Occurrence of Salmonella in retail beef and related meat products in Zaria, Nigeria

Salmonella is among the most important food borne pathogens worldwide contaminating a wide range of animal products including meat products. Human illnesses due to this pathogen are attributed to poor biosecurity in production, improper processing and handling of meat and meat products. This is more likely where surveillance and regulatory control is weak. There is however limited information on the occurrence of these pathogens in foods in Nigeria. The extent of contamination of retail-beef and related meat products with Salmonellae in Zaria was evaluated. A total of 435 retailed beef and related meat products consisting of muscle meat, offal and processed meat products were tested for the presence of Salmonella species. Sample types included raw meat, ‘suya’ (roasted meat), ‘balangu’ (barbequed meat), ‘Kilishi’ (spiced sun dried meat) and ‘dambu’ (shredded fried meat). Samples were derived from four major markets and Zango abattoir in Zaria, Nigeria and cultured using selective isolation method with prior enrichment. Suspected isolates were identified and characterised using conventional biochemical methods and Microbact 12E (Oxoid, UK) identification kit. The isolates were serotyped. Confirmed isolates were evaluated in vitro for susceptibilities to 18 commonly used antimicrobial agents. Ten samples (2.3%) were positive for Salmonella. Raw beef samples had the highest isolation rates (2.43%). All the 10 Salmonella isolates were found to carry the invA gene. All the isolates exhibited multiple drug resistance. Simultaneous resistance to up to 8 antibiotics was found amongst the Salmonellae. The isolates exhibited more commonly resistance to members of β-lactam family and other antibiotic classes including lincosamides, macrolides, aminoglycosides and nitrofurans. Meat and meat products including ready-to-eat meat in Zaria were contaminated with multidrug and virulent Salmonella species. Meat and meat products in Nigeria are thus a hazardous group of foods that can potentially transmit this pathogen to humans.

General information
State: Published
Organisations: National Food Institute, Division of Epidemiology and Microbial Genomics, Federal Ministry of Agriculture and Rural Development, Ahmadu Bello University
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Pages: 119-124
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Food Control
Volume: 32
Issue number: 1
ISSN (Print): 0956-7135
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 4.06 SJR 1.502 SNIP 1.69
Web of Science (2017): Impact factor 3.667
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.86 SJR 1.492 SNIP 1.709
Web of Science (2016): Impact factor 3.496
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.65 SJR 1.498 SNIP 1.73
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.27 SJR 1.38 SNIP 1.717
Web of Science (2014): Impact factor 2.806
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 3.14 SJR 1.278 SNIP 1.728
Web of Science (2013): Impact factor 2.819
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes