**Supplementary Material**

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**Fig. S1.** Survey of publications on coronavirus

**Table S1.** Summary of anti-viral NPs against several viral pathogen

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of NPs** | **Virus** | **Mode of action** | **Reference** |
| **Gold NPs** | HIV-1 | Binds to gp120 and prevents CD4 attachment and viral entry into cells | ([Vijayakumar and Ganesan, 2012](#_ENREF_11)) |
| Dengu virus | Inhibits viral replication by preventing the degradation of anti-DENV siRNA payload | ([Paul et al., 2014](#_ENREF_8)) |
| Herpes simplex virus type-I | Interferes with the viral attachment process and prevents cell-to-cell spread | ([Baram‐Pinto et al., 2010](#_ENREF_2)) |
| **Silver NPs** | Hepatitis B virus (HBV) | Binds to dsDNA of HBV and prevents further production HBV RNA | ([Lu et al., 2008](#_ENREF_5)) |
| Influenza virus | Disrupts the viral membrane glycoprotein protein knobs | ([Mehrbod et al., 2009](#_ENREF_6)) |
| **Copper –based NPs** | Influenza A virus | 160 nm NPs were seen to generate hydroxyl radicals and destruct the viral proteins | ([Fujimori et al., 2012](#_ENREF_3)) |
| Feline calicivirus | Reduce the infectivity of Feline calicivirus (FCV) by generating ROS | ([Shionoiri et al., 2012](#_ENREF_9)) |
| **Titanium oxide NPs** | Newcastle virus (NDV) | Destruction of the lipids of the viral envelope | ([Akhtar et al., 2019](#_ENREF_1)) |
| Influenza A virus | UV-activated NPs produced ROS and disrupted outer membrane protein and viral nucleic acids | ([Monmaturapoj et al., 2018](#_ENREF_7)) |
| **Zinc oxide NPs** | Influenza A virus | Interferes with the life cycle of the virus and reduces its infectivity | ([Ghaffari et al., 2019](#_ENREF_4)) |
| Herpes simplex virus type-I | Interferes with viral protein expression and inhibits DNA replication | ([Tavakoli et al., 2018](#_ENREF_10)) |

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**Scheme S1**. Utilizing nanoparticles for prevention against COVID-19

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