

Supplement 1. Approved/authorized vaccines worldwide for the control of the SARS-CoV-2 pandemic.

Vaccine brand	Developer	Dose schedule	Type of vaccine	Effectiveness	Storage	Approved by WHO
Pfizer-BioNTech (BNT162b2/COMIRNATY Tozinameran (INN))	The German company BioNTech collaborated with American company Pfizer	Two doses; three weeks apart	Nucleoside modified mRNA encoding full length spike protein	95% in Phase 3 clinical trial	-25°C to -15°C	Yes
Moderna (mRNA-1273)	Moderna, Inc.	Two doses; four weeks apart	mRNA-based vaccine encapsulated in lipid nanoparticle (LNP)	94.1% in Phase 3 clinical trial	30 days with refrigeration, six months at -20°C	Yes
AstraZeneca/Oxford (AZD1222, Covishield, Vaxzevria)	Oxford University and AstraZeneca (a British-Swedish multinational pharmaceutical and biotechnology company)	Two doses; four to twelve weeks apart	Recombinant ChAdOx1 adenovirus-based vector encoding the full-length S protein antigen	76.0% in Phase 3 clinical trial	Stable in the refrigerator for at least 6 months	Yes (for adults 18 or older)
Sputnik V (Gam-COVID-Vac)	Gamaleya Research Institute of Epidemiology and Microbiology a Russian medical research	Two doses; 28 days apart	Non-replicating adenovirus types 5 and 26 vectors (heterologous)	91.6% in Phase 3 clinical trial	The ready-to-use solution in water keep at -18°C and freeze-dried powder keep in 2°C to 8°C	Yes
Johnson & Johnson (Ad26.COV2. S)	American company Johnson & Johnson	single dose	Recombinant, replication-incompetent adenovirus type 26 (Ad26) vectored vaccine encoding the (SARS-CoV-2) Spike (S) protein	66.3%	Up to two years frozen at -20°C, up to 4.5 months refrigerated at 2 to 8°C	Yes
Convidicea (Ad5-nCoV)	CanSino Biologics, a Chinese vaccine company	Single-dose	Replication deficient adenovirus type 5 vector encoding full length S protein	65.7% in Phase 3 clinical trial	2°C to 8°C	No
CoronaVac (Sinovac), COVID-19 Vaccine (Vero Cell), Inactivated/Coronavac™	Sinovac Biotech, a private Chinese company	Two doses; three weeks apart	Inactivated whole virus, produced in Vero cells	50.4% in Phase 3 clinical trial	2°C to 8°C	Yes
Sinopharm (BBIBP-CorV), SARS-CoV-2 Vaccine (Vero Cell), Inactivated (InCoV)	Sinopharm's Beijing Institute of Biological Products in China	Two doses; three weeks apart	Inactivated whole virus with aluminum hydroxide adjuvant, produced in Vero cells	78.1% in Phase 3 trial	2°C to 8°C	Yes
Covaxin (BBV152)	Bharat Biotech (India) in collaboration with the Indian Council of Medical Research	Two doses; four weeks apart	Whole-Virion Inactivated Vero Cell	81% in Interim phase 3 trial	2°C to 8°C (Do not freeze)	No

BBV154	Bharat Biotech (India) in collaboration with the Washington University	Single-dose	Chimpanzee adenovirus-based	Under clinical trials	—	No
Serum Institute of India Pvt. Ltd. (Cyrus Poonawalla Group)	Covishield (ChAdOx1_nCoV-19)	Two doses; 4 to 6 weeks apart	Recombinant, replication-deficient chimpanzee adenovirus vector encoding the SARS-CoV-2 Spike (S) glycoprotein. Made in genetically modified human embryonic kidney (HEK) 293 cells	About 70%	2°C to 8°C (Do not freeze)	
COVIran Barakat	Iranian state-owned Shifa Pharmed Industrial Group	Two doses; 28 days apart	Inactivated coronavirus	Under clinical trials	2°C to 8°C	No
FAKHRAVAC	Organization of Defensive Innovation and Research in Iran	Two doses; two or three weeks apart	Inactivated coronavirus	Under clinical trials	2°C to 8°C	No
Novavax (NVX-CoV2373/Covovax)	Novavax, Inc., an American biotechnology company	Two doses; three weeks apart	Recombinant nanoparticle prefusion S protein formulated with Matrix-M™ adjuvant	90% in Phase 3 trial	2°C to 8°C	Yes
CVnCoV (CVV)	Tübingen's CureVac biotech firm, a German clinical-stage biopharmaceutical company	Two doses; four weeks apart	mNRA-based vaccine encapsulated in lipid nanoparticle (LNP)	53% in Phase 3 trial	stable for at least three months in +5°C	No
Soberana 02/Soberana Plus (Pasteurcovac)	Finlay Institute, a Cuban epidemiological research institute in collaboration with the Pasteur Institute of Iran	Two doses; four weeks apart	Protein subunit of SARS-CoV-2 spike RBD chemically conjugated to tetanus toxoid	62% after two doses and 91.2% when combined with a third (booster) dose	2°C to 8°C	No
Abdala (CIGB-66)	Center for Genetic Engineering and Biotechnology in Cuba	Three doses; spaced two weeks apart	Protein subunit adjuvanted with aluminum hydroxide	92.28% in Phase 3 trial after a three-dose vaccination	2°C to 8°C	No
EpiVacCorona Vaccine (EVCV)	Vector Institute, a Russian biological research center	Two doses; three weeks apart	based on fragments of synthetic viral peptides reflecting SARS-CoV-2 antigens	79% in Phase 3 trial	refrigerator temperatures for up to two years	No
ZF 2001 (RBD Dimer)/ Zifivax	Chinese Anhui Zhifei Longcom and the Academy of Military Medical Sciences	Three doses; spaced four weeks apart	receptor-binding domain (RBD) of S protein combined with an adjuvant	Not published or announced	2°C to 8°C	No