

Critical Analysis of Pork QMRA Focusing on Slaughterhouses: Lessons from the Past and Future Trends

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Foodborne microbial diseases have a significant impact on public health, leading to millions of human illnesses each year worldwide. Pork is one of the most consumed meat in Europe but may also be a major source of pathogens introduced all along the farm-to-fork chain. Several quantitative microbial risk assessment (QMRA) have been developed to assess human health risks associated with pork consumption and to evaluate the efficiency of different risk reduction strategies. The present critical analysis aims to review pork QMRA. An exhaustive search was conducted following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) methodology. It resulted in identification of a collection of 2489 papers including 42 on QMRA, after screening. Among them, a total of 29 studies focused on *Salmonella* spp. with clear concern on impacts at the slaughterhouse, modeling the spreading of contaminations and growth at critical stages along with potential reductions. Along with strict compliance with good hygiene practices, several potential risk mitigation pathways were highlighted for each slaughterhouse step. The slaughterhouse has a key role to play to ensure food safety of pork-based products but consideration of the whole farm-to-fork chain is necessary to enable better control of bacteria. This review provides an analysis of pork meat QMRA, to facilitate their reuse, and identify gaps to guide future research activities.