# Antimicrobial resistance during COVID-19 pandemic: alternatives to combat bacterial infections.

Ankit Bhardwaj[1] and Rachna Gupta[1]

[1]University College of Medical Sciences

December 27, 2022

**Abstract**

The pandemic of antimicrobial resistance with the paucity of new classes of antibiotics is one of the global threats warranting immediately actionable strategies. The widespread and inappropriate use of broad-spectrum and last-resort antibiotics during the first, second and third waves of the COVID-19 pandemic require a multidisciplinary approach to address this issue. The current pipeline has only 43 antibiotic candidates targeting the WHO priority pathogens and the majority are modifications of previously known classes with already existing cross-resistance. Preserving the power of existing antibiotics by their regulated use and prevention of the spread of pathogens through infection prevention and control seems the only possible solution to defer the AMR crisis. Meanwhile, numerous alternative avenues are present like antimicrobial peptides, phage therapy, probiotics, prebiotics and synbiotics, eligo-biotics, phage-endolysins, anti-virulence therapy, targeting pattern recognition receptors, phytochemicals, antimicrobial enzymes CRISPR-Cas mediated gene disruption, efflux pump inhibitor, vaccines, monoclonal and polyclonal antibodies are currently available to fight antibiotics resistance and reduce dependence on antibiotics. These alternatives must satisfy the criteria for safety, efficacy and affordability for translation in clinical use. This review provides an overview of various promising, potential and under investigative strategies, as alternatives to antibiotics, their mechanism of action, current status, challenges in their commercialization and future scope. Keywords: COVID-19, antimicrobial resistance, antibiotics, antibiotics alternatives.

**Hosted file**

`Antimicrobial_resistance 26:12:2022.docx` available at https://authorea.com/users/570374/articles/616024-antimicrobial-resistance-during-covid-19-pandemic-alternatives-to-combat-bacterial-infections

**Hosted file**

`Tables Alternatives 24:12:2022.docx` available at https://authorea.com/users/570374/articles/616024-antimicrobial-resistance-during-covid-19-pandemic-alternatives-to-combat-bacterial-infections

**Hosted file**

`Figure 1 alternatives 24:12:2022.docx` available at https://authorea.com/users/570374/articles/616024-antimicrobial-resistance-during-covid-19-pandemic-alternatives-to-combat-bacterial-infections