Trends in game meat hygiene

From forest to fork

edited by:
P. Paulsen
A. Bauer
F.J.M. Smulders
24. Veterinary and sanitary examination of game meat in the West-Balkan region – harmonisation with European Union legislation

Miroslav I. Urosevic1,2 and Zoran A. Ristic3
1 Institute of Food Technology, University of Novi Sad, Bul. Cara Lazara 1, 21000 Novi Sad, Serbia
2 Scientific Institute for Reproduction and Artificial Insemination of Domestic Animals Temerin, 21235 Temerin, Serbia; urosevic.miro2012@gmail.com
3 Faculty of Sciences, University of Novi Sad, Trg Dositeja Obradovica 3, 21000 Novi Sad, Serbia

Summary

This chapter analyses the national regulations on game meat hygiene in the West-Balkan region (i.e. Serbia, Croatia, and Bosnia and Herzegovina) as compared with European Union legislation. Depending on the degree of association with the EU, there is a more or less advanced process of harmonisation with EU legislation. The provision of adequate training materials and courses for trained persons is crucial as are raising the motivation and awareness of hunters as regards their responsibilities as food business operators.

Keywords: legislation, good hygiene practice, training

24.1 Introduction

In Serbia and in all the West Balkan region, wild game meat has great economic (hunting), and nutritional significance. Ensuring the safety of game meat plays an important part in the entire system of food safety (Urosevic et al., 2011). To ensure food safety ‘from forest/field to fork’, hunters supplying meat to consumers or retailers have to undergo specific training (Winkelmayer, 2009). Careful inspection of game before killing and post mortem examination of carcass and organs, as well as the strict adherence to certain rules of Good Hygiene Practice along the food chain (Winkelmayer, 2006) are necessary to assure that all quality traits are preserved and that game meat is not hazardous to the consumer (Winkelmayer et al., 2011).

Serbia adopted a number of veterinary and hunting regulations (including by-laws). Considering that Serbia has become a candidate country for EU membership, there is a need to fully modernise the veterinary and sanitary regulations relating to hunting tourism and the export of game meat with those of European Union member countries. Currently, hunting tourism poses problems, when foreign hunters shoot small game in Serbia and want to transport such to their home countries (Urosevic et al., 2011). Bosnia and Herzegovina, which might become candidate for EU membership around 2015 deal with similar problems.
In contrast, in Croatia, all the rules in this area have already been implemented, because this country is member of the European Union since June 2013. It should be noted that for adoption and implementation of appropriate legislation it is necessary to have reliable information about the situation of infectious diseases of game animals, many of which are zoonoses. Unfortunately, over the past decade literature data on the following diseases or agents in wild animals in Serbia, Bosnia and Herzegovina, and Croatia have not been reported: listeriosis, Q-fever, Aviceszyk’s disease, salmonellosis, cysticercosis. Also, there are no published data on the seroprevalence in exposed humans (hunters, farmers, veterinarians) of antibodies against the various pathogenic organisms causing the diseases. As opposed to data on Trichinella sp., reports on other parasitical, bacterial or viral zoonoses are rather scarce (Urosevic et al., 2012a,c).

Consequently, this presentation analyses regulations in the field of veterinary medicine in relation to diseases of wildlife, game meat hygiene and game management in general, in the West Balkan area, i.e. Croatia, Serbia, Republica Srpska, Bosnia and Herzegovina. Reference to national legislation is made, where appropriate. As these texts are published in the national language only, the interested reader may refer to international databases (e.g. www.ecolex.org and faolex.fao.org) where English transcripts of the titles, relating by-laws and links to the full texts in national language (occasionally also non-official translations in English) are provided.

24.2 Development and current status of legislation governing safety of meat from free living game in the Balkan region

24.2.1 Experiences from Croatia

Considering that Croatia is a member of the European Union, legislation on game meat hygiene has already been harmonised with EU rules. Hence, first inspection of game meat is done by so-called ‘trained persons’. In Croatia, the game meat safety is regulated by several regulations among these the most important ones being ‘Ordinance on the hygiene of food of animal origin’ (OG, 2007a), ‘Ordinance on official controls on food of animal origin’ (OG, 2007b) and ‘Regulation on the certificate of origin of game and its parts and marking standards for big game including the evidential stamps’ of 2010 (OG, 2010a).

Harmonisation of the Croatian legislation was extremely demanding and comprehensive. In a series of consultations, meetings and workshops, it was tried to create the best possible quality of the legal framework, and to communicate it to the professional public. Meat from wild game is covered by the Veterinary Law (OG, 2007c), Law on Food (OG, 2007b), the Hunting Law (OG, 2005a) and other pieces of legislation, so as to provide a framework within which subordinate legislation dealing with specific actions in certain cases could be formulated. So, Mikuš et al. (2010) notes that the meat of feral wildlife is subject to veterinary inspection and to certain procedures prior to marketing. Feral wildlife must be inspected as soon as possible after admission to the facility for the processing of wild game carcasses. The official veterinarian takes into consideration the information in accordance with the provisions of the ‘Regulations on the hygiene of food of animal origin’ (OG, 2007a) which has been delivered by a trained person who took part in the killing.
Trichinellosis is a major parasitic zoonosis associated with wildlife in the Balkan area (Bunic and Mirljovic, 2011). Today, Croatia is in a relatively stabilised epidemiological and epizootic situation regarding this dangerous disease, but almost every year cases in animals and humans are reported. As of 2014, the method of artificial digestion must be applied if the meat is intended for public consumption, and can be applied only by accredited laboratories. It is further emphasised that trichinellosis is a communicable disease in Croatia.

In summary, the legislative measures and regulations of the Republic of Croatia are respectable (Jorjua et al., 2010) and the Croatian experience in adapting legislation appears to be very useful for future candidate member countries of the European Union.

24.2.2 Situation in the Federation of Bosnia and Herzegovina

In Bosnia and Herzegovina, game meat inspection is conducted by veterinarians and/or trained persons. This is regulated by the Law on Hunting (OG, 2006a) and described in detail in an ordinance covering the form of the certificate of origin of wild game and the use of game meat in restaurants (OG, 2008).

According to the Law on Hunting, hunted or deceased wildlife and its parts can be taken out of hunting grounds only with a certificate of the hunting grounds user, which is to be issued in a prescribed form.

OG. BiH No. 63/2008 (OG, 2008) requires that all legal and natural persons marketing game meat must not only provide evidence on the safety of game meat but must also provide a document on its origin (shipping document, bill) issued by the hunting ground user.

The most recent regulation on animal health requirements for the facilities producing food of animal origin (OG, 2013b) was issued in March 2013 and includes details on where and how hunted wildlife can be handled and processed. It should be noted that – in addition to the Ordinance on the hygiene of food of animal origin – this is the first regulation in Bosnia and Herzegovina, introducing the concept of ‘trained persons’ responsible for game meat hygiene. However, an important role has been reserved for veterinarians (first examination of animals being shot after hunting), because only these (or a trained person) could perform first inspection. Among other things, this ordinance states that the collection centre for shot game is part of the primary production chain. In particular, collection centres for small quantities of wildlife are defined as those supplying: (1) to the final consumer; or (2) to retail facilities directly supplying the final consumer, and that are delivering up to a maximum of 20% of the planned annual catch of wildlife from nature as determined for each individual hunting organisation. Planned annual catch parameters in terms of animal species, gender and age, etc. are to be submitted to the competent ministry until 1st May.

Besides the general technical requirements for the collection centres an essential obligation is that the qualified person must: (1) review body and accompanying viscera as laid down in the Ordinance on the the hygiene of food of animal origin (OG, 2012a); and (2) issue a written statement. This statement must be filed and should be stored at least two years from the date of issue.
The official veterinarian considers the statement which is provided by a trained person or another veterinarian involved in hunting of animals ('Ordinance on the hygiene of food of animal origin'; OG, 2012a) and conducts visual inspection of the carcass, and if necessary, other examination.

Carcasses or meat of wild boars and other susceptible wildlife species, intended for final consumers or distributed to retailers supplying end consumers, must be examined for the prevalence of Trichinella in accordance with the code of practice in meat (OG, 2011, 2013a).

The training of hunters in health and hygiene is identical with the rules in Croatia ('Ordinance about capacity building in hunting'; OG, 2006b).

Currently, the potential of game meat inspection as a tool for disease monitoring is under-utilised. Monitoring based on a delivery of dead game and organs, and the total amount of killed animals would provide a vastly detailed base for preventing diseases and its treatment. Pathological changes can be found during necropsy conducted by specialised staff, but also experienced or trained hunters will notice abnormalities on carcasses or inner organs and their observations could form a part of a disease monitoring system. It is important to stress that this monitoring should be based on legislation and should be supported by premium payments for every game animal delivered for examination. Initially, pilot monitoring exercises could focus on a specific geographical region. Public health officials are interested to support this initiative, and hunters (besides for assuring health protection, which is their primary concern), would be able to use the financial funds that exist for these purposes under the EU programme, which are designed for non EU-countries. Unfortunately, in Bosnia and Herzegovina concerted efforts to acquire these funds have not been made (Sinanović et al., 2010).

24.2.3 The government of Republika Srpska

The 'Ordinance on the conditions under which taxidermy of game can be performed and on keeping trophies exposed in public buildings, and the use of game meat in ecotourism facilities' (OG, 2010b), stipulates that ecotourism and retail stores which put game meat on the market must – besides providing evidence for the safety of game meat – provide a document on the origin of meat, issued by the hunting ground’s user. Additional legislation on conditions for placing meat from feral animals on the market were issued in 2012 (OG, 2012b). Legislation on veterinary-sanitary conditions of facilities for production, storage and distribution of food of animal origin (OG, 2009a) is applicable to facilities for processing and cutting of game meat.

24.2.4 Overview of legislation in Serbia relating to wildlife management

In Serbia, game meat inspection is performed by veterinarians, which activity is regulated by the Law on Veterinary Medicine and described in detail in the Ordinance 'Regulation on veterinary-sanitary conditions, and general and specific requirements for food hygiene to be met by facilities for handling with shot wild game, and how to carry out official controls in shot wild game' (OG, 2010c). Related legislation is found in the Law on Game and Hunting
Veterinary and sanitary examination of game meat in the West-Balkan region

OG. 2010d), Veterinary Medicine Law (OG, 2005b), the Law on Food Safety (OG, 2009b), and other subsidiary legal acts.

The Law on Food Safety (OG, 2009b) refers to hunting and supporting activities relating to the storage, handling and transport of game carcasses from the production place to the facility. Veterinary inspections are carried out in the phase of export of products of animal origin, as well as the retail trade of game meat in specialised stores. The Law on Veterinary Medicine (OG, 2005b) describes the obligations to be fulfilled by hunting ground users in the handling of game meat and specifies veterinary-sanitary control of game meat.

Trade of hunted game and trophies is defined as a set of actions from movement of hunted game that is properly marked from the shooting places up to delivery to end users. Hunting ground users can export shot game animals or its parts, only if they are registered for such activities. However, according to the Law on Hunting and Game (OG, 2010d) in hunting tourism export of game meat is formally organised by travel agencies.

Game meat and hunting trophies to be exported from Serbia are subject to veterinary-sanitary control at border crossings. Export is organised by authorised facilities and consignments of animals and animal products are accompanied by the original international veterinary certificate confirming that the shipment fulfills the conditions of the importing country, and for food of animal origin, that these are safe for human consumption. If only trophies of wild animals are to be exported, adequate preparation is required and supporting documents are issued by the competent veterinary inspector at the place of origin. At the border crossing, veterinary inspectors verify the certificate.

In 2010, the Ministry of Agriculture of Serbia passed an important subsidiary act concerning the safety of meat from game animals, i.e. Regulation on veterinary-sanitary conditions, and general and specific requirements for food hygiene to be met by facilities for handling with shot wild game, and how to carry out official controls shot wild game (OG, 2010c). Facilities for temporary storage of shot wild game are defined as buildings in which the official post mortem inspection is done. Carcasses can then be used for own, private consumption or be delivered to facilities approved for cutting and processing of game meat. Facilities for temporary storage of shot game animals must be located within the hunting grounds, with few exceptions.

Official control of wildlife game immediately after killing may be performed also in facilities approved for processing and cutting of game meat wildlife if they are in the hunting area in which the game was shot, or nearby.

Hunting ground users have a maximum of 48 hours to present the carcasses and organs to a competent veterinary inspector or authorised veterinary practitioner. Assessment done by these persons takes into account reports about unusual behaviour or suspicion of change in health status of game carcasses or pathological changes.

It is prescribed that pulling the skin of game and cutting is not allowed on the killing location. After removal of internal organs, carcass and organs which are submitted for examination
receive a special mark. Carcasses and organs must be transferred in an appropriate device for cooling not later than 10 hours post mortem. Meat must attain a core temperature of maximum +7 °C, and up to +4 °C for carcasses and inner organs from large game, respectively.

It is clear that Trichinella infection in animals is a continuing threat to food safety in many countries, especially in resource-poor areas. Until now, Serbian regulations on Trichinella (Ministry of Agriculture and Water Management, 2002; OG, 1995) are consistent only in part with EU Regulation EC no. 2075/2005 (EC, 2005; Urosevic et al., 2012c). Also, the role and importance of the national reference laboratory for trichinellosis needs to be emphasised.

24.3 The role of hunters in the game meat inspection

In the regulations of these three countries in the Balkans, it is evident that hunters are strictly required to provide written and/or oral statements about the behaviour of game before killing. Therefore, it is important that hunters have developed awareness about the importance of game meat hygiene.

Unfortunately, communication between stakeholders is not at the required level in the Western Balkans, not only between hunters and consumers, but also within the hunting community. For example, the co-existence of hunting associations and hunting chamber in Serbia does not facilitate communication. If we analyse the weaknesses in the implementation of these regulations, it must be emphasised that the principle of traceability has not been implemented properly. Also, the possibility to rent the infrastructure of the network of agricultural schools should be improved. This would allow hunters (which are not willing or able to invest in their own infrastructure) to work and process meat under professional conditions, as was demonstrated for some regions of Austria (Fettinger et al., 2011).

24.4 Education in hunting

In addition to the appropriate legal framework (Urosevic et al., 2012b), education of hunters and other stakeholders (veterinarians, rangers) is essential for ensuring game meat hygiene. In particular, cooling of carcasses is often done with undue delay or carcasses are transported in a way that maintains body temperature rather than lowering it. So, for example, hunted small game, is often put in the rucksack (and before that in plastic wrap; Ristic and Skrinjar, 2009), which does not allow the carcasses to cool. Njari et al. (2005) state that although a lot has been done to improve the procedures for meat from hunted wild game, it still does not suffice and a lot of game enters the market uncontrolled. In addition, there are too few facilities in which wild game carcasses can be processed in a hygienic way to satisfy the market or for culinary purposes. Hence, the available data on hunting bags, number on the quantities of game meat officially placed on the market is not really credible.

For education in hunting in Croatia a special ordinance about capacity building in hunting was issued (OG, 2006b). In general, its goal is to emphasise the gaining of basic knowledge of the participants on wildlife biology, wildlife diseases (particularly disease symptoms) and
Handling of diseased and dead wildlife. In the middle of April 2011, a two day workshop entitled 'Improvement in the implementation of EU hygiene package in wild game meat' (EC, 2011) and organised by the European Commission and its Office of Technical Assistance and Information Exchange (TAIEX European Commission – Technical Assistance Information Exchange Instrument), was held in Zagreb in cooperation with the Ministry of Agriculture of the Republic of Croatia. The lecturers were experts from Slovenia, and the workshop was attended by twenty veterinary inspectors and representatives of the Croatian Hunting Association. During the first day of lectures, the EU hygiene package of facilities for the inspection of game meat was presented, and experiences of Slovenia about their application in practice and official control of game meat (basic requirements for approval, equipment, veterinary inspection official controls) were conveyed. The Slovenian education programme for 'trained persons' were subsequently discussed. The second day was devoted to practical training and use of appropriate techniques during evisceration, handling, transportation and initial examination of the shooting wildlife. The same organisers, this time in cooperation with the Croatian Food Agency, in November 2011, held a workshop entitled 'Inspection, monitoring and diagnosis of trichinellosis and other parasitic food-borne diseases'. The lecturers included experts from Italy and the Netherlands. The workshop was attended by about one hundred people, primarily veterinarians and other professionals (agricultural engineers, food technologists, biologists, etc.).

As reference materials for the training of all stakeholders in the process/implementation of game meat hygiene the books 'Wildbrethygienie' (Winkelmayer et al., 2008) and 'Wildbretdirektvermarktung' (Winkelmayer et al., 2007) were recommended. Richly illustrated with a simple display of contemporary information about EU legislation, this book is one of the best manuals in this field. An example of how to organise educational courses has been presented recently (Winkelmayer et al., 2011). Hunting associations of Austria/Lower Austria, in cooperation with agricultural schools, provide the necessary infrastructure for this type of training: facilities for processing of carcasses and for fresh meat, and professional staff (skilled butchers).

Unfortunately, in many hunting grounds in Serbia, hunters eviscerate carcasses on the ground (in the forest) and offals are left as food for other animals, thus increasing the risk of transmitting diseases. Although in Serbia there are detailed regulations regarding the facilities for temporary storage of shot game animals, there are numerous exceptions in relation to their number and territorial distribution. In addition, there is no equivalent to trained persons according to EU legislation. This means that veterinary inspection is a prerequisite even when game meat is directly supplied from the hunter to the consumer. Deficiencies in infrastructure do not facilitate veterinary inspection of hunted wild game. Consequently, the export of game meat from Serbia in an EU country would be a complicated process.

In contrast to Croatia, where EU pre-accession funds were available for education and general harmonisation of regulations on game meat production and inspection, no such funds were provided for Serbia. Admittedly, oral vaccination of foxes and suppression of classical swine fever was funded from IPA funds, but this is more or less implemented in all countries/EU candidates.
Both homologation of legislation as well as provision of the required infrastructure for training hunters will require a sufficiently long transition period for the introduction of EU regulations in Serbia, and Bosnia and Herzegovina.

24.5 Conclusions

24.5.1 What has been achieved?

In most countries of the Western Balkans the tradition and habits related to hunting provide a ‘hygienic minimum’ for production and handling of game meat. This primarily includes the processing of game meat as early as possible after the shooting, as well as obligatory trichinoscopic examination of wild boar and other susceptible species. Legislation in Croatia, Serbia, Bosnia and Herzegovina of the examination of game meat has been harmonised with that of European Union. The veterinary profession in all three countries of the Western Balkans is increasingly involved in the control of infectious diseases of wildlife.

24.5.2 What has been neglected?

However, even within one country there are different habits of hunters and local residents as regards hunting and handling of game meat. Unfortunately, some hunters still lack awareness of the importance of transmission of infectious diseases from wildlife to humans. This is likely due to a lack of knowledge and training. A number of legal texts have been issued, but it is unclear if all of them are obeyed in practice.

24.5.3 What needs to be done?

Existing legislation on game meat hygiene in the West-Balkan countries should be fully harmonised with that of the EU, especially regarding the role of trained persons. As for education on this topic, training courses should be organised by the institutions of the European Union for Bosnia and Herzegovina and Serbia. The transitional period before the entry into force of legislation harmonised with European Union laws in Serbian and Bosnia-Herzegovina should be sufficiently long.

Acknowledgements

This contribution is part of the research done in the scientific projects TR-31084 and III-46005 granted by the Serbian Ministry of Education and Science.
References


Official Gazette (OG), 2008. Ordinance on the form of the certificate of origin of the game and its components and the conditions under which it can perform taxidermy of game and keeping trophies exposed in public buildings as well as the use game meat in restaurants. Official Gazette of the Federation of Bosnia and Herzegovina No. 63/2008.


Trends in game meat hygiene
Miroslav I. Urosevic and Zoran A. Ristic


Official Gazette (OG), 2010c. The rulebook on veterinary-sanitary conditions, and general and specific requirements for food hygiene to be met by facilities for handling with shot wild game, and how to carry out official controls shot wild game. Official Gazette of the Republic of Serbia No. 68/10.


Official Gazette (OG), 2012b. Regulation on conditions for marketing and labeling of hunted game and game trophies, as well as method of keeping records. Official Gazette of the Republic of Serbia No. 16/2012.


Official Gazette (OG), 2013b. Regulation on veterinary-sanitary conditions for the facilities that produce food of animal origin. Official Gazette of the Federation of Bosnia and Herzegovina No. 22/13.


Winkelmayer, R., 2006. Food safety inspection and monitoring of meat from wild game in Austria. Annual Scientific Conference and Annual General Meeting of the European College of Veterinary Public Health in Lyon, 7-8 December 2006, Lyon, France.


Veterinary and sanitary examination of game meat in the West-Balkan region
