Covid-19 Vaccine: ZyCoV-D

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Recently, India has started phase I/II clinical trials of Covid-19 vaccine - ZyCoV-D, designed and developed by Zydus (a pharmaceutical company) with support from the Department of Biotechnology (DBT).

The adaptive phase I/II clinical trials will assess the safety, tolerability and immunogenicity of the vaccine. The other indigenously developed vaccine - Covaxin - produced by Hyderabad based Bharat Biotech is also underway to start clinical trials.

Imp Points

- **Description:** ZyCoV-D, a plasmid DNA vaccine, comes under the Vaccine Discovery Programme supported by the Department of Biotechnology under the National Biopharma Mission.

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<th>National Biopharma Mission</th>
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<td>It is an industry-academia collaborative mission for accelerating biopharmaceutical development in the country.</td>
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<td>It was launched in 2017 at a total cost of Rs. 1500 crore and is 50% co-funded by World Bank loan.</td>
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<td>It is being implemented by the Biotechnology Industry Research Assistance Council (BIRAC).</td>
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(BIRAC is a Public Sector Enterprise, set up by the Department of Biotechnology (DBT), Ministry of Science & Technology)

- Under this Mission, the Government has launched Innovate in India (i3) programme to create an enabling ecosystem to promote entrepreneurship and indigenous manufacturing in the biopharma sector.
- **Objectives:** Development of vaccines, medical devices, diagnostics and biotherapeutics besides, strengthening the clinical trial capacity and building technology transfer capabilities in the country.

Plasmids are circular deoxyribonucleic acid (DNA) vectors that can be used as vaccines to prevent various types of diseases.

- **Pre-Clinical Phase:** It was found to initiate a strong immune response in multiple animal species like mice, rats, guinea pigs and rabbits.
The antibodies produced by the vaccine were able to neutralize the wild type virus indicating the protective potential of the vaccine candidate.

- No safety concerns were observed in repeat dose by both intramuscular (directly into muscles) and intradermal (superficial injection into skin) routes of administration.

**DNA Vaccine Platform:** The development of ZyCov-D has established the DNA vaccine platform in the country which is simple to deploy, temperature stable, and consistently manufacturable - thus lowering costs and enhancing the effectiveness of a vaccine.

It provides ease of manufacturing the vaccine with minimal biosafety requirements. It has shown much improved vaccine stability and lower cold chain requirements making it easy for transportation to remote regions of the country. Furthermore, the platform can be rapidly used to modify the vaccine in a couple of weeks in case the virus mutates.