

MODULE 5. BIOSECURITY HYGIENE AND EU LEGISLATION FOR THE DISCARD FISHERIES PROCESSING AND END PRODUCTS

AUTHORS

1. Runa Thrastardottir, PhD candidate, AUI, Faculty of Agricultural Sciences
2. Dr. Johanna Gisladdottir, assistant professor, AUI, Faculty of Agricultural Sciences

STRUCTURE FOR MODULE CONTENT

The content will be what the trainee/student will learn throughout the module, after starting to take it.

TEACHING SPECIFICS

- SETTING (INDOOR/OUTDOOR/DISTANCE/BLENDED): Online (E-learning)
- DURATION (HOURS): 20h
- MATERIALS: Presentation, questions, case studies, self-study
- NO. OF LEARNERS/REPRESENTATIVES: Depending on the number of participants
- INDIVIDUAL OR GROUP WORK: Both, depending in the number and distribution of participants

INFORMATION ABOUT THE TOPIC

In order to produce Biologically Appropriate Raw Food (BARF) from fish discards, it is vital to have knowledge of the biosecurity hygiene and EU legislation regarding end products. The risks related to BARF from fish discards can be of pathogenic origin (bacteria, viruses and parasites), toxins and metals and allergens, there is also mentioned that there could be found glass in unprocessed fishes that could lead to pet consuming glass.

Bacteria of particular concern in seafood are the pathogenic forms of *Listeria monocytogenes* (*L. monocytogenes*), *Escherichia coli* (*E. coli*), *Salmonella* spp., *Staphylococcus aureus*, *Clostridium perfringens*, *Clostridium botulinum*, *Bacillus cereus*, *Campylobacter jejuni*, and *Yersinia enterocolitica*. Pathogenic bacteria can be part of the fish's microflora or its surrounding or enter during the processing step e.g., from the air, unclean hands, insanitary utensils and equipment, contaminated water or sewage and through cross-contamination between raw and cooked product. However, the prevalence of foodborne disease is low in healthy dogs and cats as they are considered to be more resistant to pathogenic effect from *Salmonella*, *Campylobacter* spp., *E. coli*, *S. aureus* and *B. cereus*. Infected dogs and cats can remain clinically normal but still excrete some bacteria in their faeces. Therefore, pet fed with raw fishery discards contaminated with pathogenic bacteria are a source of contamination

to people and other pets in the same household. Human exposure may be caused by direct contact with food and utensils that have been in contact with this food, by contact with the contaminated environment between people and pets and by contact with pets' faeces.

The only virus that can be contracted through the consumption of BARF from fishery discards is norovirus. Norovirus can cause symptoms in pets and can also be transmitted from pets to their owner, as the virus can live for the long time in the environment, e.g., the litter box.

Parasites of particular concern in seafood as raw pet feed are *Anisakis simplex* in cats, *Diocotophyma renale* (giant kidney worm), *Diphyllbothrium latum* (fish tapeworm), *Opisthorchis tenuicollis* (trematodes of the small intestine, bile duct and pancreatic ducts) and *Nanophyetus salmincola* (salmon infection) in dogs. However, all parasites in fish can be killed by freezing at -20°C or lower for 7 days or at -35°C for 15 hours to be certain to kill all fish tapeworm eggs.

The toxins that can be found in raw fish include natural toxins inside the fish, mycotoxins, pesticides, aquaculture drug residues, heavy metals, and minerals in too high concentration. In certain species of fish there is thiaminase that blocks the absorption of thiamine in the diet. The amount of most toxins and heavy metals in fish is low most of the time, and pets need to eat only or a lot of raw fish to have adverse effect. Therefore, it is important for pets to have varied diet from many sources instead of only one.

The EU regulation that must be followed to commercially produce BARF from fishery discards and to ensure the feed's safety are regulation (EC) No 1069/2009 on animal by-products used in pet feed and the Hazard Analysis (HACCP) system, regulation (EC) No 1831/2003 on feed hygiene, regulation (EC) No 767/2009 on roles that one has to follow when marketing of feed, regulation (EC) No 2073/2005, Directive 2002/32/EC and Commission Recommendation 2016/1319/EC on maximum levels of toxins and other substances in pet feed.

To minimize bacterial contamination in discard fish for pets, producers have to follow the hygiene regulation throughout, keeping the facility clean as well as all the equipment and the staff has to maintain good personal hygiene. As no formal kill-step (except for freezing) is incorporated into the production of raw pet food, there remains the potential risk of microbiological contamination in the final marketed product. It is important to maintain producing products at temperatures that do not support growth of pathogenic bacteria that can be found in discard fish. Furthermore, feed operators not in primary production must have a HACCP system in place. Feed operators in other than primary production must therefore develop a good HACCP system for their production that every staff member knows. To establish a good HACCP system every single risk at every part of the production must be identified. Good personal hygiene and using of sanitized tools when preparing raw fish for pets is important.

CAUSES AND DESCRIPTION OF HOW IT MANIFESTS

Module 5 provides knowledge on the risks related to the production and consumption of BARF from fishery discards and how to minimize these risks through the whole production chain. The module will also look at EU-regulations related to produce BARF from fishery discards and pet feed in general and how it relates to safety of the feed. The Hazard Analysis and Critical Control Points system is introduced, which is crucial for managing food safety risks in the production process. Knowing this makes it possible for owners to use BARF from fishery discards safely and makes it possible to produce commercially available BARF from fishery discards that can be marketed in Europe.

PRINCIPLES, BASIC TERMS AND MEASURES WITHIN THE SPECIFIC MODULE

The module consists of 3 parts:

1. Risks related to feeding raw fishery discards to pets:
 - a. Pathogens
 - b. Toxins
 - c. Allergens
2. EU regulation related to the topic:
 - a. Animal by-products for pet feed
 - b. Feed hygiene
 - c. Marketing of feed
 - d. Accepted level of toxins and bacteria in feed
3. How to prevent the risks related to part 1

TRAINING MATERIAL FORMAT (TASKS, CASE STUDIES, EXERCISES) WITH A SHORT DESCRIPTION

The training material for module 5 consists of a written chapter (22 pages, 27 pages with references) supported by a presentation (26 slides) and 10 multiple choice questions related to the topic.

INSTRUCTION FOR ASSESSMENT

10 multiple choice questions at the end of the module, participants must get at least 5 right answers to finish the module.

LINK TO ONLINE RESOURCES AND SPECIFIC IMAGES

The U.S. Food and Drug Administration (FDA) 2022. Fish and Fishery Products: Hazards and Controls Guidance June 2022 Edition. <https://www.fda.gov/food/seafood-guidance-documents-regulatory-information/fish-and-fishery-products-hazards-and-controls>

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STEP-BY-STEP GUIDE

INTRODUCTION - SLIDES 1

The introduction discusses all the questions that will be answered in the module.

FIRST ACTIVITY – SLIDE 1

Discussion on what the participants believe what risks can be found in BARF from fishery discards

FIRST PART – RISKS RELATED TO BARF FROM FISHERY DISCARDS - SLIDES 17

The first part discusses all the risks related to BARF from fishery discards and is divided into three parts.

- Pathogens – 11 slides, mentions all pathogenic bacteria, viruses and parasites that can be found in BARF from fishery discards, if they are more likely to cause disease in pets or cross-contamination and how to prevent infection.
- Toxins – 5 slides, mentions different types of toxins (natural toxins, mycotoxins, heavy metals and pesticides) and in what fish species they are most likely to occur in toxic level.
- Allergens – 1 slide, mentions fish allergy and how to diagnose it.

SECOND ACTIVITY – SLIDE 1

Discussion on these risks, what do the participants believe is the biggest risk.

SECOND PART - EU REGULATIONS - SLIDES 5

The second part discusses all EU regulations related to the production of BARF from fishery discards.

SECOND ACTIVITY – SLIDE 1

Discussion on EU regulation, where they actual for this topic, should there be one regulation on BARF.

THIRD PART – HOW CAN BARF FROM FISHERY DISCARDS BE SAFE - SLIDES 2

The third part discusses how to prevent the risks related to BARF from fishery discards and why the EU regulations are important for the production of safe pet feed.

THIRD ACTIVITY - SLIDE 1

Discussion on how to make BARF from fishery discard safe, do we need any extra precaution.

FOURTH ACTIVITY - APPENDIX 1

10 multiple choice questions that goes over the whole module.

FACILITATOR'S NOTES

TITLE	ESTIMATED TIMING	FACILITATOR NOTES	MATERIALS NEEDED
Discussion – Introduction	10 mins	Class: discussion on what the participants believe are risks in BARF	Internet connection
Discussion – part 1	15 mins	Class: discussion about the risks in BARF from fishery discards	Internet connection
Discussion – Part 2	15 mins	Class: discussion about the EU-regulations	Internet connection
Discussion – Part 3	15 mins	Class: discussion about the safety of BARF from fishery discards	Internet connection
Questions – Part 1-3	45 mins	Individual: Online test for individuals	Internet connection

APPENDIX 1 - TITLE

Add here:

- Worksheet, further information, etc.

APPENDIX 1: REFERENCES

The following table summarizes the documents referenced in this document.

Location	Description
<URL or file path to where document is located>	<i>The module syllabus presented as a text file</i>
	<i>The module presentation</i>
	<i>The module quiz</i>



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