun in the Codex Committee on Processed Meat Products on the standardization of meat products containing meat extenders, the Commission thought that it would be preferable for that Committee to await the development of guidelines for the use of vegetable proteins by the Codex Committee on Vegetable Proteins before proceeding.

HOSTING OF THE COMMITTEE

Discussions as to which country might host the Codex Committee on Vegetable Proteins are still in progress. Although no formal steps have yet been taken, it seems likely that Canada, a country which is among the foremost in establishing regulations for vegetable and novel sources of proteins and has a vigorous research program directed to the use of vegetable proteins other than soy, will offer to host the new committee.

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