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Application of Nanoparticles for Drug delivery against Viral Attack

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Editorial Note

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EDITORIAL NOTE

In the United States, the first inactivated influenza vaccine for civilians will not be available until 1945. Despite the vaccine, several other influenza pandemics occurred, including those in 1957 (H2N2), 1968 (H3N2), and 2009 (H3N2) (H1N1pdm). In all three outbreaks, the genetic code of the original 1918 H1N1 virus was used. These new strains illustrate the dangers of viruses as well as the difficulty of antiviral therapy. The influenza virus hasn't been the only one to pose a major threat to public health in the last century. The HIV epidemic began in the early 1980s, but antiretroviral treatment did not become the standard of care until millions of people were infected in 1996. HIV/AIDS is now a death sentence for certain people. Complex antiviral drug cocktails used by carriers only serve to postpone and prolong the process. In addition to HIV, virus outbreaks such as HPV, HCV, HBV, Dengue, and Ebola have had negative consequences for global health. Death rates and distribution are much higher in less economically developed countries. The coronavirus is currently affecting the lives of million people.

Economic collapse has resulted in a scarcity of capital. COVID-19 has infected 50 million people worldwide and killed nearly 2.35 million. Science is running out of time. Viruses are, without a doubt, here to stay. They will continue to be a threat to global public health as long as there are human or animal hosts whose cells they can use to replicate. For the sake of mankind, the world's attention must be drawn to every potential antiviral treatment option. One aspect of antivirals that is being studied with great interest is the drug delivery mechanism, especially Nano particulate-based delivery systems. Many pharmaceutical companies are currently experimenting with making nanoscale or distributed antiviral drug mechanisms. Antiviral delivery via nanoparticles is thought to be more effective than traditional mechanisms, and the benefits of this approach will be explored extensively in this paper. It's also worth noting that these nanoparticles are miniature versions of normal drug delivery capsules such as liposomes, emulsions, and polymers, rather than complete drug delivery capsules. As a result, to more effectively resolve global issues related to viruses, research should focus on nanoparticles as antiviral drug delivery mechanisms. Several common types of nanoparticles have shown great promise in the delivery of antiviral drugs. This involves carbon- and cyclodextrin-based nanoparticles, cell structure mimics such as micelles and exosomes, as well as lipid, nanoparticles, polypeptides, and dendrimers.

Metal-based Nano particles, such as metal-organic frameworks; Nano vaccines; and future Nano devices, such as Nano robots despite the fact that this is a long list of materials, it is important to note that the materials listed in this paper are far from exhaustive. Potential Nano-applications will also be discussed, as well as pertinent information about each form, for their potential utility in treating SARS-CoV-2. Overall, the nanoparticle field of science is vast, but it will continue to develop in the future in terms of structure and application. In light of this, this paper should serve as a review of current materials and the potential for new ones.