International Conference on
APPLIED MICROBIOLOGY AND MICROBIAL BIOTECHNOLOGY &
International Conference on
MICROBIOME R&D AND BIOSTIMULANTS &
3rd International Conference on
INTERNAL MEDICINE & HOSPITAL MEDICINE October 15-16, 2018 Ottawa, Canada

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Incidence of extended spectrum beta-lactamase producing bacteria in salad vegetables in Ondo City, Nigeria

This study was carried out to determine the occurrence of extended spectrum beta-lactamase (ESBL) producing bacteria in salad vegetables in Ondo City, Nigeria. Three samples each of cucumber, carrot, green pea, green beans, sweet corn and cabbage were purchased from different stalls. Serially diluted samples were spread onto nutrient agar, MacConkey agar and mannitol salt agar for the enumeration of total viable bacteria, total and faecal coliforms, and *staphylococci*, respectively. Pure isolates were identified by biochemical tests and confirmation was done by the use of API 20 E and API 20 NE in accordance with standard procedures. ESBLs screening was carried out using the double disk synergy test. Data were statistically analyzed using MedCalc statistical software (version 17.2). Total viable bacterial counts (TVBCs) ranged from 1.1 × 103 to 7.1 x 105 cfu/ml; total coliform counts (TCC) ranged from 1.2 x 102 to 3.9 x 103 cfu/ml while total faecal counts (TFC) ranged from 0 to 2.9 × 102 cfu/ml. There were statistical differences in mean TVBCs of the samples ($P< 0.05$). The mean TCCs of cabbage, carrot and cucumber showed no statistical significance; green beans, green pea and sweet corn also showed no statistical significance ($P> 0.05$) while there was a statistical difference between the former and latter samples. One hundred and sixty (166) isolates obtained from the samples were identified as *Bacillus cereus, Citrobacter freundii, Escherichia coli, Klebsiella pneumoniae, Morganella morganii, Pseudomonas aeruginosa, Proteus mirabilis, Staphylococcus aureus, Serratia marcesens and Staphylococcus saprophyticus*. At least one member of all bacterial species, except *S. saprophyticus*, produced ESBL. This study revealed that salad vegetables could be a vehicle for the spread of extended-spectrum beta-lactamase-producing bacteria which translates to a threat to public health around the world as salads are loved and consumed by all categories of people globally.

Biography

Bello received his PhD, M.Sc and B.Sc degrees in Microbiology from Olabisi Onabanjo University, Ago-Iwoye, Ogun State. His PhD benchwork was carried out in Microbial Biotechnology Unit, Department of Biological Sciences, North-West University, South Africa. He possesses National Diploma in Science Laboratory Technology from The Polytechnic Ibadan, Oyo State, Nigeria. He started his academic and research career as a graduate assistant, a position awarded to him on ground of his outstanding performance at undergraduate. He has obtained both national and international academic and research exposure through conferences, workshops, research and training. As a seasoned academic and scientist, he has equally contributed to knowledge both at local and international levels through publications. He is a recipient of several academic awards. He is presently a Senior Lecturer and Ag. Head of Department of Biological Sciences in Wesley University, Ondo, Nigeria, he is a research and development consultant and an academic editor for respected biomedical journals.

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