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Potential Applications of Conducting Polymers to Reduce Secondary Bacterial Infections among COVID-19 Patients: a Review

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Abstract

The COVID-19 pandemic is a motivation for material scientists to search for functional materials with valuable properties to alleviate the risks associated with the coronavirus. The formulation of functional materials requires synergistic understanding on the properties of materials and mechanisms of virus transmission and disease progression, including secondary bacterial infections that are prevalent in COVID-19 patients. A viable candidate in the struggle against the pandemic is antimicrobial polymer, due to their favorable properties of flexibility, lightweight, and ease of synthesis. Polymers are the base material for personal protective equipment (PPE), such as gloves, face mask, face shield, and coverall suit for frontliners. Conducting polymers (CPs) are polymers with electrical properties due to the addition of dopant in the polymer structure. The conductivity of polymers augments their antiviral and antibacterial properties. This review discusses the types of CPs and how their properties could be exploited to ward off bacterial infections in hospital settings, specifically in cases involving COVID-19 patients. This review also covers common CPs fabrication techniques. The key components to produce CPs at several possibilities to fit the current needs in fighting secondary bacterial infections are also discussed. © 2021, Qatar University and Springer Nature Switzerland AG.

Author Keywords

Conducting polymers; COVID-19; Personal protective equipment (PPE); Secondary bacterial infections

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