

The EFSA Scientific Panel on Biological Hazards first mandate: May 2003–May 2006. Insight into foodborne zoonoses

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The Scientific Panel on Biological Hazards (BIOHAZ) of the European Food Safety Authority provides scientific and technical advice to the risk managers, mainly the European Commission, in all matters related to food safety and foodborne diseases, including foodborne zoonoses and transmissible spongiform encephalopathies, microbiology, food hygiene and associated waste management. The scope of this review is to present an overview of the scientific opinions issued by the BIOHAZ Panel on foodborne zoonoses during its first mandate (2003–2006). Zoonoses are diseases or infections that are

transmissible from animals to humans either directly or through ingestion of contaminated foodstuffs. The most frequently reported zoonotic diseases in humans in the EU are salmonellosis and campylobacteriosis. During the past decades trichinellosis has been described as an emerging and/or re-emerging disease. In order to improve public health and to prevent these diseases from occurring, it is important to identify which animals and foodstuffs are the main sources of the infections and which intervention strategies would be most effective. The European Commission follows a scientific evidence-based approach to managing the risks of zoonotic agents throughout the food chain based on the risk assessments produced from the BIOHAZ Panel. This leads to the development and enforcement of legislation and/or other measures on zoonoses and zoonotic agents.

Introduction

The European Food Safety Authority (EFSA), created by the EC Regulation 178/2002 of the European Parliament and of the Council (OJEU, 2002) as the keystone of the European food safety network, is committed to providing scientific and technical advice and clear communication of existing and emerging risks. Through the work of its Scientific Committee and Expert Panels and its own scientific expertise, EFSA provides scientific opinions, advice and risk assessments on all matters linked to food and feed safety, including animal health and welfare, plant protection and nutrition in relation to Community legislation. Risk communication is a shared responsibility with the European Commission who acts as Risk Manager.

The Scientific Panel on Biological Hazards (BIOHAZ Panel) is one of the 10 Scientific Panels in EFSA and its mandate is to issue scientific opinions based on risk assessment on areas related to food safety and food-borne disease, including foodborne zoonoses and transmissible spongiform encephalopathies, microbiology, food hygiene and associated waste management. The Scientific Panel on Biological Hazards in its first mandate (2003–2006) was composed of 21 experts selected on their personal capacity and scientific excellence coming from 15 Member States. The Panel's mandate lasted for three years following an official open call for expression of interest in the Official Journal of the European Union.

The scope of this paper is to present an overview of the scientific opinions issued by the BIOHAZ Panel on foodborne zoonoses during its first mandate (2003–2006).

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Foodborne zoonoses

The Community system for monitoring zoonoses was established by Council Directive 92/117/EEC (OJEU, 1993), which sets rules for the Member States to collect, evaluate and report to the European Commission, each year, data on specific zoonoses and zoonotic agents in animals, foodstuffs and feedingstuffs. The main objective of this Directive was the collection of relevant data in order to follow the epidemiological trends of zoonoses and to indicate the need for appropriate measures to control them. Since 1994 up to 2004, the Community Reference Laboratory for the Epidemiology of Zoonoses (CRL-E) prepared an annual report on “Trends and sources of zoonotic agents in the European Union and Norway”.

At the end of the 1990s, the European Commission revised the existing rules on monitoring and reporting of zoonoses. The aim was to improve the system, in particular regarding the comparability of data, and to extend the system to cover additional zoonoses on mandatory basis and certain other important aspects such as antimicrobial resistance and foodborne outbreaks. The new Directive 2003/99/EC was adopted by the Council and the European Parliament on 17 November 2003, although it entered effectively into force on 12 June 2004.

In 2005, data related to 11 zoonotic agents and zoonoses: *Salmonella*, *Campylobacter*, *Listeria monocytogenes*, verotoxin producing *Escherichia coli*, tuberculosis due to *Mycobacterium bovis*, *Brucella*, *Yersinia*, *Trichinella*, *Echinococcus*, *Toxoplasma* and rabies were collected from the EU-25 Member States and Norway. In addition, data on antimicrobial resistance in *Salmonella*, *Campylobacter* and *E. coli* as well as foodborne outbreaks were reported. EFSA was assigned the tasks of examining the data collected and preparing the Community Summary Report (CSR).

Salmonella

Salmonella is one of the major causes of foodborne illnesses in humans (EFSA, 2007). Poultry meat, eggs and pork products are regarded to be the major sources of human infections. The existing Community legislation on food hygiene and control of zoonoses includes a number of provisions that seek to control and prevent the *Salmonella* contamination of foodstuffs. Regulation (EC) No 2160/2003 on the control of *Salmonella* and other specified zoonotic agents (OJEU, 2003) provides for the progressive setting of Community targets for *Salmonella* spp. in different animal populations: breeding flocks of *Gallus gallus* (OJEU, 2005a), laying hens (OJEU, 2006a), broilers, turkeys, slaughter and breeding pigs. After each target is set, Member States will have to develop and submit national control programmes to the European Commission for its approval. According to Regulation (EC) No 2160/2003, it may be decided to establish rules concerning the use of specific control methods in the context of the control programmes. The Regulation anticipates that before proposing such rules on specific control methods, the European

Commission shall consult the EFSA. An example of such potential specific control methods are the use of antimicrobials and/or vaccines against *Salmonella* spp.

In this context, EFSA was asked to evaluate and assess the advantages and disadvantages of the use of antimicrobials (EFSA, 2004a) and vaccines (EFSA, 2004b) in the framework of programmes to control *Salmonella* in poultry.

The BIOHAZ Panel produced an opinion (EFSA, 2004a) and concluded that from a food safety/public health viewpoint, using antimicrobials to control *Salmonella* spp. in poultry has little justification. Any use in exceptional circumstances on animal health and welfare grounds must recognize the consequences for public health. The BIOHAZ Panel recommended that the use of antimicrobials for *Salmonella* control in poultry should be discouraged due to public health risks associated with development, selection and spread of resistance. Their use should be subject to formally defined conditions that would ensure protection of public health. Such use must be fully justified in advance and recorded by the competent authority.

With respect to the use of vaccines, the panel in its opinion (EFSA, 2004b) concluded that if a control programme is targeting serovars of *Salmonella* Enteritidis and *Salmonella* Typhimurium in breeders of layers/broilers, or laying hens and flock prevalence is high, vaccination may be useful in reducing shedding and egg contamination with *Salmonella*. If the flock prevalence is low, vaccination may not be so useful but still could be used as one of the preventive measures to maintain a low prevalence. The BIOHAZ Panel also concluded that in circumstances where detection methods are able to differentiate the vaccine strain from wild strains, both inactivated and live vaccines can be safely used throughout the life of the birds except during the withdrawal period before slaughter. This applies to parent flocks of layers and broilers; it can also apply to grand parent flocks of layers and broilers. After these two opinions were issued by EFSA, the European Commission adopted Regulation (EC) No 1091/2005 (OJEU, 2005b), recently repealed by Regulation (EC) No 1177/2006 (OJEU, 2006b), regarding requirements for the use of antimicrobials or vaccines in the framework of the national programmes for the control of *Salmonella*.

In March 2006, on request from the European Commission, the BIOHAZ Panel adopted an opinion on risk assessment and mitigation options for *Salmonella* in pig production (EFSA, 2006). In particular, the BIOHAZ Panel was asked (i) to estimate the contribution of pork to human infection in EU, prioritizing *Salmonella* serotypes according to their significance for public health, (ii) to identify options for monitoring schemes in pig production, (iii) to assess the appropriateness of a progressive approach at different steps of pig production chain to reduce the risk to human health, and (iv) to identify options, including their advantages and disadvantages, to be applied at primary

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