

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

As the UK's supply of sunflower oil continues to be severely affected by the conflict in Ukraine, alternative food grade oils are currently being substituted for sunflower oil.

The industry has been unable to re-label products as quickly as oil substitutions have been occurring, which has led to the presence of mislabelled products on the market.

This rapid risk assessment considers the risk for UK consumers with allergies if sunflower oil is substituted in food with certain vegetable oils (palm oil, palm olein, palm kernel oil, fully refined soybean oil, cottonseed oil, corn oil, coconut oil and olive oil) without these oils being labelled on the packaging.

Summary

According to [FEDIOL \(the Federation representing the European Vegetable Oil and Proteinmeal Industry in Europe\)](#), the purpose of refining vegetable oils is to produce a product that meets food safety and 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. They are therefore included in the list of 14 allergens which must be declared on food labels according to [Annex II of retained Regulation 1169/2011](#) which applies in Great Britain and [Regulation \(EU\) 1169/2011](#) which applies directly in Northern Ireland under the terms of the Northern Ireland Protocol.

However, fully-refined soybean oil is excluded from these allergen labelling requirements as it is not likely to cause adverse reactions in allergy sufferers.

Based on the data available from published clinical studies and the European Food Safety Authority (EFSA) Scientific Opinion on fully refined soybean oil we consider:

- the frequency of allergic reactions to fully refined soybean oil to be negligible (meaning 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 (meaning, no effects or so mild they do not merit to be considered)
- the level of uncertainty to be low (meaning there are solid and complete data available).

Fully refined palm oil, palm olein and palm kernel oil, corn oil, cottonseed oil, fully refined olive oil and cold pressed oil

Based on the lack of clinically confirmed reports of adverse reactions to palm oil, palm olein and palm kernel oil, corn oil, cottonseed oil and olive 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, palm olein and palm kernel oil, corn oil, cottonseed oil, fully refined olive oil and cold-pressed olive oil to be very low (meaning very rare but cannot be excluded)
- the severity of illness in relation to allergic reactions to fully refined palm oil, palm olein and palm kernel oil, corn oil, cottonseed oil, fully refined olive oil and cold-pressed olive oil to be negligible (meaning 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)
- using NHS Data to monitor trends in the occurrence of severe, food induced allergic reactions (NHS Data project)
- information gathered from allergy specialists described above

We consider the level of uncertainty to be medium (meaning 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 (meaning, very rare but cannot be excluded)
- the severity of illness in relation to allergic reactions to fully refined coconut oil to be negligible (meaning, no effects or so mild they do not merit to be considered).

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

The risk associated with unrefined coconut oil to sensitive individuals is likely to be higher than 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 because of limitations in the available data.

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

Key uncertainty

The key sources of uncertainty for fully refined palm oil, palm olein, palm kernel oil, corn oil, cottonseed oil, refined or unrefined coconut oil and cold-pressed olive oil are:

- the degree to which the refining process removes proteins from fully refined vegetable oils (meaning, palm oil, palm olein, palm kernel oil, corn oil and cottonseed 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 occasion if these oils are substituted for sunflower oil
- the amount of allergenic protein that needs to be consumed to cause 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 Local Authorities and industry on the substitution of sunflower oil with certain vegetable oils to deliver on their responsibilities for consumer safety and choice.

England, Northern Ireland and Wales

PDF

[View Rapid risk assessment on the risk of allergic reactions in UK consumers if sunflower oil is substituted with certain vegetable oils as PDF\(Open in a new window\)](#) (458.86 KB)

Proportionate enforcement has not been encouraged with respect to the substitution of sunflower oil with all the oils covered by this rapid risk assessment. It has been encouraged only in respect to the following oils where substituted for sunflower oil without labelling in the short term:

- [Refined rapeseed oil](#)
- [Fully refined palm, fully refined soybean and fully refined coconut oils](#)
- [Fully refined corn/maize oil](#)