TITLE: Novel Gallium Nitrate Formulations for Disruption of Uropathogenic *E. coli* Biofilms in Bladder Infections

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TECHNOLOGY: Biologicals

UTSD: 3100

SUMMARY: This technology describes the repurposing of an FDA approved drug for treatment of recurrent and debilitating urinary tract infections.

Bladder infections account for 30% of all infections resulting in hospitalization. The annual cost of UTIs is in excess of $2 billion and hospital and community acquired UTIs together represent the largest reservoir, as well as the pool of greatest genetic diversity of drug resistant pathogens. Many post-menopausal women live with debilitating cystitis, a subtype of UTI, because there are no successful pharmacological interventions to eliminate intracellular biofilms formed by antibiotic-resistant uropathogenic *Escherichia coli*.

Internalized bacteria are able to migrate towards deeper layers of the bladder lining (urothelium), and form biofilms there where they are maximally protected from the immune system and antibiotic therapy. Since most of these infections are caused by antibiotic resistant bacteria and both urothelium and biofilms are difficult to penetrate by antibiotic treatments, a recurrent pattern of infections is frequently observed.

Gallium nitrate is FDA approved under the name Ganite™ for intravenous treatment of bladder cancer. Ganite™ is also currently in phase II trials for its demonstrated antimicrobial activity against cystic fibrosis *Pseudomonas aeruginosa* lung infections.

This technology describes a novel formulation and method of use for gallium nitrate to line the bladder epithelium and treat recurrent urinary tract infections in post-menopausal women, more specifically for treatment of recurrent uropathogenic *Escherichia coli* biofilm UTIs.

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