

Gennova Biopharma develops novel mRNA vaccine against COVID-19

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The vaccine is likely to go to Clinical Trial before the year ends



The Department of Biotechnology (DBT) has facilitated the establishment of 'first-of-its-kind' mRNA-based vaccine manufacturing platform in India.

DBT has provided seed funding for the development of Pune based Gennova Biopharmaceutical's novel self-amplifying mRNA-based vaccine candidate for COVID19.

In collaboration with HDT Biotech Corporation, Seattle, USA, Gennova has developed an mRNA vaccine candidate (HGCO19), with demonstrated safety, immunogenicity, neutralization antibody activity in the rodent and non-human primate models.

The company is working aggressively to ensure first human injection by the end of the year, subject to Indian regulatory approvals.

Dr Renu Swarup, Secretary, DBT and Chairperson, BIRAC, speaking on the subject said that "diseases emanating from unknown and new pathogens require novel ideas for effective mitigation. Gennova's m-RNA platform supported by DBT utilizes the advances in nucleic acid vaccine and delivery systems. This vaccine candidate that makes use of nanotechnology has shown promise to be effective in animal models. With the kind of capacities Gennova has, I am confident that this vaccine candidate can be rapidly scaled up, once proven effective in human clinical trials."

Speaking on the development, CEO of Gennova Biopharmaceuticals Ltd, Dr. Sanjay Singh said, "Bold moves are necessary to create globally competitive and sustainable solutions. Gennova appreciates DBT- BIRAC's initiative, guidance, and financial support towards the development of mRNA based next-generation vaccine. Our partnership is poised towards creating an eco-system for cutting-edge technology, providing solution towards making a cost-effective vaccine that can reach to the masses in a pandemic situation like COVID-19."

The novel mRNA vaccine candidate, HGCO19, has all the necessary arsenal to guide the host cells to make the antigen - spike protein of the virus, reported to interact with host cells receptor, and supported by 'lipid inorganic nanoparticle (LION)' as a delivery vehicle.

The neutralizing antibody response of the vaccine in mice and non-human primates was comparable with the sera from the convalescent patients of COVID-19, above the US-FDA recommended titre of 1:160 for neutralizing antibodies.

Further, advantages of HGCO19 are its mRNA platform design and delivery vehicle. HGCO19 uses a 'self-replicating mRNA platform' that ensures the low injectable dose(dose-sparing effect) and sustained antigen release for a longer duration. 'LION delivery system' used for HGCO19 has adjuvanting property, enhanced storage stability, reduced adverse effects, improved permeability and bioavailability.