Rapid risk assessment on the risk of allergic reactions in UK consumers if sunflower oil is substituted with certain vegetable oils

Area of research interest: Food hypersensitivity

Background

The war in Ukraine has led to industry reporting risks to disruption of the food supply chain relating to sunflower oil. The majority of the UK's sunflower oil supply comes from Ukraine and Russia.

Food businesses are reporting that UK supplies of sunflower oil are likely to be exhausted in a few weeks with some businesses already experiencing severe difficulties.

Possible mitigations could include the use of alternative commercially available food-grade oils, such as palm oil, soybean oil, or coconut oil as a substitute for sunflower oil.

It is highly unlikely that industry will be able to re-label products as quickly as oil substitutions may occur, which could lead to the presence of mislabelled products on the market.

Summary

This rapid risk assessment considers the risk in terms of allergy to UK consumers if sunflower oil is substituted in food with certain fully refined food grade vegetable oils (i.e. palm oil, soybean oil or coconut oil) or with unrefined coconut oil without these oils being labelled on the packaging.

According to FEDIOL (the edible oil refiners European trade association), the purpose of refining vegetable oils is to produce a product that meets food safety, customer and quality requirements. Refining has become increasingly critical for the removal of compounds and contaminants, including allergenic proteins.

There are two main types of refining, depending on the type of oil, seed, bean or nut to refine. These are physical refining and chemical refining.

Both processes involve several steps that are undertaken in line with Hazard Analysis and Critical Control Point (HACCP) principles, so as to achieve a refined vegetable oil meeting legal requirements. Fully-refined vegetable oils are described as edible neutralised (alkali refined) bleached and deodorised (N/RBD) oils.

Crude vegetable oils (also known as unrefined) are instead obtained by expelling or extraction. These oils contain substances and trace components, which are undesirable for taste, stability, appearance and odour. These trace components include proteins from the seed, bean or nut used to produce the oil, some of which can be allergenic.

Fully-refined soybean oil

Soybeans and products thereof are recognised as a common cause of food allergies and therefore are one of the 14 allergens included on the EU 1169/2011 Annex II list of allergens which must be declared on food labels.

However, fully-refined soybean oil is exempt from the allergen labelling legislation. Based on the data available from published clinical studies and the EFSA Scientific Opinion on fully-refined soybean oil, we consider:

- the **frequency of allergic reactions to fully-refined soybean oil to be negligible** (i.e. so rare that it does not merit to be considered)
- the **severity of illness in relation to allergic reactions to fully-refined soybean oil to be negligible** (i.e. no effects or so mild they do not merit to be considered)
- the **level of uncertainty to be low** (i.e. there are solid and complete data available).

Fully-refined palm oil

Based on the lack of clinically confirmed reports of adverse reactions to palm oil in the UK population, and lack of evidence of severe illness or deaths, we consider:

- the **frequency of allergic reactions to fully-refined palm oil to be very low** (i.e. very rare but cannot be excluded).
- the **severity of illness in relation to allergic reactions to fully-refined palm oil to be negligible** (i.e. no effects or so mild they do not merit to be considered).

Based on the data available from the Patterns and Prevalence of Adult Food Allergy (PAFA) and NHS Data project and information gathered from allergy specialists, we consider the **level of uncertainty to be medium** (i.e. there are some but no complete data available).

Coconut oil

Based on the lack of clinically confirmed adverse reports of reactions to coconut oil in the UK population, and lack of evidence of severe illness or deaths, we consider:

- the **frequency of allergic reactions to fully-refined coconut oil to be very low** (i.e. very rare but cannot be excluded).
- the **severity of illness in relation to allergic reactions to fully-refined coconut oil to be negligible** (i.e. no effects or so mild they do not merit to be considered).

Based on the data available from the PAFA and NHS Data project and information gathered from allergy specialists, we consider the level of uncertainty to be medium (i.e. there are some but no complete data available).

The risk associated with unrefined coconut oil to sensitive individuals is likely to be higher than for fully-refined coconut oil because it will contain more protein. However, we are not able to estimate the extent to which it will be of greater risk due to limitations in the available data.

This rapid risk assessment may be followed up with further work subject to data availability.

Key uncertainties

The key sources of uncertainty for fully-refined palm oil and refined or unrefined coconut oil are:

- the degree to which the refining process removes proteins from fully refined palm oil and fully refined coconut oil and the amount of protein that may remain in these oils

- the extent to which industry intends to use these oils in food and the amounts involved
- the amount of protein that would be included in servings of final food products that would be eaten on a single eating occasion if these oils are substituted for sunflower oil
- the amount of allergenic protein that needs to be consumed in order to elicit an allergic reaction
- whether the lack of confirmed clinical data on allergic reactions to these oils could be due to under-reporting.

Next steps

This risk assessment has been used to inform advice to consumers and food businesses on the substitution of sunflower oil with certain vegetable oils.

PDF
View Rapid risk assessment - the risk of allergic reactions if sunflower oil is substituted with certain vegetable oils as PDF(Open in a new window) (394.76 KB)