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Potential new source of Antimicrobials

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The prevalence of bacterial resistance to antibiotics and antimicrobial compounds has increased dramatically in recent years. Ten million deaths are predicted to be attributed to infections with these un-treatable bacteria by 2050 (1). Yet, resistance development is a natural phenomenon as bacteria that produce antibiotic compounds must be able to survive their exposure. However, there are massive selective pressures applied to microorganisms through practices like industrial animal husbandry and over-prescription of antibiotics (2). This provides the impetus for these natural resistance genes to spread throughout microbial populations, resulting in multiple-drug resistant (MDR) pathogens, such as the MDR strains of Pseudomonas aeruginosa found causing infections in hospitals and in people with chronic lung diseases.

Current strategies are being rendered insufficient to treat these infections. Hence, there is a clear necessity to restrict the further spread of resistance and prevent the forecasted deaths. Change to global perceptions of the usage of these antimicrobials alongside the promotion of research and development into novel antimicrobial compounds is required. One emerging strategy is the use of potentiator compounds, which inhibit the cellular mechanisms that allow microorganisms to resist antimicrobials. Thus, rendering existing antibiotics more effective.

This research project aims to identify a novel class of antimicrobial drug or potentiator from a large drug compound library. Identification will involve screening compounds for activity against an epidemic strain of P. aeruginosa, in the presence or absence of antibiotics. If successful, compounds will be further tested to assess their toxicity and potential use as a therapeutic drug.

Acknowledgment

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References

1. O'Neill J. Antimicrobial Resistance : Tackling a crisis for the health and wealth of nations. 2014. London: HM Government, 2016.
2. Ventola CL. The antibiotic resistance crisis: part 1: causes and threats. *P T*. 2015; 40(4):277-283.