

An abstract for the ten-minute talk

Monitoring *Enterococcus* and its antimicrobial resistance in the Upper Oconee Watershed,
Georgia

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Enterococci are commensal bacteria that reside in the gastrointestinal tracts of human and animal, and are useful indicators of fecal contamination in water. However, as opportunistic organisms, they can cause serious infections, such as bacteremia, surgical wound infection, and urinary tract infection. In fact, they are one of the leading causes of nosocomial infections, and vancomycin resistance in *Enterococcus* and the possible transfer of the vancomycin gene to *Staphylococcus aureus* raise significant health concerns. This study was conducted in order to monitor *Enterococcus* found in the Upper Oconee watershed in Athens, Georgia.

Water samples were collected once each season of 2015 at different locations along the Oconee River. The number of water samples varied from 30 to 100, with 222 total samples collected. Cellulose filter powder was added to 1L of water and filtered onto 47-mm glass fiber filter. The filter and the powder were incubated overnight in buffered peptone water. In order to isolate *Enterococcus*, the buffered peptone enrichment was streaked onto selective agar plates, CHROMagar *Enterococcus*, Enterococcosel, and m-*Enterococcus*. *Enterococcus* isolates were then genotyped by PCR. All the isolates were tested for antimicrobial resistance using broth microdilution method.

405 Enterococci were isolated and separated into 8 different species, including *E. avium*, *E. casseliflavus*, *E. faecalis*, *E. faecium*, *E. gallinarum*, *E. hirae*, *E. mundtii*, and *E. pallens*. Almost all the isolates were intermediate or resistant to more than two drugs. Resistances to daptomycin and lincomycin were seen.

This study indicates the presence of pathogens, such as *E. faecalis* and *E. faecium*, in the Upper Oconee Watershed, many of which are resistant to antimicrobials. Widespread occurrence of *Enterococcus* in the surface water suggests that water can serve as a reservoir for *Enterococcus* and play a role in its transmission.

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