

FACTFILE: GCE NUTRITION & FOOD SCIENCE

ALLERGENS



Allergens

Learning outcomes

- Discuss the possible theories influencing the increased incidence of food allergies.



Course content

1. What is a food allergen?

According to Allergy UK a food allergy is caused when the body mistakenly makes an antibody (IgE) to 'fight off' a specific food. When the food is next eaten (or sometimes is just in contact with the skin) it triggers an immune system response which results in the release of histamine and other substances in the body. These cause various symptoms, depending on where in the body they are released. For example:

- in the gut they may cause abdominal pain, vomiting and diarrhoea
- in the skin, itching and swelling (rash or nettle rash)
- in the upper airways, a runny nose or sneezing
- in the lower airways, a wheeze or cough.

Very rarely the immune system chemicals are released throughout the body, causing a 'systemic' reaction (such as anaphylaxis).

2. Common foods which cause food allergies

Certain foods have been identified as causing allergic reactions in different people. The main list of common foods associated with allergic reactions is listed below:

- cereals containing gluten – wheat, rye, barley, oats, spelt and kamut
- molluscs – clams, mussels, whelks, oysters, snails and squid
- crustaceans
- fish
- milk
- eggs
- soybeans
- lupin
- celery
- mustard
- sesame seeds
- peanuts
- nuts – almond, hazelnut, walnut, cashew, pecan, brazil, pistachio and macadamia (Queensland) nuts
- food preservatives – sulphur dioxide and sulphites

3. Why is the incidence of food allergies rising?

There has been a dramatic rise in the number of people suffering from food allergies in the last number of years with Allergy UK suggesting that as much as 30% of the population could suffer from a food allergy in their life time. This increase in sufferers has been due to a number of different revelations and the main ones are outlined below:

Genetics

- Children born into families where allergies already exist have a higher than average chance of developing allergies themselves.
- In the UK today, children have a 1 in 5 predisposition of developing an allergy - the risk is doubled if one parent has an allergy (particularly if that parent is the mother).
- If both parents have allergies, the risk is increased to 60-80%. This increased tendency for individuals to develop allergies because of their genes is known as being atopic.

Changes in the foods consumers eat

- The modern diet includes more processed foods and less fruit and vegetables. The increase in food allergy might be due to more allergenic foods, such as peanut, being present in our diet.
- Reduced levels of nutrients, in particular vitamin D, omega-3 fatty acids (in fish) and antioxidants, might contribute to the development of allergy.
- Research has suggested humans lack vitamin D due to spending more time indoors and then using more sunscreen when outside. Vitamin D deficiency has jumped in the past 15 or 20 years along with a notable increase in allergies reported.
- Babies getting too much folate. It is thought that supplementing the diet of pregnant woman with folic acid, while protecting against spinal cord defects, may increase the chance of the baby developing a food allergy.

Allergen exposure

Early advice suggested that allergenic foods should be avoided in childhood. This has been revised and it is now recommended to introduce allergenic foods when weaning. However, parents are still fearful and continue to avoid allergenic foods which could inadvertently lead to increasing prevalence of food allergies.

Environmental factors:

- Pollutants can exacerbate an existing airway allergy.
- Declining exposure to bacteria and other micro-organisms in the environment can increase the risk of developing an allergen.
- Environmental factors: scientists have found that a child who grows up on a farm, or lives in a family with at least one other sibling, is less likely to develop allergies. Interestingly, if they do, however, they are more likely to get asthma as well.
- Inadequate exposure to environmental micro-organisms may therefore result in the immune system of atopic children developing a tendency towards allergy.
- The continued use of vaccinations is, of course, essential to protect the health of children and the nation. The cost of this may be the reduction in the pressure placed on immune system to mount a strong immune response against infectious agents. This may be one of the factors why many people's immune systems are now reacting to allergens.

The hygiene hypothesis

- The immune system needs to come into contact with a variety of micro-organisms and bacteria while it is developing at the infant stage, so it responds appropriately later in life. Consumers now live in an environment however where they use cleaners containing anti-microbial agents frequently and food preparation is more hygienic than ever.

? Revision Question

- 1 Discuss the reasons for the increase in reported allergies.

