



A Review of Significant European Foodborne Outbreaks in the Last Decade

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INTRODUCTION

Foodborne diseases remain a global public health challenge. The European surveillance system for multi-state foodborne outbreaks integrates aspects from public and animal health plus the food chain for early detection, assessment and control.

METHODOLOGY

This review describes the significant outbreaks that occurred in Europe over the last decade. Their significance and relevance for public health stem from the changes, improvements, and novelties that derived and which promoted the creation of a safer food system in the European Union, a system certainly driven by the One Health approach.

RESULTS

In 2011, a point source monoclonal outbreak of infections caused by *Escherichia coli* serotype O104:H4 contaminating sprouted seeds led to hundreds of cases of haemolytic uraemic syndrome and several fatalities being recorded. In 2015, a prolonged outbreak of *Listeria monocytogenes* infections caused by the contamination of frozen corn affected Europe with 47 cases and 9 deaths recorded. In 2016, a persistent polyclonal outbreak of *Salmonella enteritidis* was linked to the consumption of eggs and was associated with hundreds of cases.

DISCUSSION

These outbreaks highlighted the importance of sharing data (e.g. sequencing and tracing data) quickly and the need for harmonised bioinformatics outputs and computational approaches to facilitate foodborne disease detection and investigation. Also, they led to the setting of the legal framework for the development of a European collaboration platform to share whole genome sequence data. These outbreaks enabled the enforcement of the existing hygiene and food safety provisions and led to the development of new hygiene guidelines and best practices. This paper also briefly touches upon the new trends in information technologies that are being explored in the field of food traceability and safety. In applying these technologies, the aim is to enhance the traceability of food throughout the supply chain to redirect the conventional tracing system towards a digitised supply chain.