MODULE 5. SYLLABUS

Elaborated by AUI – Agricultural University of Iceland, IS

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

AUTHORS

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STRUCTURE FOR THE MODULE SYLLABUS DEVELOPMENT

The syllabus will be added to the website as a "preview" of the module, to inform the prospective student/trainee.

MODULE MOTIVATION

The motivation for the present module is to elucidate the inherent risks pets face when consuming raw fish - risks ranging from pathogenic infections to toxin, metal, and allergen exposure. It delves into proactive strategies to mitigate these dangers, ensuring pet owners and feed producers can confidently navigate the complexities of a raw fish diet for pets. Central to the module's motivation is the alignment with Sustainable Development Goals (SDGs) numbers 3, 6, 12, and 14. By emphasizing good health and well-being (SDG 3), clean water and sanitation practices to prevent contamination (SDG 6), responsible consumption and production patterns (SDG 12), and conserving life below water through sustainable practices (SDG 14), the module underscores the importance of a holistic approach to pet nutrition. It addresses EU legislation governing animal feed, equipping stakeholders with knowledge to ensure safety and compliance, thereby fostering a more sustainable and health-conscious future for pet care.

TASK RANGE

The following teaching and learning activities will be adapted and used:

- Presentation
- Questions
- Case study
- Self-study (Syllabus reading and ppt.)

LEARNING OUTCOMES

The following learning outcomes are defined for the module:

- The learner has knowledge:
    - of the types of bacteria, paracites, viruses, toxins, metals, and allergens that can be present in raw fish and their potential health impacts on pets.

- of EU legislation relevant to animal feed, including regulations on feed hygiene, marketing, and the safe use of by-products.
- methods to reduce the risks of pathogenic and toxic contamination in raw fish intended for pet consumption.

- The learner has skills of being able to:
  - participating in discussions related to biosecurity hygiene.
  - adhere to EU legislative requirements for the production and marketing of animal feed products.
- The learner has the competence of:
  - making informed decisions regarding the suitability of raw fish in pet diets, considering potential health risks and nutritional benefits.
  - ensuring that feed production processes are compliant with EU regulations, protecting both pet health and business operations.

MODULE CONTENTS

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 guiding questions in the module are what risks are present from using discard fish as pet feed, how the risks can be prevented and how pet feed from discard fish can be produced while following EU legislation. The present module gives an overview of a range of pathogens that can affect food safety, including bacteria like Listeria, Salmonella, E. coli, and viruses, as well as the implications of parasites and toxins like thiaminase and heavy metals. Information is provided on various bacteria that are relevant to food safety, including their characteristics, how they can contaminate food, and the risks they pose. The module includes a section on regulations pertaining to animal by-products used in pet feed, feed hygiene, and requirements for feed businesses at both the primary production and operator levels. The Hazard Analysis and Critical Control Points system is introduced, which is crucial for managing food safety risks in the production process. Lastly, the content addresses practical aspects such as making discard fish safe for pet consumption, along with guidance on production, packaging, marketing, and labeling of feed products.

MODULE INCLUDES

The module includes an overview of:

- a range of pathogens that can affect food safety, including bacteria like Listeria, Salmonella, E. coli, and viruses, as well as the implications of parasites and toxins like thiaminase and heavy metals.
- various bacteria that are relevant to food safety, including their characteristics, how they can contaminate food, and the risks they pose.

- regulations pertaining to animal by-products used in pet feed, feed hygiene, and requirements for feed businesses at both the primary production and operator levels.
- the Hazard Analysis and Critical Control Points system, which is crucial for managing food safety risks in the production process.
- practical aspects such as making discard fish safe for pet consumption, along with guidance on production, packaging, marketing, and labelling of feed products.

RECOMMENDED AND/OR REQUIRED READING

The U.S. Food and Drug Administration (FDA) 2022. *Fish and Fishery Products: Hazards and Controls Guidance June 2022 Edition*.

Novoslavskij, A., Terentjeva, M., Eizenberga, I., Valciņa, O., Bartkevičs, V. & Bērziņš, A. 2016. Major foodborne pathogens in fish and fish products: a review. *Annals of Microbiology,* 66**,** 1-15.

Miller, E. P., Ahle, N. W. & DeBey, M. C. 2010. Food Safety. *In:* HAND, M. S., THATCHER, C. D., REMILLARD, R. L., ROUDEBUSH, P. & NOVOTNY, B. J. (eds.) *Small Animal Clinical Nutrition.* 5 ed. St. Louis, MO, USA: Mark Morris Institute.

Mostashari, P., Amiri, S., Rezazad Bari, L., Hashemi Moosavi, M. & Mousavi Khaneghah, A. 2021. Physical Decontamination and Degradation of Aflatoxins. *In:* HAKEEM, K. R., OLIVEIRA, C. A. F. & ISMAIL, A. (eds.) *Aflatoxins in Food: A Recent Perspective.* Cham: Springer International Publishing.

Boermans, H. J. & Leung, M. C. K. 2007. Mycotoxins and the pet food industry: Toxicological evidence and risk assessment. *International Journal of Food Microbiology,* 119**,** 95-102.

European Commission 2019. Consolidated text: Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation).

European Commission 2005a. Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene (Text with EEA relevance). Belgium Brussel.

European Commission 2018. Consolidated text: Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (Text with EEA relevance)Text with EEA relevance. Belfium, Brussel.

European Commission 2002a. Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. 01.07.2022 ed. Belgium, Brussel.

European Commission 2005b. Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs (Text with EEA relevance). Belgium, Brussel.

European Commission 2002b. Consolidated text: Directive 2002/32/EC of the European Parliament and of the Council of 7 May 2002 on undesirable substances in animal feed.

EFSA Panel on Additives Products or Substances used in Animal Feed 2014. Scientific Opinion on the potential reduction of the currently authorised maximum zinc content in complete feed. *EFSA Journal,* 12**,** 3668.

European Commission 2016. Commission Recommendation 2016/1319/EC of 29 July 2016 amending Commission Recommendation 2006/576/EC on the presence of

deoxynivalenol, zearalenone, ochratoxin A, T-2 and HT-2 and fumonisins in products intended for animal feeding. *Off J Eur Union,* 208, 58-60.
European Commission 2011. Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food Text with EEA relevance. Brussel, Belgium.
European Commission 2004. Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC. Brussel, Belgium.

ASSESSMENT FORMAT

IQuiz assessment to be taken on Moodle

GLOSSARY

BARF: Biologically Appropriate Raw Food

Discarded fish: Discarding is a term specifically used for catches of species that are not kept but returned to the sea.

MARIPET BARF: BARF specialized in the MARIPET project formulated for cats and dogs by using discarded fisheries.

LINKS TO USEFUL WEBSITES

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