

Allergic and toxic reactions to seafood

ASCIA Education Resources patient information

Seafood allergy occurs most commonly where seafood is an important part of the diet, such as Asia and Scandinavia. It is more common in adults than children, usually remains a life-long problem and is most often restricted to only one seafood group. Some conditions caused by toxins in seafood can resemble allergic reactions to seafood.

Symptoms of seafood allergy are usually obvious

Many allergic reactions to seafood are mild and cause hives or swelling. The most dangerous symptoms are breathing difficulties or a drop in blood pressure (shock), either of which can be life threatening. This is known as Anaphylaxis, which is the most severe form of allergic reaction. Other symptoms include swelling of the face or throat, dizziness, difficulty thinking, an intense sense of fear, tightness in the chest, vomiting or diarrhoea. Occasionally, breathing difficulties may occur from inhaling fumes when seafood is being cooked, and in seafood processing factories.

There are many varieties of seafood

The major groups of seafood which can trigger allergic reactions are:

- **VERTEBRATES**
Scaly fish (eg. salmon, cod, mackerel, sardines, herring, anchovies, tuna, trout, haddock, John Dory)
- **INVERTEBRATES**
Crustaceans (eg. prawns/shrimps, lobster, crab, crayfish, yabbies)
Molluscs (eg. snail, abalone, clams, oysters, mussel)
Cephalopods (eg. octopus, cuttlefish, squid, calamari)
Gastropods (eg. sea slugs, garden slugs, snails)

NB: the term "shellfish" is used to encompass both "shelled" fish (eg. oysters) as well as crustaceans

Seafood allergy is most often restricted to only one seafood group

People who are allergic to one scaly fish are often allergic to other scaly fish. Similarly, allergy to one crustacean usually means that all must be avoided. On the other hand, people who are allergic to seafood from one group can usually tolerate those from another. Occasionally, intense cooking will partially or completely destroy the triggering allergen. This may explain why some people who are allergic to fresh fish are able to tolerate tinned salmon or tuna.

Avoiding seafood groups is an important part of management

Complete avoidance of one or more groups of seafood is often advised, yet this can be difficult. Accidental exposure is more likely to occur when eating away from home, particularly when eating at seafood restaurants. Other potential sources of accidental exposure and cross-contamination include:

- Seafood platters and smorgasbords (best avoided)
- Asian foods, in which shellfish can be a common ingredient or contaminant (eg. prawns in fried rice or soups)
- Food may be rolled in the same batter or cooked in the same oil as seafood (eg. takeaway fish and chips)
- Anchovies (fish) in Caesar salads and as an ingredient or Worcestershire sauce
- Contaminated barbeques

- Fish extracts are also occasionally used to remove particulate matter from some beverages such as wine and beer, a process known as “fining”.

Seafood allergy and iodine allergy are unrelated

Even though seafood is a rich source of natural iodine, allergic reactions to seafood have a different mechanism to that described with iodine in topical antiseptics (like Betadine or Povidine) or intravenous x-ray radio-contrast agents. People who are allergic to seafood are not at an increased risk of allergic reactions to iodine. People with iodine allergy are not at increased risk of seafood allergy.

Glucosamine is derived from shellfish

Glucosamine is a popular complementary medicine, used to treat osteoarthritis. It is derived from the outer coatings of “shellfish” such as crustaceans. (Novel synthetic methods involving fermentation of microorganisms have also been described, but are not currently in commercial use). Sometimes chondroitin sulphate is added, usually derived from shark cartilage. While patients allergic to shellfish are sensitive to protein and not shell constituents, tests to exclude protein contamination are not routinely performed and there is little proof of safety in allergic patients. Products registered in Australia and New Zealand carry labels warning against their use in people allergic to shellfish/crustaceans.

Some adverse reactions can resemble seafood allergic reactions

Some conditions caused by adverse reactions to seafood can resemble allergic reactions. These include:

- **SCOMBROID FISH POISONING** – this is an allergic-like reaction that occurs after eating foods containing histamine. These are generally fish that have been improperly refrigerated after capture. Symptoms may be triggered by mackerel, tuna, herring, sardines, marlin, anchovies and bluefish. Affected fish often have a metallic or peppery taste. Symptoms usually commence within 30 minutes of eating, and include flushing, itch, urticaria/hives, nausea, vomiting, abdominal cramps, dizziness, palpitations and headache. Severe episodes may result in wheezing and a drop in blood pressure. Treatment usually involves taking antihistamines.
- **ANISAKIS SIMPLEX** – this is a nematode (worm) that acts as a fish parasite. It is mostly found in North America and Europe. Cooking at temperatures above 60°C or storage in industrial freezers is required to kill the parasite. It can cause two major problems in humans: **Anisakis simplex infection (anisakiasis)** can result from eating raw or undercooked seafood such as sushi. Infection may cause nausea, vomiting, tummy pain, and sometimes appendicitis, bowel blockage or bleeding. Diagnosis requires an endoscopy. **Anisakis simplex allergy** resembles other allergic reactions to food. Reactions often occur sometimes after eating seafood rather than on every occasion. The allergens of Anisakis simplex appear to be not destroyed by heat or cooking and so allergic reactions may be triggered by dead parasites.
- **CIGUETERA POISONING AND PARALYTIC SHELLFISH POISONING** – these are both caused by eating seafood that has been contaminated by algae-derived toxins. These toxins interfere with the function of nerve endings and are thus “neurotoxic”. Symptoms occur within 2-3 hours of eating contaminated food. Symptoms consist of tingling of the lips, tongue and throat, often followed by stomach upset, headache, fever and muscle aches and pains. Numbness, collapse, coma and confusion have also been described. Most people recover within a few days or weeks with supportive treatment.

The Australasian Society of Clinical Immunology and Allergy (ASCIA) is the peak professional body of Clinical Allergists and Immunologists in Australia and New Zealand.

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ASCIA Education Resources (AER) information bulletins have been peer reviewed by ASCIA members and represent the available published literature at the time of review .

It is important to note that information contained in this bulletin is not intended to replace professional medical advice.

Any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner.

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