

Institutional framework for quality and safety assurance of aquaculture products in Bosnia And Herzegovina

Smajlović, M.¹, D. Alagić,¹ T. von Müffling,¹ S. Tanković,³ F. Čaklovića,¹ K. Čaklovića,¹

Stručni rad

Summary

One of the major characteristics of Bosnia and Herzegovina (B&H) aquaculture production is its long tradition. However, the war that happened in B&H (1992-1995) resulted in destruction of the most of the production infrastructure. Since then, modern fish production and processing facilities have been reestablished and trade in fish and fish products has recommenced. Further expansion of the B&H aquaculture has been officially identified as an important source of overall agriculture development, as well as the key sector able to fulfill the international, particularly the European Union (EU) requirements for trade, faster than other sectors in B&H agriculture. During the negotiation of export license to the EU, the proper authorities, in particular the State Veterinary Office of Bosnia and Herzegovina (SVO) of the Ministry of Foreign Trade and Economic Relations (MoFTER), and other stakeholders identified the lack of capacity in fulfilling some of the EU requirements on aquatic animal health management and food safety issues. In order to overcome the problem, the SVO and the MoFTER asked for FAO assistance, which resulted in official approval of the FAO project "Strengthening capacity on aquaculture health management in Bosnia and Herzegovina". In this paper authors present institutional framework for quality and safety assurance of aquaculture products in B&H as a part of mentioned problems.

AQUACULTURE IN BIH

Bosnia and Herzegovina has a long tradition of producing fish in aquaculture; mainly cyprinids and salmonids are produced of which rainbow trout has the major importance. Though during the war most establishments were destroyed, aquaculture is seen as one major part of the agricultural sector with good future prospects. Altogether 3.975.853, 65 kg of fish, crustaceans, mollusks and other marine invertebrates were exported (mainly) to the nearby non-EU countries in 2006, whereas 6.421.356, 22 kg of these products were imported in the

same year. However, the export possibilities will even decrease with some of the countries importing products from B&H now (especially Croatia) presumably becoming an EU member state themselves in 2009/2010. They will then not be able to import aquaculture products any more if until then these don't obtain the according license for the export to the EU. An important market for Bosnian aquaculture will then break away. The majority of aquaculture businesses are small or medium-sized units. Most of the produced fish go to local markets or shops. Because 392 of difficul-

ties with transportation facilities and hygiene measures the fish is mainly traded (exported) as live fish.

ADMINISTRATIVE FRAMEWORK FOR FOOD QUALITY & SAFETY

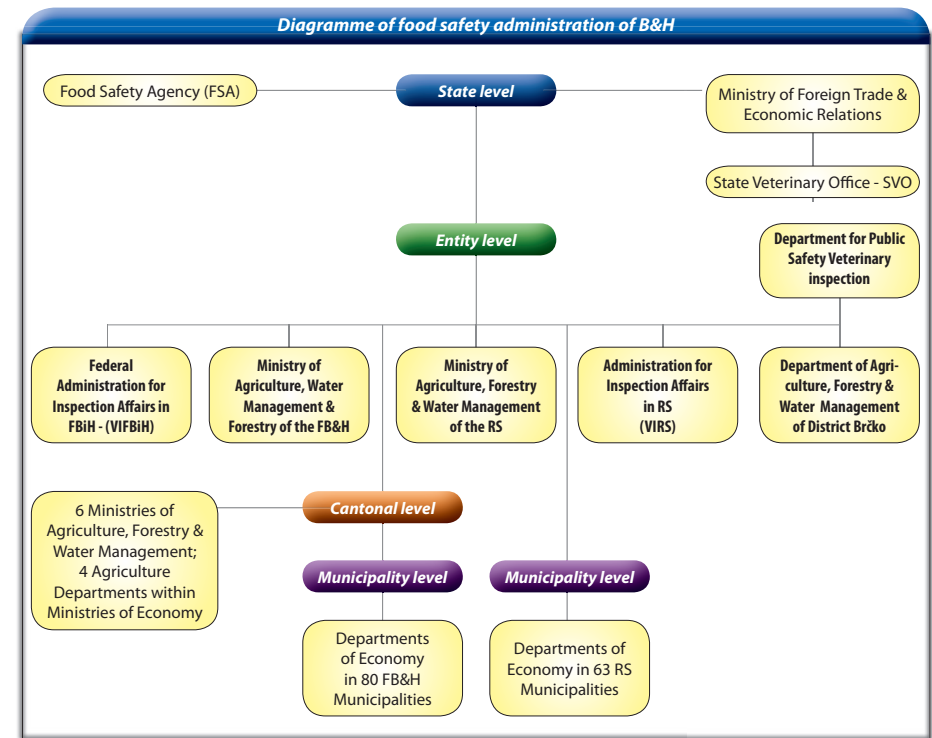
ASSURANCE OF AQUATIC PRODUCTS IN BOSNIA AND HERZEGOVINA

The 1992-1995 war and aggression on independent B&H was ended by signing the Dayton Peace Agreement in December of 1995. The Agreement defined current administrative

¹ Department of Food Hygiene & Technology, Veterinary Faculty, University of Sarajevo, Bosnia and Herzegovina

² Institute for Food Quality and Food Safety, University of Veterinary Medicine Hannover, Foundation, Germany

³ State Veterinary Office of Bosnia and Herzegovina



organization of B&H and enforced division of B&H into two entities (administrative units), the Federation of Bosnia and Herzegovina (FBiH) and the Republic of Srpska (RS) and one internationally supervised district, the Brčko District (BD), as an administrative unit under the sovereignty of Bosnia and Herzegovina. The entities retain a large degree of autonomy from the central government, which is dependent upon the entities for most of its budget.

Furthermore, the FBiH is divided into ten cantons as administrative units that also have political and financial autonomy from the central and entity government to a great extent.

Moreover, each of the ten cantons in the FBiH, as well as the whole RS, is divided into municipalities. The of-

ficial parties involved in food safety are located on the different levels according to the political structure of B&H. There are official authorities on the state level, the entity or district level, the canton and municipality level. The following authorities are engaged in food safety inspections or legislation:

State Level:

- The Ministry for Foreign Trade and Economic Relations: In regard of food safety aspects the MoFTER is responsible for the development of the basic legislation in the veterinary, phytosanitary, quality control and food safety areas along with the establishment of institutions that are directly responsible for their implementation.

- The State Veterinary Office (SVO): The SVO has the responsibility for the preparation of draft regulations regarding food hygiene & safety, requirements for aquaculture businesses and all other legislative acts defining the area of food of animal origin.

- Food Safety Agency (FSA): The FSA is an independent administrative institution whose duties and tasks are defined by the Law on Food. In addition to all types of scientific activities linked with the food and animal feed risk analyses, the FSA initiates, prepares and organizes the development of implementing regulations based on the Law on Food and represents a point of contact for the activities of B&H in the Codex Alimentarius Commission. Its obligation is to perform the

Institucionalni okvir kvaliteta i sigurnost proizvoda akvakulture u Bosni i Hercegovini

Sažetak

Jedna od glavnih karakteristika bosansko-hercegovačke proizvodnje u akvakulturi je njena duga tradicija. Međutim, rat koji se dogodio u BiH (1992-1995) je rezultirao destrukcijom najvećeg dijela proizvodne infrastrukture. Od tada, moderna proizvodnja u ribarstvu i pogoni za preradu su ponovno počeli sa radom, što je pratilo i buđenje trgovine ribom i ribljim proizvodima. Dalja ekspanzija BiH akvakulture je i službeno bila prepoznata kao vrlo važan izvor sveobuhvatnog razvoja poljoprivrede, te kao ključni sektor koji je u stanju ispuniti međunarodne, a posebno trgovinske zahtjeve EU, brže nego drugi sektori BiH poljoprivrede. Tijekom pregovora o izvoznju dozvoli za EU, nadležne vlasti, a posebno Ured za veterinarstvo BiH i Ministarstvo spoljne trgovine i ekonomskih odnosa te ostale interesne grupe, su ustanovile nedostatak mogućnosti za ispunjenje nekih zahtjeva EU koji se tiču upravljanja zdravljia akvatičnih životinja i pitanja sigurnosti namirnica. U nastojanju da prevaziđe problem, Ured za veterinarstvo BiH i Ministarstvo spoljne trgovine i ekonomskih odnosa su tražili pomoć od strane FAO koja je rezultirala službenim odobrenjem FAO projekta pod nazivom "Jačanje kapaciteta upravljanja zdravljem akvakulture u BiH". U ovom radu autori prezentiraju institucionalni okvir kvaliteta i sigurnosti proizvoda akvakulture u BiH kao dio spomenutih problema.

named activities in co-operation with the competent authorities.

Federation of BiH Level:

• FafIA - VIFBIH: The Veterinary Inspectorate of the Federation of BiH (VIF-BIH) has close co-operation with the cantonal veterinary inspection. During 2006 the entity inspection supervision was established within the administrations for inspection affairs as independent administrative organizations. The post-border inspection supervision falls within the responsibility of the above mentioned inspections, except in the case of the border veterinary inspection organized at the state level (SVO). Supervision over the

operation of these inspections is performed by the entity-level governments, and therefore the entity-level ministries may not perform a direct supervision over their operations. They follow-up registered companies, do daily updates if alerts are notified; inspections on-site, etc.

• FMOAWF: The Federal Ministry of Agriculture, Water Management and Forestry- Veterinary Department is mainly involved in the first registration of food businesses and audits;

Cantonal level:

Veterinary inspections/departments: perform audits, inspections, and monitoring; cantonal inspections

are supervised by cantonal governments.

Republic of Srpska Level:

• RAfIA - VIRS: Veterinary Inspectorate of Republic Administration for Inspection Affairs; similar authorities like FafIA - VIFBIH

• MoAFWRS: The Ministry of Agriculture, Forestry and Water Management of Republic of Srpska- Veterinary Department has similar authorities like the Veterinary Department of FMOAWF.

Municipality Level:

Veterinary inspectors have similar authority like the inspectors on the

Regolamento istituzionale della qualità e della sicurezza dei prodotti di acquacultura in Bosnia ed Erzegovina

Sommario

Una tradizione lunga è una delle caratteristiche principali della produzione di Bosnia e Erzegovina (BiH) in acquacultura. Però, la guerra in BiH (dal 1992 al 1995) ha risultato con la distruzione della maggior parte dell'infrastruttura produttiva. Da allora, la produzione moderna nel settore di pesca ed i macchinari per la lavorazione generi alimentari, hanno ricominciato di lavorare, accompagnati dal risveglio del commercio di pesce e dei prodotti di pesce. L'espansione futura dell'acquacultura in BiH è stata ufficialmente riconosciuta come una fonte importantissima di tutto lo sviluppo d'economia, e anche come il settore chiave capace di effettuare le richieste internazionali, soprattutto commerciali, da parte di Unione Europea, più velocemente che gli altri settori dell'agricoltura in BiH. Durante le negoziazioni riguardanti il permesso di esportazione, il potere statale autorizzato, e innanzi tutto l'Ufficio veterinario di Bosnia ed Erzegovina e il Ministero degli Affari Esteri e delle relazioni economiche e gli altri gruppi interessati, hanno determinato la loro incapacità di soddisfare alcune richieste che riguardano la tutela diritti e salute degli animali acquatici e della loro sicurezza alimentare. Volendo risolvere questo problema, l'Ufficio veterinario di Bosnia ed Erzegovina e il Ministero degli Affari Esteri e delle relazioni economiche hanno chiesto l'aiuto dalla parte di FAO, ed hanno ottenuto il consenso di progetto di FAO, con il titolo "Rinforzamento delle capacità di tutela diritti e salute degli animali acquatici in BiH". In questo studio gli autori presentano il regolamento istituzionale di qualità e della sicurezza dei prodotti di acquacultura in BiH come una parte dei suddetti problemi.

cantonal level; inspections are supervised by municipality governments.

Problems identified and Recommendations

It seemed that differentiation of competencies between different official authorities was not always clear. There are a lot of complains about unclear responsibilities between ministries and other authorities on different levels (state, entities, cantons, districts and municipalities) as well as insufficient co-operation between the ministries and the involved Food businesses.

For a small country like B&H having State ministries and offices, followed by the same structures on Entity level, on Cantonal level and Municipality

level, this seems to bind too much money and can result in too many people being responsible for one thing. One major Ministry would make things easier.

ACKNOWLEDGEMENTS

The study was carried out under the umbrella of the FAO project "Strengthening capacity on aquaculture health management in Bosnia and Herzegovina" (Contract No. TCP/BH/3101).

LITERATURE

Alagić, D. (2008). National Epidemiology Consultant Report. FAO Project "Strengthening capacity on aquaculture health management in Bosnia and Herzegovina" (Contract No. TCP/BH/3101).

von Müffling, T. (2008). International Food Safety Consultant Report. FAO Project "Strengthening

capacity on aquaculture health management in Bosnia and Herzegovina"

(Contract No. TCP/BH/3101).

Perc, M (2007). National Coordinator Report. FAO Project "Strengthening food safety in south east European transition countries – a regional approach to food legislation and control" (Contract No. TCP/RE/3002).

Smajlović, M. (2007). Local Food Safety Consultant Report. FAO Project "Strengthening food safety in south east European transition countries – a regional approach to food legislation and control" (Contract No. TCP/RE/3002).

Smajlović, M. (2008). National Food Safety Consultant Report. FAO Project "Strengthening capacity on aquaculture health management in Bosnia and Herzegovina" (Contract No. TCP/BH/3101).

Received: May, 25 2009

Accepted: July, 20 2009

Institutioneller Rahmen für Qualität und Sicherheit der Erzeugnisse der Aquakultur in Bosnien und der Herzegovina

Zusammenfassung

Eine der Hauptcharakteristiken der bosnisch-herzegowinischen Herstellung in Aquakultur ist ihre lange Tradition. Der Krieg (1992-1995) resultierte mit Destruktion des größten Teils der Herstellungsinfrastruktur. Danach begannen die moderne Produktion in der Fischerei und die Verarbeitungsbetriebe erneut mit der Arbeit, was auch die Entwicklung des Handels mit Fisch und Fischereierzeugnissen als Folge hatte. Die weitere Expansion der BiH Aquakultur wurde auch offiziell als ein wichtiger Faktor der gesamten Landwirtschaftsentwicklung als auch der Schlüsselsektor erkannt, der imstande ist, internationale und besonders kaufmännische Forderungen der EU zu erfüllen, schneller als andere Sektoren in der BiH Landwirtschaft. Während der Verhandlungen über die Ausfuhrlicenz für EU wurde seitens den zuständigen Behörden, besonders des Veterinäramtes BiH und des Ministeriums für äußere Angelegenheiten und ökonomische Verhältnisse und anderer Interessengruppen festgestellt, dass man nicht in der Lage ist, einigen EU Forderungen nachzukommen, besonders denen, die sich auf die Gesundheit der aquatischen Tiere und die Sicherheit von Nahrungsmitteln beziehen. Mit der Absicht, dieses Problem zu überwinden, wendete sich das Veterinäramt BiH und das Ministerium für äußere Angelegenheiten und ökonomische Verhältnisse mit der Bitte um Hilfe an FAO, was mit einer offiziellen Genehmigung für FAO Projekt unter dem Titel "Stärkung der Verwaltungskapazität der Aquakulturgesundheit in BiH" resultierte. Die Autoren präsentieren in dieser Arbeit den institutionellen Rahmen für Qualität und Sicherheit der Aquakultur-Erzeugnisse in BiH als einen Teil der erwähnten Probleme.

52 godine
glasnik
zaštite
bilja

Zadružna štampa, d.d.

Jakićeva 1, 10000 Zagreb
P.P. 910
Tel/fax: 2301-347
2316-050
2316-060
email: zaduzna-stampa@inet.hr

Fraqueza, M.J., A.S. Barreto(2009):

The effect on turkey meat shelf life of modified-atmosphere packaging with an argon mixture.

Utjecaj pakiranja u modificiranu atmosferu sa mješavinom argona na održivost puretine. *Poultry Science*. 88(9):1991-1998.

Još je uvijek nedovoljno znanja povezanog sa utjecajem Ar na razvoj mikroorganizama kao i prevenciju oksidacije kada se primjeni na svježe meso upakirano u modificiranu atmosferu (modified-atmosphere package - MAP). Cilj ovog istraživanja bio je vrednovati utjecaj anerobne smjese plinova sa argonom na rast mikroflore kvarenja, boju i stabilnost lipidne oksidacije u puretini pod MAP pohranjenom na 0 °C. Uzorci prsa prikupljeni su različitim radnim danima sa trupova pura (BUT9 i BIG6), brzo ohlađeni u tunelu (-2 °C, 2 m/s, 90%RH) kroz 2 sata i odabrani za otkoštavanje prema trenutnoj praksi u industrijskim klaonicama. Prsa su sječena na komade koji su individualno pakirani pod aerobiozom (P0) te u 4 različite modificirane atmosfere koje sadrže različite mješavine plinova kao: (P1) 100% N₂, (P2) 50% Ar - 50% N₂, (P3) 50% Ar - 50% CO₂, (P4) 50% N₂ - 50% CO₂. Svi uzorci bili su pohranjeni u tamnom na 0 ± 1°C tijekom 12 do 25 dana. Uzorci mesa pakirani u P0 podvrgnuti su mikrobiološkim i kemijskim anali-

zama 0., 5. i 12. dana pohrane te dalje 19. i 25. dana kada su uzorci bili u MAP. Produljenje perioda mikrobiološke održivosti MAP puretine, u usporedbi sa aerobnim pakiranjem (održivost 5 dana) je 1 tjedan više za P1 i P2 mješavine, 2 tjedna više za P4, te 3 tjedna više za P3. Ar-CO₂ smjesa bila je učinkovitija u odgađanju rasta flore nego CO₂ - N₂ sa razlikom od 1 log 25. dana pohrane za ukupan psihrotrofni broj, ukupan aerobni broj i *Brochothrix thermosphacta*. Čini se da prisustvo Ar u smjesi plinova, nije imalo nekih dodatnih zaštitnih utjecaja na oksidaciju masti purećeg mesa. ■

Lynnette R. Ferguson (2009):

Meat and cancer.

Meso i karcinom.

Meat Science. In Press, Corrected Proof, Available online 23 June 2009.

Sve je više literature koja povezuje veliki unos mesa, posebice crvenog mesa kao i prerađenog mesa s rastućim rizikom od karcinoma, osobito kolorektalnog karcinoma. Postoje dokazi da rizik možda nije uvjetovan mesom per se, nego može reflektirati velik unos masti i/ili karcinogena stvorenih putem različitih metoda kuhanja i prerađivanja. Rizik od karcinoma može se modulirati različitim genotipovima. Karcinomi povezani sa visokim konzumacijom mesa mogu se smanjiti dodatkom antikancerogena u hranu, posebno ukoliko

se dodaju tijekom pripreme mesa ili konzumacije, te modifikacijom metoda pripreme hrane. Meso sadrži potencijalne antikarcinogene, uključujući omega-3 polinezasićene masne kiseline i konjugiranu linolensku kiselinu. Crveno meso je osobito važan izvor mikronutritijenata s antikancerogenim svojstvima, uključujući selen, vitamin B6 i B12, te vitamin D. Uravnotežiti udio mesa naspram drugih dijetalnih komponentata može biti kritična točka kako bi se za zaštitili od potencijalnih rizika od raka. ■

Pentimalli, D., N. Pegels, T. Garcia, R. Martin, I. Gonzalez (2009):

Specific PCR Detection of *Arcobacter butzleri*, *Arcobacter cryaerophilus*, *Arcobacter skirrowii*, and *Arcobacter cibarius* in Chicken Meat.

Specifičan dokaz *Arcobacter butzleri*, *Arcobacter cryaerophilus*, *Arcobacter skirrowii* i *Arcobacter cibarius* u pilećem mesu lančanom reakcijom polimeraze. *Journal of Food Protection*. 72(7):1491-1495.

Obogaćeni test lančane reakcije polimerazom (PCR) razvijen je za dokaz *Arcobacter butzleri*, *Arcobacter cryaerophilus*, *Arcobacter skirrowii* i *Arcobacter cibarius* u pilećem mesu. Početnice (prajmeri) za *A. cryaerophilus*, *A. skirrowii* i *A. cibarius* napravljene su prema gyrA genu za umnožavanje fra-

gmenata nukleinske kiseline od 212, 257 i 145 bp. *A. butzleri*-specifične početnice napravljene su od 203-pb DNA fragmenta u 16S rRNA genu. Specifičnost četiri para početnica procijenjena je pomoću PCR analize DNA panela *Arcobacter* vrsta, srodnih *Campylobacter* i *Helicobacter* vrsta, te drugih bakterija u hrani.

Primjenjivost metode zatim je validirana testirajući 42 uzorka pilećine iz maloprodaje putem PCR testa. 18 satni selektivni korak predobogaćenja, nakon kojeg slijedi PCR umnožavanje sa četiri seta *Arcobacter* početnica, otkrio je prisutnost *Arcobacter* spp. u 85,7% uzoraka analizirane pilećine. *A. butzleri* bio je jedina prisutna vrsta u 50% uzoraka, dok je 35,7% uzoraka bilo pozitivno na oboje *A. butzleri* i *A. cryaerophilus*. *A. butzleri* i *A. cryaerophilus*. te *A. skirrowii* i *A. cibarius* nisu dokazani niti u jednom analiziranom uzorku pilećine. Razvijeni obogaćeni PCR test je specifičan i brza alternativa za dokaz (studiju) *Arcobacter* kontaminacije u mesu.

Ivana Filipovic, dr. med. vet ■

EFSA: EFSA završila prvu procjenu izvora vitamina i minerala koji su korišteni kao dodaci hrani u EU

Europska agencija za sigurnost hrane (EFSA) završila je prvu sveobuhvatnu procjenu tvari koje su korištene kao izvor vitamina i minerala u dodacima hrani koji se trenutno prodaju u EU. Od 2005. godine EFSA je obradila 533 zahtjeva koji su se odnosili na 344 različite tvari. Procjene su bile utemeljene na znanstvenim dokazima koje su dostavili sami proizvođači u svrhu iskazivanja njihove sigurnosti, kao i do koje količine se apsorbiraju i metaboliziraju u tijelu.

Od početka procjene povučeno je iz različitih razloga 186 zahtjeva dok je procjena još trajala, dok su za procjenu preostale polovice zahtjeva znanstveni dokazi bili nepotpuni. Za 39 zahtjeva iskazana je moguća zdravstvena zabrinutost.

Prema EU direktivi 2002/46/EC, od 1. siječnja 2010. moći će se koristiti samo oni dodaci za koje je EFSA izvršila procjenu i koji su navedeni na važećem Aneksu spomenute direktive. ■

Izdavanje mišljenja o zdravstvenim tvrdnjama

Prema regulativi Europskog parlamenta (EC)1924/2006 o prehrambenim i zdravstvenim tvrdnjama za hranu, članku 13. i 14. određeno je kako svaka zdravstvena tvrdnja koju opisuju spomenuti članci mora biti jasna i znanstveno potvrđena.

EFSA, kao nezavisna europska institucija, dobila je od Europske komisije krajem srpnja 2008. godine listu s popisom 2 870 proizvoda koji na deklaraciji sadrže zdravstvene tvrdnje.

Budući da neki proizvođači imaju više zdravstvenih tvrdnji, a i da se broj takvih proizvoda povećao, sveukupno je zaprimljeno oko 4000 zahtjeva za procjenu zdravstvenih tvrdnji. EFSA-in odbor za dijetetske proizvode, prehranu i alergije (NDA) obrađuje zahtjeve Europske komisije periodično izdavajući mišljenja o procjeni zdravstvenih tvrdnji, koja objavljuje na svojoj web stranici: http://www.efsa.europa.eu/EFSA/ScientificPanels/NDA/efsa_locale-1178620753812_1211902602292.htm ■

Pretplata

Naručujem pretplatu na 6 (šest) brojeva časopisa MESO po cijeni od 400,00 Kn (za Hrvatsku) ili 70 EUR (za inozemstvo).

ZADRUŽNA ŠTAMPA d.d., Jakićeva 1, Zagreb

Žiro račun kod ZAGREBAČKE BANKE broj: 2360000-1101905427; Devizni račun broj: 2360000-2100316203

Pretplatu ću platiti na slijedeći način:
(odaberite željeni način plaćanja i šitko unesite potrebne podatke)

općom uplatnicom

pouzećem (po primitku prvog broja)

virmanom na žiro-račun

Ime i prezime _____

Tvrtka za pravne osobe _____ MB/JMBG _____

Ulica i broj _____ Mjesto _____

Telefon _____ Fax _____

Vlastoručni potpis _____ Datum _____

ZADRUŽNA ŠTAMPA d.d., Jakićeva 1, Zagreb, tel/fax: 01/ 230 13 47, 231 60 50, 231 60 60

www.meso.hr