

What are Wax Esters?

Wax esters are fatty acid components of certain types of fish. Wax esters are indigestible by humans and cause a condition known as steatorrhoea or, more specifically, keriorrhoea, in which anal leakage of an oily residue occurs, sometimes accompanied by abdominal cramping, nausea and vomiting.

What fish species are wax esters found?

Wax esters are found in the fats of certain types of fish, and in particular Escolar (*Lepidocybium flavobrunneum*) and Oilfish (*Ruvettus pretiosus*). These two species contain very high proportions of indigestible wax esters.

Fish mislabelling and misidentification has led to instances where Escolar or Oilfish have been incorrectly or fraudulently sold in Australia under different names, such as Butterfish and Rudderfish. Escolar has been sold in other countries under names such as Sea Bass, Cod, White Tuna and Hawaiian Butterfish.

What outbreaks have occurred?

Reported outbreaks from consumption of wax esters are infrequent in Australia. One outbreak was reported from NSW in 2001, where delegates at a conference consumed mislabelled Escolar for lunch. Of the 44 delegates interviewed by public health officers, 20 reported symptoms. Other cases and outbreaks have been reported from Victoria and South Australia.

What are the symptoms?

- Oily diarrhoea is caused by accumulation of indigestible fish oils in the rectum before being expelled, often involuntarily.
- Symptoms are not life-threatening, and the diarrhoea caused by wax ester consumption does not result in dehydration or electrolyte imbalance.
- Severity ranges from a painless discharge of oily yellow, orange or green liquid to more intense diarrhoea, nausea, vomiting and abdominal cramping.
- Symptom onset ranges from hours to days following a single exposure.

How much wax ester is a harmful dose?

A single meal of Escolar or Oilfish is sufficient to cause gastro-intestinal symptoms.

What can be done to manage wax esters in seafood?

- Cooking does not destroy or degrade wax esters. Some agencies recommend grilling in order to separate oils from the flesh, but others dispute such advice, suggesting that water loss from grilling or baking can concentrate the oil content.
- Addressing the issue of fish mislabelling, misidentification and substitution is an important management intervention.

How can we test for wax esters?

- A rapid and inexpensive chemical test for detecting wax esters in fish has been

developed overseas and could be adopted by Australian laboratories.

- DNA barcoding can confirm the identity of fish species in cases where the provenance is uncertain or disputed.

Regulatory standards

There is no regulation against the sale of Escolar or Oilfish in Australia. Some state authorities, e.g. Queensland, recommend a health warning about the risks of consuming these fish is displayed at the point of sale.

Regulatory intervention is highly variable internationally. Escolar and Oilfish are prohibited for import and sale in Japan, Italy and South Korea. Other countries do not regulate these fish.

Requirements for veracity and integrity in product labelling represent more widely-adopted regulatory practices that can impact on the sale of Escolar or Oilfish.

International regulatory limits can be found in the Trade & Market Access Database, available at www.frdc.com.au/trade.

Where can I access more information?

Ling HK, Nichols PD, But PPH (2009). Fish-induced keriorrhea. *Advances in Food and Nutrition Research* 57:1-52

Queensland Health 2011. Food Safety Fact Sheet No. 9: Escolar and oilfish health warning
<http://www.health.qld.gov.au/foodsafety/documents/fs-9-oilfish.pdf>

Yohannes K, Dalton CB, Halliday L, Unicomb LE, Kirk M (2002) An outbreak of gastrointestinal illness associated with the consumption of escolar fish. *Communicable Diseases Intelligence* 26(3):441-5

Contact us:

<http://safefish.com.au>



Considering the Benefits and Risks of Seafood Consumption

Eating seafood confers many benefits: it provides top-quality protein, and is an excellent source of important nutrients like iodine, selenium, vitamins A and D, and long-chain polyunsaturated omega-3 fatty acids. However like all foods, some seafood products may contain substances that are harmful to health. Illness from seafood is rare, so the benefits of seafood consumption must be weighed against the risks. For most people, following the recommended national dietary guidelines is the best means of balancing risks and benefits. For some groups such as pregnant women and children, specific advisories on healthy and safe seafood choices should apply. For more information, see http://www.nap.edu/catalog.php?record_id=11762

