MODUL 5. BIOSIGURNOST, HIGIJENA I ZAKONODAVSTVO EU-A ZA PRERADU RIBARSKOG OTPADA I KRAJNJE PROIZVODE

AUTORI

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STRUKTURA SADRŽAJA MODULA

Sadržaj će biti ono što će polaznik/student naučiti tijekom modula nakon što ga počne pohađati

NASTAVNI DETALJI

- POSTAVLJANJE (UNUTARNJI/VANJSKI/NA DALJINU/MJEŠOVIT): Online (E-učenje)
- TRAJANJE (SATI): 20h
- MATERIJALI: Prezentacija, pitanja, analize slučaja, samostalno učenje
- NO. OF LEARNERS/REPRESENTATIVES: Depending on the number of participants
- INDIVIDUALNI ILI GRUPNI RAD: Oboje, ovisno o broju i raspodjeli sudionika

INFORMACIJE O TEMI

Kako bi se proizvodila Biološki Prikladna Sirova Hrana (BARF) od odbačenih ribljih dijelova, ključno je posjedovati znanje o biosigurnosti, higijeni i EU zakonodavstvu u vezi s krajnjim proizvodima. Rizici povezani s BARF-om od odbačenih ribljih dijelova mogu potjecati od patogena (bakterija, virusa i parazita), toksina i metala i alergena. Također se spominje mogućnost prisutnosti stakla u neprocesuiranim ribama što može dovesti do konzumacije stakla od strane ljubimaca.

Bakterije od posebne zabrinutosti u morskoj hrani su patogene forme *Listeria monocytogenes*, *Escherichia coli*, *Salmonella* spp., *Staphylococcus aureus*, *Clostridium perfringens, Clostridium botulinum, Bacillus cereus, Campylobacter jejuni* i *Yersinia enterocolitica*. Patogene bakterije mogu biti dio mikroflore ribe ili njezine okoline ili ući tijekom procesa proizvodnje, npr. iz zraka, nečistih ruku, nečistih posuđa i opreme, onečišćene vode ili otpadnih voda te kroz međusobno onečišćenje između sirovog i obrađenog proizvoda. Prevalencija bolesti prenosivih hranom niska je kod zdravih pasa i mačaka jer se smatra da su otporniji na patogene učinke izazvane *Salmonellom, Campylobacter spp., E. coli, S. aureus* i *B. cereus*. Zaraženi psi i mačke mogu ostati klinički zdravi, ali i dalje izlučivati neke bakterije u svom izmetu. Stoga, kućni ljubimci hranjeni sirovom odbačenom ribom kontaminiranom patogenim

bakterijama predstavljaju izvor onečišćenja za ljude i druge ljubimce u istom domaćinstvu. Ljudska izloženost može se dogoditi izravnim kontaktom s hranom, priborom koji su bili u kontaktu s ovom hranom, kontaktom s onečišćenim okolišem između ljudi i ljubimaca te kontaktom s izmetom ljubimaca.

Jedini virus kojim se može zaraziti konzumacijom sirove hrane za ljubimce (BARF) od dijelova odbačene ribe je norovirus. Norovirus može izazvati simptome kod ljubimaca i također se može prenijeti s ljubimaca na njihove vlasnike, budući da virus može dugo vremena opstati u okolišu, npr., u pjesku za mačke.

Paraziti posebne zabrinutosti u morskoj hrani kao sirovoj hrani za ljubimce su *Anasakis simplex* kod mačaka, *Dioctophyma renale*, *Diphyllobothrium latum*, *Opisthorchis tenuicollis* i Nanophyetus salmincola kod pasa. Međutim, svi paraziti u ribi mogu biti uništeni smrzavanjem na -20°C ili niže tijekom 7 dana, ili na -35°C tijekom 15 sati kako bi se osiguralo uništenje svih jaja riblje trakavice.

Toxini koji se mogu pronaći u sirovoj ribi uključuju prirodne toksine prisutne u samoj ribi, mikotoksine, pesticide, ostatke lijekova iz akvakulture, teške metale i minerale u prekomjerno visokim koncentracijama. Neke vrste riba sadrže tiaminazu koja može blokirati apsorpciju tiamina u prehrani. Većinu vremena, razine toksina i teških metala u ribi su niske, a štetni učinci na kućne ljubimce obično se javljaju samo ako konzumiraju značajnu količinu sirove ribe. Stoga je važno da kućni ljubimci imaju raznoliku prehranu iz više izvora umjesto da se oslanjaju samo na jedan.

EU propisi koje treba poštovati u komercijalnoj proizvodnji BARF-a od djelova odbačene ribe, osiguravajući sigurnost hrane, uključuju Uredbu (EZ) br. 1069/2009 o nusproizvodima životinjskog podrijetla u hrani za kućne ljubimce i sustav analize opasnosti i kritičnih kontrolnih točaka (HACCP), Uredbu (EZ) br. 183/2005 o higijeni hrane, Uredbu (EZ) br. 767/2009 o ulozi koju treba slijediti u marketingu hrane, Uredbu (EZ) br. 2073/2005, Direktivu 2002/32/EZ te Preporuku Komisije 2016/1319/EU o maksimalnim razinama toksina i drugih tvari u hrani za kućne ljubimce.

Kako bi se minimizirala bakterijska kontaminacija odbačene ribe za kućne ljubimce, proizvođači moraju slijediti higijenske propise tijekom cijelog procesa, održavati postrojenje čistim, kao i sve opreme, a osoblje mora održavati dobru osobnu higijenu. Budući da se u proizvodnji sirove hrane za kućne ljubimce ne primjenjuje formalni korak uništenja (osim smrzavanja), ostaje potencijalni rizik od mikrobiološke kontaminacije u konačnom proizvodu na tržištu. Važno je održavati proizvodnju na temperaturama koje ne podržavaju rast patogenih bakterija koje se mogu pronaći u odbačenoj ribi. Osim toga, proizvođači hrane koji nisu u primarnoj proizvodnji moraju imati uveden sustav analize opasnosti i kritičnih kontrolnih točaka (HACCP). Proizvođači hrane koji nisu u primarnoj proizvodnji stoga moraju razviti dobar HACCP sustav za svoju proizvodnju koji svaki član osoblja poznaje. Kako bi se uspostavio dobar HACCP sustav, svaki rizik u svakom dijelu proizvodnje mora biti identificiran. Dobra osobna higijena i upotreba dezinficiranih alata prilikom pripreme sirove ribe za kućne ljubimce su važni.

UZROCI I OPIS KAKO SE MANIFESTIRAJU

Modul 5 pruža znanje o rizicima vezanim uz proizvodnju i konzumaciju BARF-a od odbačene ribe te kako minimalizirati te rizike kroz cijeli proizvodni lanac. Modul će također istražiti EU propise vezane uz proizvodnju BARF od odbačene ribe i hrane za kućne ljubimce općenito, te kako se to odnosi na sigurnost hrane. Uvod u sustav analize opasnosti i kritičnih kontrolnih točaka (HACCP) objašnjava se kao ključan za upravljanje rizicima sigurnosti hrane u procesu proizvodnje. Poznavanje ovih informacija omogućuje vlasnicima sigurnu upotrebu BARF-a od odbačene ribe i omogućuje proizvodnju komercijalno dostupnog BARF-a koji se može plasirati na tržištu u Europi.

NAČELA, OSNOVNI POJMOVI I MJERE UNUTAR SPECIFIČNOG MODULA

Modul se sastoji od 3 dijela:

1. Rizici povezani s hranjenjem kućnih ljubimaca sirovim ribljim otpacima:
    a. Patogeni
    b. Toksini
    c. Alergeni
2. EU regulative povezane s temom:
    a. Životinjski nusproizvodi namjenjeni za hranu za kućne ljubimce
    b. Higijena hrane
    c. Plasman hrane na tržište (marketing)
    d. Prihvatljiva razina toksina i bakterija u hrani za životinje
3. Kako spriječiti rizike povezane s prvim dijelom

FORMAT NASTAVNOG MATERIJALA (ZADATCI, ANALIZE SLUČAJA, VJEŽBE) S KRATKIM OPISOM

Nastavni materijal za modula 5 sastoji se od pisanog poglavlja (22 stranica, 27 stranica s literaturom) podržanog prezentacijom (26 slajdova) i 10 pitanja s višestrukim izborom vezanih uz temu.

UPUTSTVA ZA OCJENU

10 pitanja s višestrukim izborom na kraju modula, sudionici moraju dobiti najmanje 5 točnih odgovora kako bi završili modul.

POVEZNICA NA ONLINE IZVORE I SPECIFIČNE SLIKE

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POSTUPNE UPUTE

UVOD – **1 SLAJD**

U uvodu se raspravlja o svim pitanjima koja će biti odgovorena u modulu.

PRVA AKTIVNOST – **1 SLAJD**

Rasprava o tome što sudionici vjeruju koji su rizici prisutni u BARF-u od odbačene ribe

PRVI DIO – RIZICI POVEZANI S BARF-OM OD ODBAČENE RIBE – **17 SLAJDOVA**

Prvi dio raspravlja o svim rizicima povezanim s BARF-om od odbačene ribe i podijeljen je u tri dijela.

- Pathogeni – 11 slajdova, navodi sve patogene bakterije, viruse i parazite koji se mogu pronaći u BARF-u od odbačene ribe, a koji su skloni uzrokovati bolesti kod kućnih ljubimaca ili prijenos kontaminacije te kako spriječiti infekcije.
- Toksini – 5 slajdova, navodi različite vrste toksina (prirodni toksini, mikotoksini, teški metali i pesticidi) i u kojim vrstama riba najvjerojatnije dosežu toksične razine.
- Alergeni – 1 slajd, navodi alergijske reakcije na ribu i kako je dijagnosticirati

DRUGA AKTIVNOST – **1 SLAJD**

Rasprava o ovim rizicima, što sudionici vjeruju da je najveći rizik.

DRUGI DIO - EU REGULATIVE – **5 SLAJDOVA**

Drugi dio raspravlja o svim EU propisima koji se odnose na proizvodnju BARF-a od odbačene ribe.

DRUGA AKTIVNOST – **1 SLAJD**

Rasprava o EU propisima, jesu li oni stvarno primjenjivi na ovu temu, treba li postojati poseban propis o BARF-u.

TREĆI DIO – KAKO MOŽE BARF OD ODBAČENE RIBE BITI SIGURAN – **2 SLAJDA**

Treći dio raspravlja o tome kako spriječiti rizike povezane s BARF-om od odbačene ribe te zašto su EU propisi važni za proizvodnju sigurne hrane za kućne ljubimce.

TREĆA AKTIVNOST – **1 SLAJD**

Rasprava na temu kako učiniti BARF od odbačene ribe sigurnim, jesu li potrebne dodatne mjere opreza.

ČETVRTA AKTIVOST - **PRILOG 1**

10 pitanja s višestrukim izborom koja pokrivaju cijeli modul

BILJEŠKE VODITELJA

NASLOV	POTREBNO VRIJEME	BILJEŠKE VODITELJA	POTREBNI MATERIJALI
Rasprava – Uvod	10 min	**Nastava:** rasprava o tome što sudionici smatraju da su rizici u BARF-a	Internetska veza
Rasprava – 1 dio	15 min	**Nastava:** rasprava o rizicima korištenja BARF od odbačene ribe	Internetska veza
Rasprava – 2 dio	15 min	**Nastava:** rasprava o Eu regulativama	Internetska veza
Rasprava – 3 dio	15 min	**Nastava:** rasprava o sigurnosti BARF-a od odbačene ribe	Internetska veza
Pitanja – 1-3 dio	45 min	**Individualno:** online test za pojedince	Internetska veza

PRILOG 1 - NASLOV

Dodati:

- Radne listove, dodatne informacije i dr.

PRILOG 1: LITERATURA

Tablica objedinjuje dokumente navedene u ovom dokumentu

Lokacija	Opis
<URL or file path to where document is located>	*Nastavni plan I program modula u pisanom obliku*
<URL or file path to where document is located>	*Prezentacija modula*
<URL or file path to where document is located>	*Upitnik*

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