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**REPURPOSING PAROXETINE: INVESTIGATION OF
ANTIBACTERIAL AND ANTI-ADHESIVE PROPERTIES
OF THE ANTI-DEPRESSION DRUG AGAINST
MAJOR PATHOGENS CAUSING
CATHETER-ASSOCIATED URINARY TRACT INFECTIONS**

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ABSTRACT

Objective: Catheter-associated urinary tract infections make one of the leading nosocomial diseases worldwide. Most of the bacteria causing catheter-associated urinary tract infections form protective biofilms inside which the pathogens would be more resistant to antimicrobial agents, making the treatment more complicated resulting in severe sufferings of the patients with prolonged morbidity, increased hospital expenses and comparatively higher mortality. Treatment of infections caused by two of such pathogens - *Enterococcus faecalis* and *Escherichia coli* are challenging and the pharmaceutical world is trying to find alternative antimicrobial agents. Thus, the current investigation is a trial to repurpose paroxetine - an anti-depression drug to evaluate its antibacterial potentials against these pathogens.

Material and methods The repurposing of paroxetine to evaluate its efficiency against *Enterococcus faecalis* and *Escherichia coli* was performed by agar diffusion method. Using microdilution protocols, the minimal inhibitory concentration was also calculated. To qualitatively analyse the anti-biofilm activity of the drug, paroxetine was coated on catheters and the activity was evaluated against the bacterial growth.

Results: Paroxetine exhibited promising antibacterial activity and the minimum inhibitory concentrations were found to be 75 µg/ml and 37.5 µg/ml against *Enterococcus faecalis* and *Escherichia coli* respectively. The drug could also reduce the formation of biofilms by 72% in the case of *Enterococcus faecalis* and by 86% in case of *Escherichia coli*. Paroxetine also shown to possess potential anti-adhesive properties.

Conclusion: The results suggest that the anti-depression drug paroxetine has antibacterial, anti-biofilm and anti-adhesive properties against two of the most prevalent bacteria involved in catheter-associated urinary tract infections

KEYWORDS: Anti-biofilm, anti-depression, minimum inhibitory concentrations, paroxetine, repurposing.

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