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Editorial

Nanomedicine: A new era to eradicate cancer and viral diseases - COVID – 19

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Nanomedicine is a branch of medicine that applies the knowledge and tools of nanotechnology for the prevention and treatment of disease. It involves the use of nanoscale materials, such as biocompatible nanoparticles and nanorobots, for diagnosis, delivery, sensing or actuation purposes in a living organism. As per researcher's study, they found a way to transport specific drugs to various parts of the body that are very difficult to access with an ordinary drug. In these findings, Yshaped block catiomer (YBC) binds with definite therapeutic materials to constitute a package of size 18 nanometers wide. This bundle is less than one-fifth the size of those that were considered in previous studies; so it can pass through much smaller gaps. This allows nanomedicine to pass through barriers in cancers of the brain and pancreas.

For modern treatment and advancing the technology one of the most serious form of brain cancer. Researchers from Illinois reported a novel method of first nanoparticle that can seek and destroy brain cancer cells without actually damaging neighbouring healthy cells. The solution contain chemically linked titanium dioxide nanoparticles to an antibody that identifies and attaches to GMB cells. In their experiment, these nanoparticles killed up to 80 percent of the brain cancer cells after 5 minutes of exposure to focused white light.

A team of researchers at Columbia University Medical Center in collaboration with Massachusetts Institute of Technology and Brigham and Women's Hospital has created biodegradable nanoparticles that can deliver nano drug to the sites of tissue injury. It holds promise for the treatment of wide array of diseases characterized by excessive inflammation such as atherosclerosis.

Lung diseases, including COVID-19 and lung cancers, are a huge threat to human health. However, for the diagnosis and treatment of various lung diseases, such as pneumonia, asthma, cancer, and pulmonary tuberculosis, are becoming increasingly challenging. Currently, several types of treatments and/or diagnostic methods are used to treat lung diseases; however, the occurrence of adverse reactions to chemotherapy, drug-resistant

bacteria, side effects that can be significantly toxic and poor drug delivery necessitates the development of more promising treatments. Nanotechnology, as an emerging technology, has been extensively studied in medicine. Several studies have shown that nano-delivery systems can significantly enhance the targeting of drug delivery. When compared to traditional delivery methods, several nanoparticle delivery strategies are used to improve the detection methods and drug treatment efficacy. Transporting nanoparticles to the lungs, loading appropriate therapeutic drugs, and the incorporation of intelligent functions to overcome various lung barriers have broad prospects as they can aid in locating target tissues and can enhance the therapeutic effect while minimizing systemic side effects. In addition, as a new and highly contagious respiratory infection disease, COVID-19 is spreading worldwide. However, there is no specific drug for COVID-19. Clinical trials are being conducted in several countries to develop antiviral drugs or vaccines. In recent years, nanotechnology has provided a feasible platform for improving the diagnosis and treatment of diseases, nanotechnology-based strategies may have broad prospects in the diagnosis and treatment of COVID-19.

Lung-targeted drug delivery is a promising therapeutic strategy. This is because of the unique anatomical structure of the lungs, such as the low thickness of the epithelial barrier, large surface area of the alveolar region, high degree of vascularization, relatively low proteolytic activity, and lack of preliminary metabolism. Certain studies have demonstrated the advantages of lung-targeted drug delivery strategies for lung diseases; moreover, these strategies can improve the therapeutic effect. Further, pulmonary administration is easy to achieve because the drug can easily reach the lung lesion through intravenous and intratracheal routes. This editorial view, emphasizes on the latest developments of nanomedicine as a pivotal tool to eradicate the lung disorders and carcinoma.

References

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