



Sputnik V Vaccine

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Why in News

Sputnik V, the vaccine against **Covid-19** developed by Russia, has been cleared for emergency use by the **Drugs Controller General of India (DCGI)**.

It is now the third coronavirus vaccine to get emergency use approval, after **Covishield (Serum Institute of India)** and **Covaxin (Bharat Biotech)**.

Key Points

- **About the Sputnik V Vaccine:**

- The **Sputnik V vaccine** has been developed by **Gamaleya National Research Institute of Epidemiology and Microbiology** in Moscow.
- It **uses two different viruses** that cause the **common cold (adenovirus)** in humans.
 - The **adenoviruses** are weakened so they cannot replicate in humans and cannot cause disease.
 - They are also modified so that the vaccine delivers a code for making the coronavirus spike protein. This aims to ensure that when the real virus tries to infect the body, it can mount an immune response **in the form of antibodies**.
- Sputnik uses a **different vector** for each of the **two shots** in a course of vaccination. This **provides immunity with a longer duration than vaccines using the same delivery mechanism** for both shots.
 - The two shots are **given 21 days apart**.
- Sputnik **V is to be stored at -18°C in its liquid form**. However, in its freeze-dried form, **it can be stored at 2-8°C**, in a conventional refrigerator without any need to invest in additional cold-chain infrastructure.

- **Efficacy:**

- **Phase 3 trials** conducted in Russia, with the results published in The Lancet, have found it has **an efficacy of 91.6%**.
- In India, Dr Reddy's conducted a bridging study after which it applied for emergency use approval.

Trial **participants** were given the **first dose (rAd26-)** followed by a **booster dose (rAd5-S) 21 days later**.

Adenoviruses

- Adenoviruses (ADVs) are **DNA viruses** ranging from **70-90** nanometre in size, which induce many illnesses in humans like cold, respiratory infection etc.
- Adenoviruses are **preferred for vaccines** because their **DNA is double stranded** which makes them **genetically more stable** and the chances of them changing after injection are lower.
- **Rabies vaccine** is an adenovirus vaccine.
- Adenovirus vaccines are **a type of viral vector vaccine**.
 - In this vaccine, adenovirus is used as a tool to deliver genes or vaccine antigens to the target host tissue.
- However, there are **drawbacks of adenovirus vector** vaccines like **pre-existing immunity in humans, inflammatory responses etc.**

Just as human bodies develop immune responses to most real viral infections, they also develop immunity to adenoviral vectors. Since adenoviral vectors are based on natural viruses that some humans might already have been exposed to, these vaccines might not work for everyone.

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