Abstract: Nanomedicine influences almost each and every fields of medicine, and has been considered an important tool for novel diagnostics, medical imaging, nanotherapeutics, vaccines and to develop biomaterials for regenerative medicine. Drug-based nanoparticles have been developed for decades, and several are under clinical trials for cancer, neurodegenerative, inflammatory, cardiovascular and infectious diseases, although only few of them are approved for human use. The occurrence of novel viruses such as SARS-CoV-2, Ebola etc. and their heterogeneity currently demands innovative and failsafe therapies. This way, considering specific targeting, nanotechnology opens a new avenue for antiviral therapy. The strategy of using nanoparticles to combat SARS-CoV-2 could involve mechanisms that effect the entry of the virus into the host cell until their inactivation. To date, there are very specific approved drugs for treating SARS-CoV-2, and vaccines are under clinical trials. All efforts are welcome to combat the virus, and nanotech-based approaches would bring a new perspective to conventional medicine for the inhibition of virus internalization or treatment. So far, no treatment for COVID-19 has been considered effective and several strategies are being tested. Although it is well-established that nanotech-based drug-delivery systems improve existing therapeutics in medicine, its application in viral diseases is underexplored and underused, as observed in the SARS-CoV-2 pandemic. Nanostructured systems can impact diagnosis, since they can improve the detection, sensitivity and increase the signal amplification specificity in polymerase chain reaction analysis; and prophylaxis as adjuvants for vaccines, as well as therapeutics for COVID-19 through the targeting of antiviral drugs. So, Nanotechnology could represent a convenient strategy in addition to other approaches to provide positive outcomes for COVID-19 treatment.

Keywords: COVID-19, nanotechnology, nanomaterials, nanoparticles, nanodiagnostics, nanomedicine.