



Emerging problems with food allergens

FOOD ALLERGIES HAVE PROBABLY affected human beings since the dawn of time. Centuries ago, the Roman philosopher, Lucretius, said: “The food of one may be poison to another”. The first well recorded case histories of food-allergic patients appeared in the early part of the twentieth century, but food allergies were largely ignored by the medical community and regulatory authorities until even more recently. Today, they are more widely recognized, particularly in North America, Europe, Japan and Australia.

The prevalence of food allergies and their overall impact are not clearly understood in many parts of the world. However, food allergies most probably affect some individuals in all countries. Since the outcome of inadvertent exposure to the offending food can be extremely serious and even deadly for some food-allergic individuals, the impact of food allergies on public health should be given greater consideration by regulatory authorities than is currently the case.

Introduction and classification

A food sensitivity is an abnormal physiologic response to a particular food. That same food is safe for the vast majority of consumers to ingest. Food sensitivities can be divided into two major categories: food allergies and food intolerances. Many consumers and some medical professionals often refer to any abnormal response to one or more specific foods as a food allergy, regardless of the mechanism involved in the reaction. In fact, food sensitivities can involve several types of mechanisms. There are practical reasons for distinguishing between true food allergies and food intolerances, from both a clinical and a regulatory perspective.

Food allergies are abnormal responses of the immune system to certain food components. The allergens in foods are, typically, naturally occurring proteins. True food allergies can be divided into two further categories: immediate hypersensitivity reactions and delayed hypersensitivity reactions. In immediate hypersensitivity

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reactions, symptoms begin to develop within minutes to an hour or so after ingestion of even minute amounts of the offending food. Immediate hypersensitivity reactions have been noted with more than 170 different foods (Hefle, Nordlee and Taylor, 1996). Basically, any food that contains protein has the potential to elicit allergic sensitization in some individuals. The reactions involved in immediate hypersensitivities can sometimes be quite severe. In contrast, the symptoms associated with delayed hypersensitivity reactions do not begin to appear until 24 hours or more

three major classifications of food intolerances: metabolic food disorders, anaphylactoid reactions and idiosyncratic reactions. For the most part, food intolerances involve less severe manifestations, and affected individuals can frequently tolerate some of the offending food in their diets.

From a practical viewpoint, true food allergies should be distinguished from other types of food sensitivities because they can elicit serious adverse reactions in some individuals and because people with food allergies can tolerate little of the offending food. For example, individuals with milk

in the blood. At this point, the affected individual is sensitized to the food but has not experienced an allergic reaction. On subsequent exposure to the allergenic substance in the offending food, the allergen interacts with the specific IgE antibodies on the surface of the mast cell or basophil, stimulating the release of a host of mediators of the allergic response into the tissues and blood. Although many mediators have been described, histamine is one of the primary mediators responsible for many of the immediate symptoms that occur in such reactions. The interaction of small amounts

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after ingestion of the offending food. The role of delayed hypersensitivity reactions in adverse reactions to foods remains rather poorly defined, with the exception of celiac disease. The symptoms of delayed hypersensitivity reactions do not reach the level of severity involved in the more severe cases of immediate hypersensitivity reactions. However, the level of tolerance to the offending food is also very low for delayed hypersensitivity reactions.

As with true food allergies, food intolerances affect a limited number of individuals. Food intolerances can be defined as any form of food sensitivity that does not involve immunologic mechanisms. There are

allergy can tolerate little milk, as their allergy may involve systemic and sometimes serious reactions. In contrast, lactose intolerance, which results from an enzyme deficiency in the small intestine, involves only gastrointestinal symptoms, and affected individuals can often tolerate appreciable quantities of milk in their diets.

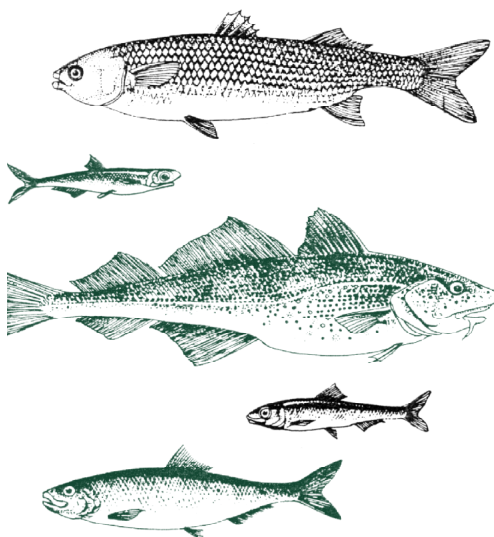
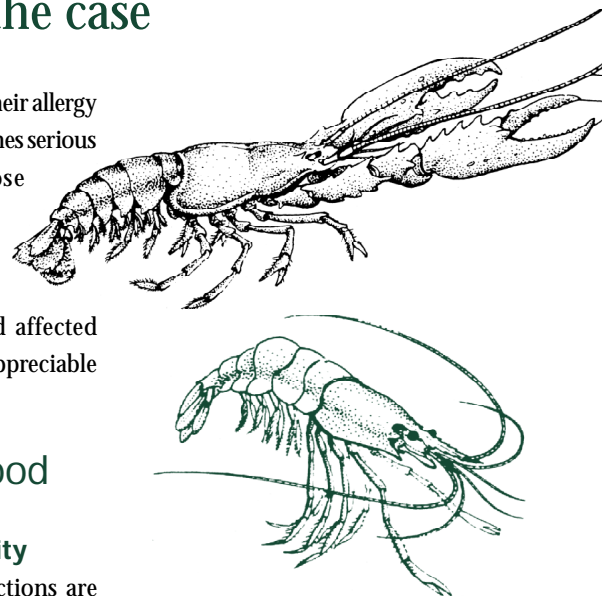
Characteristics of food sensitivities

Immediate hypersensitivity

Immediate hypersensitivity reactions are mediated by a specific class of antibodies known as immunoglobulin E (IgE). Although all humans have low levels of IgE antibodies, only individuals predisposed to the development of allergies produce IgE antibodies that are specific for and recognize certain environmental antigens or allergens. These antigens or allergens are typically proteins; only a few of the many proteins found in nature can act as allergens by stimulating the production of specific IgE antibodies in susceptible individuals. Exposure to food allergens elicits the formation of specific IgE antibodies by the B-cells that exist in many tissues, including the intestinal tract. The IgE antibodies attach to mast cells in various tissues and basophils

of the allergen with the mast cell-bound IgE antibodies triggers the release of massive quantities of mediators. For this reason, ingestion of a small amount of the offending food can elicit an allergic reaction in a sensitive individual.

A wide variety of symptoms, ranging from mild to life-threatening, can be associated with IgE-mediated allergies. Such symptoms can involve the gastrointestinal tract (nausea, vomiting, diarrhoea, abdominal cramping), the skin (urticaria or hives, dermatitis, eczema, angioedema, pruritis or itching) or the respiratory tract (rhinitis, asthma, laryngeal oedema). Individuals with food allergies usually suffer from just a few of the many possible



symptoms. Gastrointestinal symptoms are fairly common because foods are ingested and the gastrointestinal tract is the initial organ of insult. Cutaneous responses are also common manifestations of food allergies. Respiratory reactions are less common with food allergies than with environmental allergies, such as those

The most frightening symptom associated with food allergies is anaphylactic shock. Anaphylactic shock involves the gastrointestinal tract, the skin, the respiratory tract and the cardiovascular system, with symptoms often occurring in combination and developing rapidly. Severe hypotension can occur and, without

diagnosis and misconceptions and misdiagnosis by some physicians.

Most IgE-mediated food allergies are attributable to a small group of eight foods or food groups, sometimes referred to as “the big eight”: cows’ milk, eggs, fish, crustaceans, peanuts, soybeans, tree nuts and wheat. It is estimated that these foods

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involving pollen or animal dander, in which cases the allergens are primarily inhaled. However, asthma is among the more severe symptoms associated with food allergies, although food-induced asthma is relatively rare.

Perhaps the most common manifestation of food allergy is the so-called oral allergy syndrome, which is so mild that it is sometimes ignored even by its sufferers. Oral allergy syndrome is confined to symptoms in the oropharyngeal area, including itching, hives and swelling. It is most frequently associated with the ingestion of fresh fruits and vegetables. Because the allergens in these foods are inactivated on contact with stomach acid, systemic reactions are rarely encountered.

proper treatment, death can ensue within minutes of ingestion of the offending food. Only a few people with food allergies are at risk of such serious consequences, but among such people numerous deaths have resulted from inadvertent exposure to the offending food.

IgE-mediated food allergies affect between 1 and 2 percent of the total population (Taylor, Hefle and Munoz-Furlong, 1999). Infants and young children are more commonly affected than other age groups. Among infants under three years of age, the prevalence of food allergies appears to be in the range of 5 to 8 percent (Sampson and McCaskill, 1985). In some countries, a much higher percentage of the population believes that they have food allergies because of self-diagnosis, parental

or food groups account for more than 90 percent of all food allergies in the United States. These foods are listed as the most common causes of food allergy worldwide (FAO, 1995). Several collective terms are used to describe food groups. For the purposes of food allergies, crustaceans include shrimps, prawns, crab, lobster and crayfish. Fish refers to all species of finfish, both freshwater and saltwater. Tree nuts comprise almonds, walnuts, pecans, cashews, Brazil nuts, hazelnuts, pistachios, pine nuts, macadamia nuts, chestnuts and hickory nuts. Overall, more than 170 foods have been documented as causing food allergies. Several additional foods are worth mentioning because, although they cause allergies less frequently, they can cause severe reactions. These foods include molluscan shellfish (clams, oysters, etc.), sesame seeds, poppy seeds, sunflower seeds, cottonseed and certain other legumes (various types of dry beans, peas, lentils, lupin and garbanzo beans). The allergens involved in IgE-mediated food allergies are specific naturally occurring proteins that exist in that particular food. Only one or a few of the many proteins found in each of these foods is capable of acting as an allergen.

The prevalence of allergies to specific foods is not precisely known. Cows’ milk allergy is most common in infancy and is often outgrown. In several countries, studies indicated that the prevalence of cows’ milk allergy among young infants is about 2 percent (Hill *et al.*, 1997; Host and Halcken, 1990). Recent studies have shown that the prevalence of peanut allergy may



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be as high as 1 percent in the United States and 0.5 percent in the United Kingdom (Emmett *et al.*, 1999; Sicherer *et al.*, 1999). The prevalence of peanut allergy may be lower among United Kingdom consumers because, until recently, they did not eat peanuts as frequently as North Americans. However, peanut consumption has risen in the United Kingdom, and peanut allergy also appears to be increasing in prevalence.

Although the symptoms of food allergies can be treated with certain drugs, including antihistamines and epinephrine, the only prophylactic approach is the specific-avoidance diet. For example, those who are allergic to peanuts must avoid ingesting peanuts. However, the construction and implementation of safe and effective avoidance diets is often a challenge. Individuals must avoid all forms of the offending food that contain protein because the allergens are found in the protein fraction. For example, cows' milk-allergic individuals need to avoid all dairy products and most dairy ingredients such as casein and whey. The ingredient statement on the label of packaged foods provides critical information to food-allergic consumers.

Individuals with IgE-mediated allergic reactions to foods experience symptoms on exposure to small amounts of the offending food. The interaction of a small amount of allergen with IgE antibodies on the surface of the mast cell releases massive quantities of mediators, which accounts for the low degree of tolerance. The precise threshold doses for allergenic foods are unknown, exposure to as little as 1 to 2 mg of the offending food will elicit allergic reactions in some sensitive individuals. The severity of the symptoms is likely to increase as the dose of exposure increases.

Despite careful reading of food ingredient statements, food-allergic individuals can suffer allergic reactions as the result of the "hidden" presence of the offending food in the product. The use of the 25 percent rule allows allergenic food components to be present in unlabelled food products at rather significant levels in comparison with the minimal threshold



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dose for reactions. Occasionally, food ingredients are derived from allergenic source materials that may contain residues of the proteinaceous allergens from those sources. Furthermore, ingredients are often listed on the ingredient statement under collective terms, and the source of the ingredient is not revealed to the consumer. Examples include flavours, spices, oils, starch and lecithin. These ingredients, even when derived from allergenic sources, do not always contain residues of the allergens. For example, highly refined vegetable oils including peanut and soybean oils, contain extraordinarily low amounts of proteins from the source material and do not elicit allergic reactions in sensitive individuals. The unexpected residues of allergenic foods that occasionally occur in other foods are the result of formulation mistakes, packaging errors, unwise use of rework or inadequate cleaning of shared equipment. Although such errors occur infrequently, they can have serious consequences.

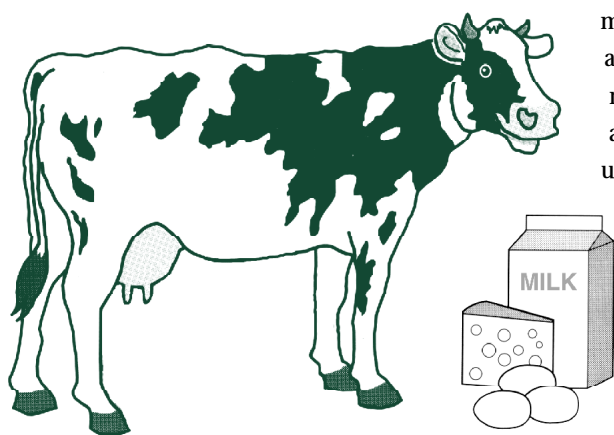
Because of the severity of symptoms involved in IgE-mediated food allergies in some individuals and because of the likelihood of adverse reactions from ingestion of trace amounts of these allergenic foods, IgE-mediated food allergies merit the highest degree of attention from regulatory authorities.

Delayed hypersensitivity

Delayed hypersensitivity reactions are mediated by tissue-bound immune cells. The only well described example of a delayed hypersensitivity reaction to foods is celiac disease. Celiac disease, also known as celiac sprue or gluten-sensitive enteropathy, occurs in certain individuals following the ingestion of wheat, rye, barley, related grains (notably spelt, kamut and triticale) and, perhaps, oats. Celiac disease results from an abnormal response of the T lymphocytes in the small intestine to particular proteins (gluten from wheat and related proteins from the other grains) found in these cereal grains. An inflammatory process ensues and the absorptive epithelium of the small intestine becomes damaged. The tissue damage is localized to the small intestine but the disruption of the absorptive process affects many other physiological functions.

The symptoms of celiac disease are reflective of a malabsorption syndrome and include diarrhoea, bloating, weight loss, anaemia, bone pain, chronic fatigue, weakness, muscle cramps and, in children, growth retardation and failure to gain weight. Considerable variability exists in the severity of celiac disease among patients with the illness. Some celiac sufferers experience few symptoms and latent, asymptomatic celiac disease has been described, along with concern that the latent illness may progress to the symptomatic illness if not recognized and treated. Symptoms develop from 24 to 72 hours after ingestion of the offending food, because the intestinal damage caused by the inflammatory process takes some time to occur. The symptoms of celiac disease are likely to persist for some days, even with avoidance of the offending food, because the intestinal damage must be repaired by the body before it can return to normal functioning. Deaths resulting directly from the acute phase of celiac disease have not been reported. However, patients with celiac disease are 50 to 100 times more likely to develop malignant lymphomas (Ferguson, 1997). A lifelong avoidance of the offending foods may be necessary to lessen this chronic risk.

The prevalence of celiac disease appears to vary among countries. Differences may be related, in part, to the method of diagnosis used and the likelihood of recognition of latent celiac disease. In some European countries and regions prevalence of the disease approaches one in 250 persons, while in the United States it appears to be approximately one in 2 000 to 3 000 persons (Troncone, Greco and Auricchio, 1996; Kasarda, 1978). Celiac disease is an inherited trait that occurs most commonly in European populations and their descendants in other countries. It rarely occurs in Asian or African populations.



The treatment for celiac disease involves the total avoidance of wheat, rye, barley, oats and all products made from these grains. A gluten-free diet results in significant improvement of the intestinal mucosa and its absorptive function. Celiac sufferers are thought to react to ingestion of trace amounts of the offending food, although the exact threshold dose has not been established. As with IgE-mediated food allergies, the cereal grains involved in celiac disease can be "hidden" in foods as a result of the lack of source labelling of certain ingredients, the failure to declare certain ingredients based on such regulations such as the 25 percent rule, and various inadvertent errors made by food manufacturers.

Celiac disease also merits serious attention from regulatory authorities. Although the symptoms are less serious than are those of IgE-mediated food allergies, the morbidity of this illness is considerable unless strict adherence to a gluten-free diet can be achieved.

Metabolic food disorders

Metabolic food disorders result from defects in the ability to metabolize a food component. Metabolic food disorders are often genetically acquired defects. The best examples of food-related metabolic food disorders are lactose intolerance and favism.

Lactose intolerance is caused by an inherited deficiency of the enzyme, lactase or β -galactosidase, in the intestinal mucosa. As a result, lactose, a disaccharide and the primary sugar in milk and milk products, cannot be metabolized into constituent

monosaccharides, galactose and glucose. While monosaccharides can be absorbed by the intestine and used by the body for energy, undigested lactose cannot be absorbed by the small intestine and passes into the colon, where bacteria metabolize it into carbon dioxide (CO₂) and

water (H₂O). The symptoms characteristic of lactose intolerance include bloating, flatulence, abdominal cramping and frothy diarrhoea. Lactose intolerance affects a large number of people worldwide. It is more frequent among certain ethnic groups than others. The symptoms of lactose intolerance are rarely present at birth, but can begin to develop in childhood as the level of activity of intestinal lactase decreases. The illness is most prevalent among older individuals within the population. The usual treatment for lactose intolerance is the avoidance of dairy products containing lactose. However, most individuals with lactose intolerance can tolerate some lactose in their diets because some activity of intestinal lactase remains. Often, they can ingest several ounces of milk without developing symptoms. Thus, the development of avoidance diets for individuals with lactose intolerance is simplified because exposure to very small amounts of lactose resulting from labelling

practices or industry errors is unlikely to elicit adverse reactions. Because of the mild symptoms involved in lactose intolerance and the demonstrated tolerance for small amounts of lactose among sensitive individuals, regulatory authorities do not need to be as vigilant about this particular type of food sensitivity.

Favism is an intolerance to broad beans (also known as fava beans) or the inhalation of pollen from the *Vicia faba* plant. Favism affects individuals with an inherited deficiency of erythrocyte glucose-6-phosphate dehydrogenase (G6PDH), which is a critical enzyme in the prevention of oxidative damage to erythrocyte membranes. Broad beans contain several naturally occurring oxidants, including vicine and convicine, that are capable of damaging erythrocyte membranes in G6PDH-deficient individuals. The result is acute haemolytic anaemia with pallor, fatigue, dyspnea, nausea, abdominal and/or back pain, fever and chills. In rare cases, more serious symptoms occur such as haemoglobinuria, jaundice and renal failure. The onset time is quite rapid, usually five to 24 hours after ingestion. Favism is a self-limiting illness with a prompt and spontaneous recovery, assuming no further exposure. G6PDH-deficiency is an inherited trait occurring very commonly among Oriental and Jewish communities in Israel, Sardinians, Cypriot Greeks, African-Americans and certain African populations. The trait is virtually non-existent in northern European populations, native Americans and Eskimos. G6PDH deficiency affects an estimated 100 million individuals worldwide (Mager, Chevion and Glaser, 1980). However, many of these individuals are never exposed to broad beans. Favism is most prevalent when the *V. faba* plant is in bloom, causing elevated levels of airborne pollen, and when broad beans are available in the market. However, in many parts of the world, the beans are not commonly consumed. Avoidance is the primary strategy for treatment of favism. The threshold dose for broad beans among sensitive individuals is unknown.

Regulatory attention to favism is probably not necessary except where broad beans are routinely available in the marketplace.

Anaphylactoid reactions

Anaphylactoid reactions are caused by substances in foods that bring about the non-immunologic release of chemical mediators from mast cells. While the mediators are the same as those in IgE-mediated allergies, the mechanism does not involve IgE antibodies. Only circumstantial evidence exists to support the involvement of this mechanism in food sensitivities. Supposedly, some food-borne chemicals are able to destabilize mast cell membranes and allow the spontaneous release of histamine and other mediators. However, none of these histamine-releasing substances in foods have been identified.

Idiosyncratic reactions

Idiosyncratic reactions are adverse reactions to food experienced by certain individuals through an unknown mechanism. The cause-and-effect relationship between specific foods and food ingredients and idiosyncratic illnesses is often poorly defined. While numerous mechanisms could occur, none have been proven. In a few cases, the role of foods in a specific type of idiosyncratic reaction is well documented.

Sulphite-induced asthma is a good example of a well established food idiosyncrasy. The role of sulphites in the causation of asthma in a small proportion of the asthmatic population (an estimated 1 to 2 percent of all asthmatics) has been well documented by double-blind, placebo-controlled clinical trials (Bush *et al.*, 1986). However, the mechanism of the illness remains unknown. While some reports allege a relationship between other symptoms and ingestion of sulphites, this has not been proven. Sulphites are common food additives used for a number of different technical functions. Exposure to sulphites can occur through a number of common foods, including wines, corn starch, dehydrated fruits and vegetables.

Sulphite-sensitive individuals must avoid certain sulphited foods and beverages, as the adverse reaction can be serious and even fatal. However, sulphite-sensitive individuals can tolerate small amounts of sulphites in their diets, although the threshold for sulphites varies from one person to another. In the United States and several other countries, regulatory authorities have mandated the labelling of sulphites when residual levels of sulphur dioxide (SO₂) exceed 10 parts per million (Taylor, Bush and Nordlee, 1997). This labelling strategy appears to protect the sulphite-sensitive segment of the population.

Recommendations

History of past actions

Allergens in foods have been considered by the Codex Committee on Food Labelling (CCFL) since 1993 (Ref: CX/FL 93/5). A FAO Technical Consultation on Food Allergies, held in Rome in 1995, was asked, *inter alia*, to “provide guidance on the development of science-based criteria to determine which foods or food products should be placed on a list of those foods or food products whose presence should always be declared in the list of ingredients on a food label, because of their allergenic properties”.

The revised list of foods and ingredients that are known to cause hypersensitivity and should always be declared are shown in the Box.

CCFL has been debating the 25 percent rule and considering whether to recommend a 5 percent rule in its place. Such a recommendation was adopted by CAC in June 1999. During the CCFL debate, further questions have arisen that require advice from JECFA. As a result, WHO convened a Food Allergens Labelling Panel in Geneva in February 1999 to provide guidance to JECFA on certain specific issues related to food allergies and intolerances. With respect to criteria for the addition of foodstuffs to the Codex list of common allergenic foods, the panel recommended the criteria to be applied.

The existence of a credible cause-and-effect relationship needs to be proved, on the basis of positive double-blind, placebo-controlled food challenge or unequivocal reports of reactions with typical features of severe allergic or intolerance reactions. Reports should be made of severe systemic reactions following exposure to the foodstuff.

Whereas the panel recognized that the ideal criterion would be prevalence data in children and adults, supported by appropriate clinical studies, i.e. a double-blind, placebo-controlled food challenge from the general population of several countries, it noted that currently such information is only available for infants, and is not available at all in some countries, for some foodstuffs or, in most cases, for adults. As an alternative, the panel agreed that the use of available data (e.g.

Common allergenic foods

Foods and ingredients that are known to cause hypersensitivity should always be declared. These include:

- cereals containing gluten, i.e. wheat, rye, barley, oats and spelt, their hybridized strains and products of these;
- crustacea and products of these;
- eggs and egg products;
- fish and fish products;
- peanuts, soybeans and products of these;
- milk and milk products (lactose included);

- tree nuts and nut products;
- sulphites in concentrations of 10 mg per kilogram or more.

This list was adopted as a final text by the Codex Alimentarius Commission (CAC) in June 1999, with the understanding that future additions and/or deletions will be considered by CCFL, taking into account advice received from the Joint FAO/World Health Organization (WHO) Expert Committee on Food Additives (JECFA).

comparative prevalence of the specific food allergy in groups of allergy patients from several countries, ideally backed up by a double-blind, placebo-controlled food challenge) would be appropriate.

The panel recognized that the application of these criteria would be reliant on expert advice. Such advice would best be provided by a body that, because of geographical variation in food allergies and diets, should be constituted to have representation from a variety of disciplines and global regions.

The panel discussed the list adopted by CCFL, which included not only allergenic foods but also “products of these”. Whether this definition is too broad and includes products that are not allergenic because they do not contain sufficient amounts of allergenic proteins to elicit a reaction was discussed. However, with the current available data, it was not possible to set a limit on the amount of protein necessary to elicit an allergic reaction. The panel recommended that products of allergenic foods on the CCFL list must always be labelled as such unless they are included in a list of products that are excluded from the need for labelling of the food source.

Criteria for the entry of a product on such a list are:

- evidence that a clinical study using double-blind, placebo-controlled food challenge has confirmed that the specific product does not elicit allergic reaction in a group of patients with clinical allergy to the parent foodstuff;
- specifications for the product and its manufacturing process that demonstrate the process’s ability to yield a consistently safe product.

To the panel’s knowledge, only two products may currently fulfil these criteria – highly refined peanut and soybean oils. The panel recommended that these two products be reviewed by JECFA. JECFA debated the recommendations and made an assessment of the allergenicity of highly refined peanut and soybean oils at its meeting in the summer of 1999 (WHO, 2000).

Recent recommendations

FAO, WHO, the World Trade Organization (WTO) and governments must continue to recognize the importance of food allergies and intolerances to the health and well-being of a small but significant proportion of the consuming public. Clearly, labelling is the key to the implementation of safe and effective avoidance diets by individuals with food allergies and intolerances. Government regulatory agencies must assure that labels provide the information that individuals seek and need.

Governments should:

- adopt the list of most common allergenic foods as defined by CAC and modify labelling regulations to assure that allergenic foods and their products shall always be declared when present in packaged foods;
- exclude highly refined peanut and soybean oils from the labelling requirements because these two products do not contain sufficient amounts of protein to elicit allergic reactions;
- support the CAC adoption that modifies the 25 percent rule to a 5 percent rule, and then adopt the new rule.

With respect to FAO, WHO, WTO and governments, an expert subcommittee or panel on food allergies and intolerances should be constituted to provide guidance to JECFA on such issues. Mechanisms should be developed to provide guidance on the addition of specific foods or food ingredients to the Codex list of common allergenic foods and to provide guidance on which products could be excluded from source labelling. Expert judgement will be required to determine if the scientific basis exists to allow the exclusion of “products of these” from the labelling criteria. Several existing ingredients might be considered for such exclusions, including peanut oil, soybean oil, butter, butterfat and butter oil (from milk), lysozyme (from eggs), fish gelatin, various tree nut oils and chitin (from crustacea).

Highly refined peanut and soybean oils should be excluded from the source

labelling provisions. Sufficient data already exist to support this recommendation.

The 25 percent rule should be abolished in favour of labelling regulations that mandate the declaration of intentionally added ingredients, with the exception of several broad collective categories such as flavours, spices, starch and oils. The adopted 5 percent rule is not sufficient to protect food-allergic individuals. Even if the foods and ingredients from commonly allergenic sources (the Codex list) are always labelled, there are over 160 other known allergenic foods. While allergies to these foods are not sufficiently common to be placed on the Codex list, smaller numbers of consumers do wish to avoid these foods owing to allergic sensitization.

CCFL may wish to consider making recommendations with respect to the use of precautionary labelling. In several countries (e.g. Canada, the United Kingdom) there is already precautionary labelling on foods where manufacturing processes may occasionally lead to the presence of undeclared residues of allergenic foods, for example, from use of shared equipment or rework practices. Since such manufacturing practices are widespread, the use of precautionary labelling can affect many packaged food products, and numerous foods may be removed from the diets of food-allergic individuals. Some of these dietary restrictions may be unnecessary because the food does not contain sufficient residues of the allergens to elicit reactions in sensitive consumers. In addition, many forms of precautionary labelling statements have appeared on packages. Examples include: “may contain”, “may contain nut traces”, “manufactured on the same equipment as”, “manufactured in the same facility as”. A greater degree of uniformity in these statements might prevent some consumer confusion.

The establishment of an international collaborating centre on food allergies and intolerances that could accumulate and organize published information on food allergies and intolerances should be

considered. The centre could serve as a resource for experts and governments seeking information on specific types of food allergies. The Food Allergy Research and Resource Programme at the University of Nebraska, the United States, has already established an extensive computerized database of existing scientific and medical literature on food allergies and intolerances.

Future issues

The entire issue of food allergies and intolerances has emerged recently and many of the recommendations outlined above have yet to be fully implemented. Several new factors are clearly emerging. Precautionary labelling is one such issue: the volume of global trade in packaged foods and the lack of uniformity in precautionary labelling statements among countries certainly imply that FAO and WHO may become involved in this.

Another emerging issue relates to genetically modified foods. Genetically modified foods usually contain a few proteins that are novel in comparison with the traditional food from which they were derived. There is certainly some possibility that one or more of these novel proteins could be or become food allergens. This has been widely recognized and was addressed during the 1996 FAO/WHO Expert Consultation on Biotechnology and Food Safety (FAO, 1996). However, assessment of the potential allergenicity of genetically modified foods continues to be refined and debated.

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Emerging problems with food allergies

Until recently, food allergies were largely ignored by the medical community and regulatory authorities. The prevalence of food allergies and their overall impact are not clearly understood in many parts of the world, although such allergies probably affect a number of individuals in all countries. Some allergies can be extremely serious and even deadly for some individuals and they merit regulatory attention.

Food sensitivities can be divided into two major categories: food allergies, which are abnormal responses of the immune system to certain food components; and food intolerances, which are any form of food sensitivity that does not involve immunologic mechanisms. The distinctions have practical implications from both a clinical and a regulatory perspective.

Many food allergies are attributable to a small group of eight foods or food groups: cows' milk, eggs, fish, crustaceans, peanuts, soybeans, tree nuts and wheat. More than 170 foods have been documented to cause food allergies.

For susceptible individuals, the only way to prevent food allergies is to avoid specific foods. The ingredient statement on the label of packaged foods provides critical information to food-allergic consumers. The Codex Committee on Food Labelling has considered allergens since 1993. Last year, the Codex Alimentarius Commission (CAC) adopted a list of foods and ingredients that are known to cause hypersensitivity and should always be declared on labels. These are: cereals containing gluten, i.e. wheat, rye, barley, oats, spelt, or their hybridized strains and products of these; crustacea and products of these; egg and egg products; fish and fish products; peanuts, soybeans and products of these; milk and milk products (including lactose); tree nuts and nut products; and sulphites in concentrations of 10 mg per kilogram or more. CAC also adopted the recommendation of the 5 percent rule.

FAO, the World Health Organization, the World Trade Organization and governments must continue to recognize the importance of food allergies and intolerances to the health and well-being of a small but significant proportion of the consuming public. Several new issues are emerging, such as precautionary labelling and the potential allergenicity of genetically modified foods.

Apparition de problèmes liés aux allergies alimentaires

Il y a peu de temps encore, les allergies alimentaires étaient largement ignorées par le milieu médical et les instances de réglementation. Dans beaucoup de régions du monde, la prévalence des allergies alimentaires et leur incidence globale sont mal connues, bien que les allergies concernent probablement un certain nombre de personnes dans tous les pays. Certaines allergies peuvent être extrêmement graves, voire mortelles pour quelques-uns; elles méritent donc l'attention des autorités.

Les sensibilités aux aliments se répartissent en deux grandes catégories: les allergies alimentaires, qui sont des réponses anormales du système immunitaire à certains composants des produits alimentaires; et les intolérances alimentaires, qui sont toutes les formes de sensibilité aux aliments dans lesquelles les mécanismes immunologiques n'interviennent pas. Ces distinctions ont des conséquences pratiques tant du point de vue clinique que sous l'angle de la réglementation. Beaucoup d'allergies alimentaires sont attribuables à un ensemble de huit aliments ou groupes d'aliments: lait de vache, œufs, poisson, crustacés, arachides, soja, fruits à coque et blé. On a pu démontrer que plus de 170 aliments provoquent des allergies.

Pour les personnes concernées, la seule façon d'éviter les allergies alimentaires est d'éviter les aliments en cause. La liste des ingrédients sur l'étiquette des emballages fournit des informations cruciales au consommateur souffrant d'allergie alimentaire. Le Comité du Codex sur l'étiquetage des denrées alimentaires étudie les allergènes depuis 1993. L'an dernier, la Commission du Codex Alimentarius a dressé une liste des aliments et des ingrédients qui peuvent provoquer une hypersensibilité et doivent toujours être spécifiés sur l'étiquette, à savoir: les céréales contenant du gluten (blé, seigle, orge, avoine, épeautre, ou leurs souches hybrides et les produits dérivés); les crustacés et les produits dérivés; les œufs et les produits dérivés; le poisson et les produits dérivés; les arachides; le soja et les produits dérivés; le lait et les produits laitiers (y compris le lactose); les fruits à coque et les produits dérivés; et les sulfites en concentration égale ou supérieure à 10 mg/kg. La Commission du Codex Alimentarius a également adopté une recommandation concernant la règle des 5 pour cent.

La FAO, l'Organisation mondiale de la santé, l'Organisation mondiale du commerce et les gouvernements doivent continuer à reconnaître l'importance des allergies et des intolérances alimentaires pour la santé et le bien-être d'une part faible mais significative des consommateurs. Plusieurs questions nouvelles se posent, comme celle de l'étiquetage de précaution et celle du pouvoir allergisant potentiel des aliments génétiquement modifiés.

Problemas emergentes de los alérgenos alimentarios

Hasta hace poco tiempo la comunidad médica y las autoridades reglamentarias ignoraban, en buena medida, las alergias a alimentos. En muchas partes del mundo no se conoce a fondo la prevalencia de alergias alimentarias y sus efectos globales, aunque es probable que en todos los países exista un cierto número de personas afectadas. Ciertas alergias pueden ser sumamente graves e incluso resultar mortales para algunos individuos, por lo que merecen una adecuada atención.

Las sensibilidades a alimentos pueden dividirse en dos grandes categorías: las alergias, que son respuestas anormales del sistema inmunitario a determinados componentes de los alimentos, las intolerancias, es decir, todas aquellas formas de sensibilidad a determinados alimentos en las que no intervienen mecanismos inmunológicos. Esa distinción tiene consecuencias prácticas tanto desde el punto de vista clínico como reglamentario.

Muchas alergias alimentarias pueden imputarse a un grupo de sólo ocho alimentos o grupos de alimentos: leche de vaca, huevos, pescado, crustáceos, cacahuetes (maní), soja, nueces y trigo. Existe documentación sobre más de 170 alimentos cuyo consumo provoca alergias.

Los individuos vulnerables sólo pueden prevenir las alergias alimentarias evitando ciertos alimentos. Por consiguiente, la declaración de ingredientes que figura en la etiqueta de los alimentos envasados proporciona una información esencial para los consumidores alérgicos a alimentos. El Comité del Codex sobre Etiquetado de los Alimentos examina los alérgenos desde 1993. En 1999, la Comisión del Codex Alimentarius adoptó una lista de alimentos e ingredientes que se sabe provocan hipersensibilidad, por lo que siempre deben declararse. Éstos son: cereales que contienen gluten, como trigo, centeno, cebada, avena, espelta y sus variedades híbridas y subproductos; crustáceos y productos de crustáceos; huevos y productos a base de huevos; pescado y productos pesqueros; cacahuetes (maní), soja, y sus productos; leche y productos lácteos (incluida la lactosa); nueces y sus productos; y sulfitos en concentraciones de 10mg/kg o superiores. Asimismo la Comisión del Codex Alimentarius adoptó la recomendación de utilizar la regla de 5 por ciento. La FAO, la Organización Mundial de la Salud, la Organización Mundial del Comercio y los gobiernos deben seguir reconociendo la importancia de las alergias e intolerancias alimentarias para la salud y el bienestar de una proporción pequeña, pero significativa, del público consumidor. En este campo van surgiendo diversas cuestiones nuevas, como el etiquetado precautorio y la alergenidad potencial de los alimentos modificados genéticamente.