

# GEMCOVAC-19, India's first mRNA Covid-19 vaccine

July 2, 2022

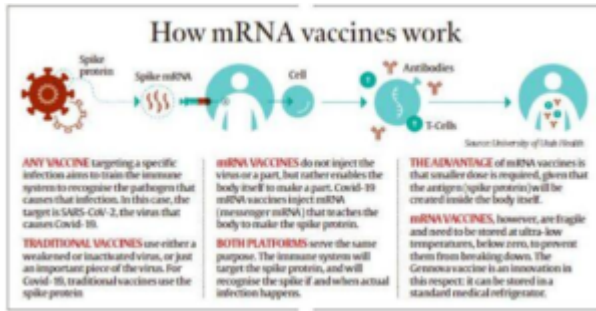
**In news**– Recently, India's first home-grown mRNA Covid-19 vaccine '**GEMCOVAC-19**', has got a '**restricted emergency use**' nod for the 18-and-above age group.

## What is GEMCOVAC-19?

- It is India's first indigenously developed **mRNA Covid vaccine and only third mRNA vaccine to be approved for Covid-19 in the world after Pfizer and Moderna.**
- **It was developed at Pune's Gennova Biopharmaceuticals.**
- Gemcovac's 43 lakh doses have already been cleared by the Central Drugs Laboratory (CDL) in Kasauli, Himachal Pradesh.
- **It is a two-dose vaccine** to be administered intramuscularly 28 days apart.
- **As mRNA vaccines are required to be kept at sub-zero temperatures**, it was a mammoth task for Gennova scientists to develop a thermostable mRNA Covid-19 vaccine.
- **The new vaccine can now be stored at the temperature of a standard medical refrigerator.**

## How does mRNA vaccine work?

- As the Covid-19 pandemic spread, an **mRNA vaccine candidate was the first to enter human trials globally.**
- **Unlike vaccines that put a weakened or inactivated virus** in one's body to activate an immune response, the **two Covid-19 vaccines named Pfizer-BioNTech and Moderna used messenger RNA or mRNA** to deliver a message to your immune system.



- Basically, **the technology uses genetically engineered mRNA to instruct cells to make the S-protein found on the surface of the Covid-19 virus.**
- According to scientists, **after vaccination, the muscle cells begin making S-protein pieces and displaying them on cell surfaces.** This causes the body to create antibodies.
- But **these vaccines have to be stored at sub-zero temperatures as mRNA is fragile** and breaks down easily.
- Unlike in the West, where the vaccine has to be stored at sub-zero temperatures, the challenge in India was to be able to store the vaccine between 2-8 degree Celsius.
- **GEMCOVAC-19 can now be stored at the temperature of a standard medical refrigerator.**
- **The conversion from liquid to powder form of the vaccine takes place via Lyophilisation; this is freeze-drying, a process where the water is removed from the product after it is frozen and placed under a vacuum allowing the ice to change directly from solid to vapor without passing through a liquid phase.**

**Further reading: <https://journalsofindia.com/mrna-vaccine/>**