

Risk Assessment of increased disinfection practice and its role in mediating the spread of antibiotic resistance

Graphical Abstract/ Lavout

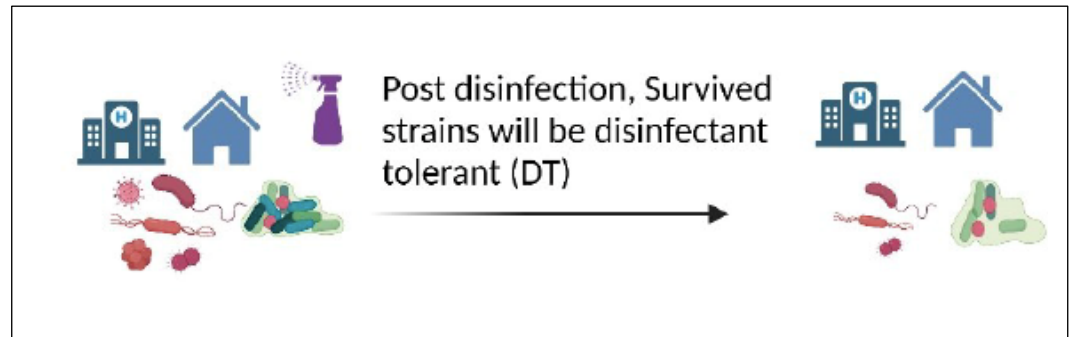


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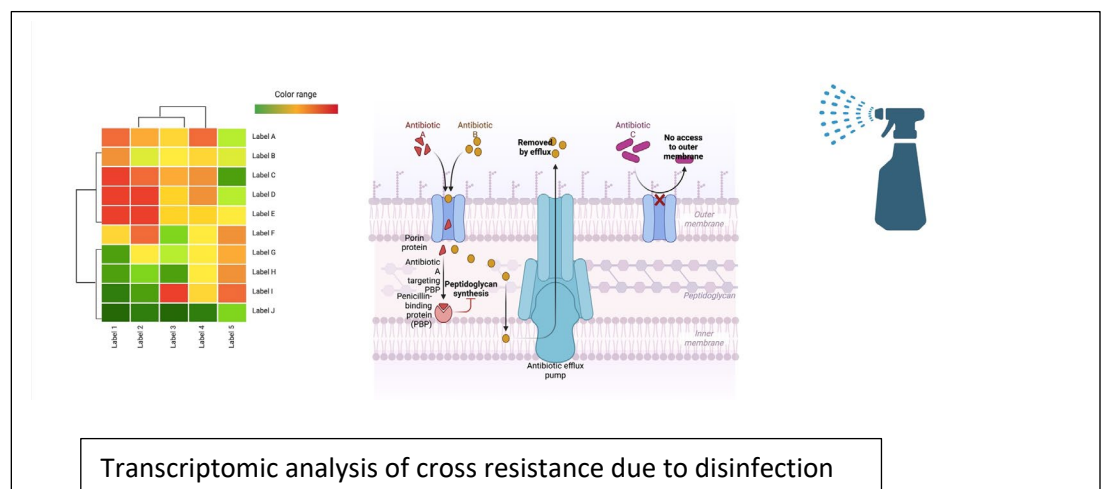
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Project Description

Increased use of disinfectant solutions may pose public health risks by spreading antibiotic resistance. Disinfectants are referred to as antimicrobial products comprised of chemicals like - chlorine, iodine, alcohols, and benzalkonium chloride. The widespread use of disinfectants following the COVID situation may lead to a concentration gradient in humans, livestock, hospitals and the environment. There is a severe concern that the widespread use of disinfectants in clinical settings may lead to the selection of disinfectant-tolerant strains (DTS). Disinfectants can trigger stress in bacteria which can lead to adaptive changes by gene mutations and thus possible consequences on cross-resistance towards antibiotics, biofilm formation and pathogenicity. To our concern, it will be worrying if ESKAPE pathogens become disinfectant tolerant, with decreased susceptibility to antibiotics and enhanced pathogenicity. These pathogens are known for hospital related infections, antibiotic resistance, and high mortality rate. Considering the overuse of disinfectants, this study will give a fundamental overview of disinfectant tolerance and its genetic link with antibiotic resistance. In addition, this study will clarify the global impact of disinfectants on bacterial gene regulations and processes. The results from this study are critical for protecting public health risks by slowing down of spread of antibiotic resistance by controlling disinfection practices.

Products/ Instruments/ Results/ Outreach Activities



Transcriptomic analysis of cross resistance due to disinfection

Name of the Funding Agency
Science and Engineering Research
Board (SERB)

Name of the Scheme
Start-up Research Grant (SRG)

Sanctioned Amount (in Rupees)
Rs. 27,00,000

Duration of the Project (years)
2