

Challenges and opportunities of the European risk-based pig meat safety assurance system

Bojan Blagojevic, *University of Novi Sad*

Background

The traditional pig meat safety assurance system - relying primarily on veterinary meat inspection and end-product testing - has significantly contributed to public health protection throughout the last century. However, in the recent decades, relevant scientific community and regulatory authorities have recognised that this system suffered from many flaws – the main being its limited ability to control currently most important meat-borne hazards. Therefore, in 2009, the European Commission triggered scientific work on modernisation of the traditional system by delegating the European Food Safety Authority (EFSA) tasks to prioritise biological and chemical meat-borne hazards and propose a generic framework for a new, risk-based meat safety assurance system (RB-MSAS). Pig RB-MSAS proposed by EFSA in 2011 is flexible and dynamic, longitudinally integrated system that is focused on safety of chilled carcasses. The system incorporates meat inspection with producers' food safety management systems and other farm-to-abattoir controls into a coherent whole. Its implementation has recently started in Europe as a direct result of the changes of relevant legislation in the European Union. Full implementation is expected to be a slow and careful process followed by thorough development, fine-tuning, and testing of practical feasibility and general impacts of the system.

Materials and Methods

With an aim to strengthen European-wide research efforts on modern meat safety controls and thus to help implementation of the RB-MSAS, a network of researchers and regulatory and meat industry representatives was established in 2019 through the European Cooperation in Science and Technology (COST) Action "Risk-based meat inspection and integrated meat safety assurance" (RIBMINS). RIBMINS is structured in five working groups and includes more than 250 participants who are coming from 43, mostly European, countries.

Results

Many challenges of the new pig RB-MSAS have been identified through the work of RIBMINS network in the period 2019 to 2023. They include generally inadequate food chain information system, variable criteria to declare meat fitness for human consumption, differences in terminology and frequency of meat inspection findings among European countries, etc. Considering the opportunities anticipated with the implementation of the new system, more efficient controls of the major pork-borne hazards, such as *Salmonella* spp., *Yersinia enterocolitica* and *Toxoplasma gondii*, have been suggested. Additional *post-mortem* inspection procedures and laboratory methods that complement visual meat inspection, as well as the use of computer vision systems in meat safety assurance, have been evaluated. Furthermore, efficacy of interventions applied during primary processing to reduce microbial contamination on pig carcasses, methods for abattoir risk categorisation and assessment of performances of food safety management systems, have been investigated. Finally, the concepts for future training of official veterinarians, who are expected to take a pivotal role in the RB-MSAS, have been proposed.

Conclusions

Full development of pig RB-MSAS requires incorporation of principles for tailor-made control measures, based on risk assessment and applied at those points in the meat chain where they have highest cost-effectiveness in reducing meat-borne risks. More focus on targeted and risk-based inspection along the supply chain is needed, as well as the use of new digital technologies which is a cost-effective and feasible way forward. Further progress that will lead to the full implementation of the RB-MSAS in Europe is dependent on intensive research to fill knowledge gaps, training of the participants in this new system and fostering close collaboration among all stakeholders. Sharing European experiences in meat safety assurance systems with developed overseas countries (such as United States, Australia, New Zealand, Brazil, etc.), would be mutually beneficial to enable recognition of equivalence that facilitates free meat trade.