SEAFISH
the authority on seafood

Guidance Note

January 2012

Parasites in fish

Fish and fish products have known health benefits. The UK Government advice is that adults should consume at least two portions of fish a week, one of which should be oily. Research shows that the known benefits of eating fish and fish products hugely outweigh any possible risks, however there are concerns that fish and fish products may contain parasites that pose risks to human health if not processed or handled correctly.

Fish parasites, also known as nematodes, are a normal part of the ecosystem and are found in the majority of waters, both sea and fresh. Consumers are unlikely to come across parasites due to the measures put in place in commercial fishing and processing to remove, or minimise their presence.

Most living things, including fish, have parasites that are usually harmless. Controls in place mean it is unlikely the consumer will find any in the fish they purchase. Any found can be removed and fish preparation continued as normal. They can be unsightly, so the consumer may request a refund.

In the home any parasites present in fish will be killed by normal cooking (the centre of the fish fillet needs to reach a temperature of 70^{o} for two minutes), or freezing for a minimum of four days in a domestic freezer (commercial freezers will need less time).

If they have been killed by freezing or cooking they are not harmful if eaten. If eaten in their live state, they can cause inflammation of the stomach or the small intestine. Illness in the UK is very rare as most fish is cooked prior to consumption. However there is a possible risk when fish is consumed raw.

The law

European law does not require fish to be free of parasites, but does contain measures to reduce their prevalence and control any potential health risks.

The parasite of most concern in the EU is *Anisakis,* so the requirements of EU law are designed to control the risk from this. Other parasites may be a problem in countries outside of the EU.

Before being placed on the market, fish should have been subjected to a visual examination process and should not be ‘obviously contaminated’ by parasites. While European law does not define ‘obviously contaminated’, CODEX standards, which are international voluntary codes for food standards, set a limit for parasites in fish products of two parasites per kilogram of edible flesh.

For fish which will be consumed raw there are legal requirements to use freezing techniques to kill the parasites before placing on the market. A new Regulation was introduced on 8 December 2011 which sets out the treatment required.

This guidance note looks at processing control methods, the new EU Regulation, fish that are exempt from treatment and the differences between wild and farmed fish.

Should certain species or products be avoided?

No, any fish placed on the market will have to comply with the controls in EU law. The greatest risk is where the fish is intended to be eaten raw or slightly cooked, such as sushi, sashimi and cold smoked salmon. These products must either have come from an environment that does not present a health hazard with regard to parasites, or have been frozen at sufficient time/temperature to destroy the parasite.

Fish that is sold raw, but is likely to be cooked, does not have to be treated in this way and therefore if you intend to eat this fish raw or carry out home preservation, such as bottling, then you should ensure that the fish has been frozen at some point before consumption.

Commercially, prepared products using raw fish are required to have been treated to destroy parasites and are perfectly safe.

How do you ensure parasites are destroyed during commercial processing?

It should be a critical control point of any food safety plan that fish is treated to kill parasites. If you are producing a cooked product then the time/temperature should be sufficient to kill any potential parasites.

If the product is to be sold raw and it is likely that it would be eaten raw, such as sushi, sashimi or cold smoked salmon then, you need to ensure that the fish has been treated to kill parasites by freezing. The current legal requirement to achieve this is -20^{o}C or lower for 24 hours, or -35^{o}C or lower for 15 hours being currently proposed.

This can be done as part of the process or by your supplier. Your supplier must supply documentation from the food business operator who carried out any treatment, stating the type of freezing the product has undergone, or evidence for exemption.

Are any fish exempt from treatment?

Fish that have been preserved as frozen fishery products are exempt. This refers to commercial cold storage/transport, so any fish bought frozen is likely to be exempt.

Wild catches are exempt from freezing if epidemiological data shows that the fish caught do not pose a health hazard with regard to parasites, and the competent authority have approved this.

Farmed fish are exempt if certified parasite free or as presenting a negligible risk of infection.

How are farmed fish certified parasite free or a negligible risk,?

Certain methods of fish farming are free from the risk of parasites. These exclude the possibility of parasite infestation. Methods include onshore systems that use water that has been tested to show it is free of parasites.

Other systems cannot exclude the possibility of infestation, such as open water farming systems. But as the process is easier to control, if verified procedures are in place to control the risk of infection, then the farm can be certified as presenting a negligible risk of infection.

To be certified parasite free or negligible risk from either method, the fish must have been cultured from embryos and fed their whole life on a diet that cannot contain parasites that pose a health hazard.

Are wild fish more likely to contain parasites than farmed?

Certain farmed fish are exempt from freezing as they do not present a health hazard with regard to parasites; these are often used in commercial raw fish products to maintain quality. However, the fact that fish is farmed does not guarantee it will be parasite free or of negligible risk.

Fishermen tend to avoid fishing grounds they know are badly affected by parasites. Any parasites will be predominately in the gut, so gutting the fish soon after capture can reduce or prevent flesh contamination. The flesh around the gut where contamination will be highest may also be removed.

As required by European law, the fillets will be visually inspected, usually using a candling table that uses light to make parasites more visible.

Are freshwater fish less likely to contain parasites?

No, there are parasites in freshwater fish as well as sea fish and similar control measures are required.

Is the presence of destroyed parasites harmful?

In very rare cases, some people may have an allergic reaction to the hard case of the parasite. Research has shown that these people tend to also be allergic to shellfish.

Further reading:

Codex Alimentarius Code of Practice for fishery and fishery products
http://www.codexalimentarius.net/download/standards/10273/CXP_052e.pdf

Seafish fact sheet: Anisakis in salmon
http://www.seafish.org/media/Publications/FS47_04_10_AnisakisinSalmon.pdf

Seafish legislation advice
http://www.seafish.org/processors/legislation

Regulation (EU) No 1276/2011
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:327:0039:0041:EN:PDF

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