

## Prevalence and phylodiversity of ESBL-Producing coliforms isolated from ruminant mastitis in Nigeria

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The public health threat posed by Extended-Spectrum Beta-Lactamase producing *E. coli* (ESBL- $\dot{E}C$ ) in food animal production systems has attracted global attention. Data on the prevalence, diversity and genetic characteristics of ESBL-producing coliforms are a key to advocacy on promoting responsible antimicrobial stewardship and proper planning of control strategies. The coliforms were isolated from 1052 milk samples of 160 cows, 103 ewes and 103 does with mastitis in Plateau State, Nigeria and analysed for ESBL production by phenotypic, biochemical, antimicrobial sensitivity and genetic characterization. The percentage of occurrence of clinical mastitis in cows, ewes and does were 0.2%, 0%, 1.5% respectively, while the percentage occurrence of subclinical mastitis in ruminants were 18.1%, 28.2% and 38.3% respectively. From the 677 isolates, 31.3% (n=212) were ESBL producing coliforms, with a prevalence of 48.6%, 18.4%, 12.7%, 8.9%, 5.7%, 3.8% and 1.9% for *E. coli*, *K. pneumoniae*, *C. freundii*, *K. aerogenes*, *S. marcescens*, *K. oxytoca* and *E. cloacae*, respectively. The genetic characterization revealed a higher prevalence of blaCTX-M than blaTEM in the samples analysed (24.39% vs. 12.19%). High pairwise identity was observed among the blaCTX-M and blaTEM gene sequences obtained in this study, but they displayed high phylodiversity with sequences from ruminants and humans from other climes. The blaSHV gene was not detected. Multidrug resistances especially to the commonly

used antimicrobials; ofloxacin, gentamycin and streptomycin in veterinary practice in Nigeria were observed. This has public health implications considering the fact that consumption of raw unpasteurized milk is a common practice in some cultures in Nigeria. Such practise will facilitate the transfer of multidrug resistant coliforms to humans resulting in the complications of treatment outcomes. To the best of our knowledge this is the first genetic characterization of ESBL-producing agents from ruminant mastitis in Nigeria.

### Keywords:

Antibiogram,  $\beta$ -lactamases, Coliform, Mastitis, Phylogeny, Ruminants.

### Biography

Anueyiagu Kenneth N is a registered Public Health Microbiologist and Medical Laboratory Scientist with a solid research background, industry experience and a teaching portfolio. He is interested in developing a career which combines teaching and research in Public Health Microbiology, while maintaining my interest in public engagement with human capital development. His current research interest is on [Antimicrobial Resistance](#).