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A new determination of pan-pathogen antimicrobials

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Purpose/Objective

Drug repositioning studies in recent decades have revealed a growing number of antimicrobials effective at treating infection types tangential to their original antimicrobial classification. Such 'pan-pathogen' antimicrobials, however, have not been formally characterized.

Methodology

By reviewing historical limitations of the canonical antimicrobial lexicon in light of the contemporary 'Casadevall and Pirofski' model for infectious disease, we propound a taxonomy that defines antimicrobials according to the host-pathogen interactome, not the pathogen.

Results

In doing so, antimicrobials that are effective at treating multiple infection types are highlighted, namely azithromycin, ivermectin, niclosamide, and nitazoxanide. These therapeutics not only harbor extensive repositioning profiles across a plethora of infection types, but exhibit anti-inflammatory activity specific to lung tissue.

Conclusion

Consequently, all are currently undergoing clinical trials for COVID-19. Recognition of the pan-pathogen nature of these antimicrobials can stimulate a more unified approach to antimicrobial development cognizant of generalized anti-infective mechanisms within the host-pathogen interactome and anticipatory of future pandemics and bioterrorist attacks, in accordance with the 2007 Strategic Plan for Biodefense Research by the U.S. Department of Health and Human Services.

Keywords: Pan-Pathogen Antimicrobials; Host Modulators; Drug Repositioning

Biography

Praveen Prathapan currently working as a Senior Researcher at University of Oxford in US.

He completed his research training at the University of Oxford in England where he worked with Prof. Rob Klose studying how **epigenetic** processes contribute to gene regulation. He returned to research in 2020 at the height of the **COVID-19** pandemic, during which he evaluated drug repositioning strategies for the treatment of the **novel disease** research which he continues to this day.

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