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Induction of Shiga toxins in *Escherichia coli* O157:H7 isolated from groundwater in the North West Province, South Africa intended for human consumption using ampicillin and tetracycline

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A total of 67 isolates from groundwater were used to determine their susceptibilities against 7 antibiotics and the Multiple Antibiotic Resistance (MAR) patterns were compiled. Most isolates were resistant to amocyxillin, ampicillin, chloramphenicol and penicillin G. MAR phenotype A-AP-K-NE-OT-C-PG was dominant among isolates from Rustenburg. However, in Carltonville and Delaryville the phenotypes A-AP-C-PG and A-AP-OT-PG were obtained at 87.5% and 80%, respectively. The isolates were screened for the presence of shiga toxin genes by PCR analysis and none was positive. Moreover, when the *E. coli* O157:H7 isolates were subjected to antibiotic treatment for the induction of shiga toxins using both ampicillin and tetracycline in broth cultures, no shiga toxins were detected with an ELISA assay after 24 hours of incubation. However, after 72 hours of treatment with these antibiotics shiga toxins were detected in a large proportion (89.6%) of *E. coli* O157:H7 isolates with ampicillin when compared to tetracycline in which only one of the isolates produced shiga toxins. Tetracycline and ampicillin are readily available over the counter and is most often used in animal medicine. The consumption of these antibiotics when suffering from *E. coli* O157:H7 infections may worsen the complications.

Biography

Collins Njie Ateba has completed his PhD from the North West University - South Africa. Collins also received professional training in the Centre for Medical Genetics, Yerevan State University, Yerevan – Armenia in 2006; Department of Microbiology- Tartu University Tartu – Estonia in 2007 and the Lethbridge Research Station – Lethbridge Alberta, Canada in 2014. He is currently an Associate Professor in the Department of Biological Sciences, Microbiology Division, North West University –Mafikeng Campus and is head of the Water, Food Safety and Phage Therapy/Biocontrol Research Laboratory. Collins is actively involved in research training and lecturing at both undergraduate and postgraduate levels. He has been serving as a host mentor for the DST/NRF internship program from 2011 till date. He has published more than 30 papers in reputed journals and serving as an editorial board member of repute. Collins has presented research papers in a number of conferences locally and internationally.

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