Nanotechnology: A prospective implement to battle COVID-19

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The COVID-19 pandemic has posed a global public health emergency as an unprecedented situation. Current available therapies fail in severe disease where the hallmark is the cytokine storm induced by COVID-19 in the lung. Hence, an urgent exploration of effective and safe diagnostic/therapeutic approaches for minimizing the threat of this highly pathogenic coronavirus infection is needed. Increasing diversity in therapeutic strategy with a multi and interdisciplinary methodology involving transversal disciplines will be indispensable to achieve advanced and efficient solutions to address such pandemics. As an alternative to conventional diagnosis and antiviral agents, nanomaterials have a great potential to cope with the current or even future health emergency situation with a wide range of applications. Fundamentally, nanomaterials are physically and chemically tunable and can be employed for the next generation nanomaterial-based detection of viral antigens and host antibodies in body fluids as antiviral agents, nanovaccine, suppressant of cytokine storm, nanocarrier for efficient delivery of antiviral drugs at infection site or inside the host cells, and can also be a significant tool for better understanding of the gut microbiome and Coronavirus interaction. This paper highlights the inherited potential of specific nanotechnologic platforms for improving coronavirus detection, disinfection, and multiplication inhibition. Nanomedicines exhibit several advantages over conventional antiviral drugs in the fight against COVID-19. Overall, nanomaterial-based therapeutics are promising in the fight against infectious diseases, including the COVId-19 pandemic. Nanotechnology may have great potential to be of enormous help in the treatment of COVID-19.