

Comprehensive Summary of the Knowledge on COVID-19 Treatment

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Supplementary Table 1. Potential drug candidates for the treatment of COVID-19.

Classification	Drug	Drug target	Dosage	Source	Mechanism	Indications and usage	Ref.
Antiviral therapy	Camostat Mesilate	Type II transmembrane serine protease (TMPRSS2) inhibitor	PO, 200 mg, tid, 5d	NCT04353284 (US) NCT04455815 (GB) NCT04521296 (JP)	Block the virtual entry.	Treatment of some forms of cancer	[67]
	Nafamostat mesilate	TMPRSS2 inhibitor	Intravenous administration, 0.1-0.2 mg/kg/h	NCT04418128 (US) NCT04390594 (SN) NCT04352400 (CH)	Block TMPRSS2 may reduce viral replication	Treatment of pancreatitis	
	Imatinib	TMPRSS2 inhibitor	PO	Theoretical hypothesis NCT04422678 (EG) NCT04356495 (FR)	Block virtual entry.	Treatment of chronic myelogenous leukemia (CML), gastrointestinal stromal tumors (GISTs) and a number of other malignancies	[100]
	alpha-lantitrypsin	TMPRSS2 inhibitor, alpha1-proteinase inhibitor	INH, 8 ml alpha1-proteinase inhibitor Glassia as nebulizer every 12 hours for 5 days	NCT04385836 (SA)	1. Bind to elastase localized on the cell surface in which case; 2. Bind to neutrophil elastase released by inflammatory cells. 3. an Inhibitor of the SARS-CoV2-Priming Protease TMPRSS2	Treatment of chronic obstructive pulmonary disease	[68]
	Bicalutamide	TMPRSS2 inhibitor, antiandrogen medication.	PO, 150 mg, 28 d	NCT04509999 (US) NCT04374279 (US)	Block TMPRSS2 may reduce viral replication	Treatment of prostate cancer	
	Enzalutamide	TMPRSS2 inhibitor, hormone	PO, 40 mg, 28 d	NCT04456049 (CH) NCT04475601 (SE)	Inhibit the expression of androgen regulated proteins, such as TMPRSS2, then stop the cleave of viral S glycoprotein	Treatment of prostate cancer	[101]
	Meplazumab	Antibody against CD147	IV, 10 mg, 2 d	NCT04275245 (CN)	Block the infection of SARS-CoV-2.	Investigational drug	[72]
	Arbidol	Membrane fusion inhibitor and immunomodulator	PO, 200 mg, tid, < 10 d	Guidelines (version 8) for treatment of COVID-19 NCT04273763 (CN) NCT04255017 (CN)	1. Membrane fusion inhibition; 2. Stimulate humoral immune response, induces IFN-production	Antiviral treatment for influenza infection	[102]
	Suramin sodium	cGAS antagonist	IV,	ChiCTR2000030029 Artificial intelligence search	An entry inhibitor for various of viruses including DNA virus and RNA virus.	Treatment of trypanosomiasis	[103]
	Chlorpromazine	Cleavage of viral spike protein	PO, 75-300 mg	NCT04366739 (FR) NCT04354805 (EG)	1. Dopamine antagonist; 2. Anti-serotonergic; 3. Antihistaminergic properties; 4. Inhibit assembly and disassembly of Clathrin lattices on cell surfaces and endosomes by CPZ-HCl	Antipsychotic medication	

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				and prevent the entry of virus into host cells.		
Chloroquine	Receptor binding and membrane fusion inhibitor	PO, 500 mg bid, 7 d	Guidelines (version 8) for treatment of COVID-19 NCT04323527 (BR) NCT04341727 (US)	1. Increases late endosomal and lysosomal pH, block virus genetic material release into the cell; 2. Inhibit viral RNA-dependent RNA polymerase; 3. Inhibit receptor binding and membrane fusion.	Prevent and treat malaria	[49]
Hydroxychloroquine	Receptor binding and membrane fusion inhibitor	PO, 400 mg bid loading dose, 200 mg bid maintenance doses for 4d	NCT04308668 (US) NCT04315948 (FR) NCT04338698 (BR)	1. Increases late endosomal and lysosomal pH, block virus genetic material release into the cell; 2. Inhibit viral RNA-dependent RNA polymerase; 3. Inhibit receptor binding and membrane fusion.	Prevent and treat malaria	[104]
		INH, 20 or 50 mg/mL, 8 d	NCT04461353 (US) NCT04477083 (EG)			
Mefloquine	Receptor binding and membrane fusion inhibitor	PO, 250 mg, tid, Day 1 250 mg, bid, Day 2 250 mg, qd, Day 3-7	NCT04347031 (RU)	1. Increases late endosomal and lysosomal pH, block virus genetic material release into the cell; 2. Inhibit viral RNA-dependent RNA polymerase; 3. Inhibit receptor binding and membrane fusion.	Prevent and treat malaria	
Remdesivir	Adenosine analog, RdRP inhibitor	IV, 200 mg loading dose, 100 mg/d maintenance doses for 9d	NCT04252664 (CN) NCT04401579 (US) NCT04321616 (NO)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	[105]
Darunavir	Adenosine analog, RdRP inhibitor	PO	NCT04252274 (CN)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	[106]
Galidesivir	Adenosine analog, RdRP inhibitor	PO,	Artificial intelligence search NCT03891420 (BR)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	[107]
Favipiravir	Adenosine analog, RdRP inhibitor	PO	NCT04310228 (CN) NCT04336904 (IT) NCT04346628 (US)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	[106]
Atazanavir	Adenosine analog, RdRP inhibitor	PO, 600 mg, bid in Day 1, 300 mg bid for 9 days.	NCT04468087 (BR)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	
Daclatasvir	Adenosine analog, RdRP inhibitor	PO, Initial dose of 120 mg, 60 mg, qd, 10d	NCT04468087 (BR) NCT04460443 (EG)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	
Oseltamivir	Adenosine analog, RdRP inhibitor	PO, 75 mg, bid, 5d	NCT04338698 (PK) NCT04255017 (CN) NCT04338698 (BR)	Adenosine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Antiviral drug in the clinical trial stage	
Ribavirin	Guanosine analog, Nucleoside inhibitor	IV, 500 mg, bid or tid, in combination with IFN- α or lopinavir/ritonavir, < 10 d	Guidelines (version 8) for treatment of COVID-19	Guanosine (ribonucleic) analog, used to stop viral RNA synthesis and viral mRNA capping.	Treatment of hepatitis C and viral hemorrhagic fevers	[49]

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Triazavirin	Guanosine analog, Viral RNA-dependent RNA polymerase inhibitor/ CYP3A protein inhibitor	PO, 250 mg, tid, 7 d	ChiCTR2000030001	Guanine nucleotide analog, inhibit Viral RNA-dependent RNA polymerase, control the virus replication.	Treatment of influenza and other virus infections	[108]
Clevudine	Nucleoside analog	PO, 120 mg, qd, 14 d	NCT04347915 (KR)	Pyrimidine analogue, triphosphate metabolite competes with thymidine for incorporation into viral DNA, thereby causing DNA chain termination and inhibiting the function of HBV DNA polymerase (reverse transcriptase).	Antiviral drug	
Clofazimine	Nucleoside analog	PO, 100 mg, bid, 3 d	NCT04465695 (CN)	1. Anti-inflammatory effect; 2. Immunosuppressive effects	Treatment of leprosy	
Dipyridamide	Nucleoside transport inhibitor and a PDE3 inhibitor medication	PO, 150 mg, tid, 7 d	ChiCTR2000030005	1. Reduce viral replication; 2. Suppress hypercoagulability; 3. Enhancing immune recovery.	Used to dilate blood vessels	[109]
Azvadine	Reverse transcriptase inhibitor	PO, 5 mg, qd	ChiCTR2000029853	Reverse transcriptase inhibitor.	Investigational drug for HCV	[110]
Decitabine	Nucleic Acid Synthesis Inhibitor	IV, 10 mg/m ² , 5 d	Artificial intelligence search NCT04482621 (US)	RdRp inhibitor	Treatment of myelodysplastic syndromes, a class of conditions where certain blood cells are dysfunctional, and for acute myeloid leukemia	[111]
Selinexor	XPO1 inhibitor	PO	In vitro model NCT04534725 (AU) NCT04349098 (US)	Selective inhibitor of nuclear export (SINE) compound that blocks cellular protein XPO1 and interfere with key host protein interactions with SARS-CoV-2.	Treatment of relapsed/refractory multiple myeloma	
ABX464	Molecule binding to the cap binding complex (CBC) of the viral mRNA	PO, 50 mg qd for 28 d	NCT04393038 (BE, FR, DE, BR, IT, MZ, ES, GB)	1. Antiviral effect to inhibit the SARS-CoV-2 viral replication; 2. Anti-inflammatory effect to prevent and treat the acute respiratory distress syndrome (ARDS); 3. Tissue repair properties preventing longer-term pulmonary dysfunction.	Anti-HIV therapy	[112]
PF-07304814	SARS-CoV-2 3CL protease inhibitor	IV	NCT04535167 (US)	SARS-CoV-2 3CL protease inhibitor to block viral replication	Investigational drug	
Brequinar	Dihydroorotate dehydrogenase (DHODH) inhibitor	IV, 100 mg, 5 d	NCT04425252 (US)	Synthetic quinolinecarboxylic acid analogue, suppress host nucleotide synthesis	Treatment of tumor	
PTC299	DHODH inhibitor	PO, 200 mg, bid for 7 d, followed 50 mg, qd for 7 d	NCT04439071 (US)	Reduce the high viral replication and also selectively attenuate the immune response	Investigational drug for tumor	
Leflunomide	DHODH inhibitor	PO, 20 mg, qd	ChiCTR2000030008	Inhibiting dihydroorotate dehydrogenase.	Treatment of active moderate-to-severe	[113]

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			NCT04361214 (US)		rheumatoid arthritis and psoriatic arthritis	
Fenofibrate	Fibrate class	PO, 145 mg/d, 10 d	NCT04517396 (US)	Inhibite SARS-CoV-2 viral replication	Medication of the fibrate class used to treat abnormal blood lipid levels.	
Atovaquone	Atovaquone analog	PO, 1500 mg, bid	NCT04456153 (US)	Inhibit the replication of SARS-CoV-2 in vitro	Treatment or prevention of pneumocystis pneumonia, toxoplasmosis, malaria and babesia	
Ivermectin	-	PO, 6 mg, tid	NCT04510233 (EG) NCT04530474 (US) NCT04529525 (AR)	Inhibitor of the COVID-19 causative virus (SARS-CoV-2) in vitro.	Treatment of certain parasitic roundworm infections.	
		1 mL per nostril, bid, ISIN	NCT04510233 (EG)			
		IV, 0.2 mg/kg	NCT04431466 (BR)			
Niclosamide	-	PO, 2 g/d, 14 d	NCT04399356 (US) NCT04524052 (JP)	Inhibit SARS-CoV replication	Treatment of tapeworm infestations	[114]
Ebselen	Glutathione peroxidase mimetic	PO, 400 or 800 mg, bid, 14 d	NCT04483973 (US) NCT04484025 (US)	Against COVID-19 by irreversible inhibition of the main protease via a covalent bond formation with the thiol group of the active center's cysteine (Cys-145)	Investigational drug for reperfusion injury and stroke	
Opaganib	Sphingosine Kinase-2 (SK2) Inhibitor	PO, 500 mg, bid	NCT04502069 (IL) NCT04467840 (MX, RU)	Anti-viral and anti-inflammatory activity via selective SphK2 inhibition	Investigational drug for tumor	
MPT0B640	Heat Shock Protein Inhibitor	PO, 15, 30, 60, 80 mg	NCT04526717 (KR)	inhibit hsp90, which emerged as a major component enables viruses to hijack infected cells through the process of autophagy	Investigational drug for tumor	
DAS181	Recombinant sialidase	INH, 9 mg/d, 10 d	NCT04324489 (CN) NCT04338698 (BR)	-	Treatment of parainfluenza and influenza in clinical trials	
EIDD-2801	Ribonucleoside analog	PO, 200 or 300 mg	NCT04405739 (US)	Increase transition mutation frequency in viral	Investigational drug for broad-spectrum antiviral	[115]
Bismuth potassium citrate	NTPase and RNA helicase Inhibitor	PO, 0.6 g, bid	ChiCTR2000030398	Inhibit both the NTPase and RNA helicase activities of SARS-CoV-2 nsp13.	Used in combination with antibiotics and a proton pump inhibitor for the treatment of Helicobacter pylori infections	[93]
Azithromycin	Tetracycline	PO, 500 mg bid	NCT04381962 (GB) NCT04332107 (US) NCT04365582 (FR)	1. The coronaviruses is known to bind to metalloproteases (MMPs) of the host, in particular to ensure viral survival. Tetracyclines are known to chelate zinc from MMPs to limite virthal replicate in the host. 2. Inhibit the replication of positive-polarity single-stranded RNA viruses. 3. Be modulators of innate immunity (anti-inflammatory activity), decrease the expression of NFKB, the release of inflammatory cytokines	Antibiotic drug	

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					such as TNF- α , IL-1 β and IL-6, inhibit granulomas inflammatory and free radical release.		
Carrimycin	Tetracycline	PO, 400 mg, qd, 7 d	NCT04286503 (CN)	-		Treatment of Mycobacterium tuberculosis infection	[116]
Doxycycline	Tetracycline	PO, 200 mg, 14 d	NCT04371952 (FR) NCT04528927 (TN) NCT04433078 (US)	1. The coronavirus is known to bind to metalloproteases (MMPs) of the host, in particular to ensure viral survival. Tetracyclines are known to chelate zinc from MMPs to limit viral replication in the host. 2. Inhibit the replication of positive-polarity single-stranded RNA viruses. 3. Be modulators of innate immunity (anti-inflammatory activity), decrease the expression of NF κ B, the release of inflammatory cytokines such as TNF- α , IL-1 β and IL-6, inhibit granulomas inflammatory and free radical release.		Antibiotic drug	
XAV-19	Anti-SARS-CoV-2 antibody	IV, 0.5 or 2 mg/kg, Day 1 and 5	NCT04453384 (FR)	Polyclonal humanized anti-SARS-CoV2 antibodies (XAV-19)		Investigational drug for COVID-19	
AZD7442	Anti-SARS-CoV-2 antibody	IV and IM	NCT04507256 (GB)	A combination of two mAbs derived from convalescent patients with SARS-CoV-2 infection.		Investigational drug for COVID-19	
JS016	Anti-SARS-CoV-2 antibody	IV	NCT04441918 (CN)	-		Investigational drug for COVID-19	
SCTA01	Anti-SARS-CoV-2 antibody	IV	NCT04483375 (CN)	Neutralize virus		Investigational drug for COVID-19	
Anti-SARS-CoV-2 equine immunoglobulin fragments (INOSARS)	Anti-SARS-CoV-2 Equine Antibody Fragments	IV, 150 mL, 4.0 mL/min over 40 min.	NCT04514302 (MX)	Recombinant SARS-CoV-2 spike protein receptor-binding domain (RBD)		Investigational drug for COVID-19	[117]
CT-P59	Anti-SARS-CoV-2 spike RBD antibody	IV	NCT04525079 (KR)	A monoclonal antibody targeted against SARS-CoV-2 spike RBD as a treatment for SARS CoV 2 infection.		Investigational drug for COVID-19	
LY3819253	SARS-CoV-2 neutralizing antibody	IV	NCT04497987 (US) NCT04518410 (US)	Neutralizing IgG1 monoclonal antibody (mAb) directed against the spike protein of SARS-CoV-2		Investigational drug for COVID-19	
BGB DXP593	SARS-CoV-2 neutralizing antibody	IV, 10-30 mg/kg	NCT04532294 (AU)	Viral neutralisation.		Investigational drug for COVID-19	
Hyperimmune plasma or Convalescent plasma treatment	-	IV	NCT04261426 (CN) NCT04323800 (US) NCT04483960 (AU)	-		-	[118]
INM005	Equine hyperimmune serum	IV, 4 mg/kg	NCT04494984 (AR)	-		-	
hyper immunoglobulins containing	Immunoglobulin	IV	NCT04383548 (EG)	1. Activation of complement; 2. Activation of effector		-	

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anti-Corona VS2 immunoglobulin					cells; 3. Natural antibodies; 4. purified from COVID19 convalescent plasma		
hyper immunoglobulins containing anti-Corona VS3 immunoglobulin	Immunoglobulin	IV	NCT04521322 (AR)		1. Activation of complement; 2. Activation of effector cells; 3. Natural antibodies; 4. purified from COVID19 convalescent plasma	-	
Octagam	Immunoglobulin	IV, 0.5 g/kg	NCT04411667 (US)		-	-	
SAB-185	Immunoglobulin	IV, 10, 25 and 50 mg/kg	NCT04469179 (US) NCT04468958 (US)		An anti-SARS-CoV-2 Human Immunoglobulin Intravenous (transchromosomal [Tc] bovine-derived)	-	
SAR443122	Immunoglobulin	PO, 14 d	NCT04469621 (AR, BR, CL, MX, RU)		Improve hyperinflammatory state	Investigational drug for Systemic Inflammatory disease	
Interferon- α	Immunomodulator	IFN- α : 5 million U or equivalent dose, bid, < 10 d, INH	Guidelines (version 8) for treatment of COVID-19 NCT04534725 (AU)		Involved in innate immunity against viral infection.	Antiviral treatment	[49]
		IFN- α 1 β : 2-3 drops for each nostril, 4 times per day, 28 d, ISIN	NCT04320238 (CN)		1. Activation of complement; 2. Activation of effector cells; 3. Natural antibodies.	Treatment of rheumatoid arthritis, multiple sclerosis, psoriasis, many forms of cancer including non-Hodgkin's lymphoma, colorectal cancer, head and neck cancer and breast cancer	[119]
		Cerrokine: INH, 10 μ g, bid, 10 d	ChiCTR2000030480		Recombinant human IFN-alpha 1beta. 1. Activation of complement; 2. Activation of effector cells; 3. Natural antibodies.	Antiviral or antineoplastic drug	
		IFN- α 2 β : INH, 10 μ g, bid, 10 d	NCT04293887 (CN) NCT04379518 (USA)		1. Activation of complement; 2. Activation of effector cells; 3. Natural antibodies.	Antiviral or antineoplastic drug	[120]
Inovaferon- β	Immunomodulator	IFN- β : 20 μ g, bid, INH, 7-14 d	ChiCTR2000029496		Involved in innate immunity against viral infection.	Antiviral treatment	[121]
		IFN- β 1 α : 44 mcg, three times per week, 14 d, SC	NCT04449380 (IT)				
		SNG001 IFN- β 1 α : INH	NCT04385095		been well tolerated during virus infections enhanced antiviral activity in the lungs (measured in sputum and blood samples) provided significant lung function benefit over placebo in asthma in two Phase II trials.		
		IFN- β 1 β : 9.6 million U x2/d for 48 hours, then 9.6 million U x1/d for 8 to 16 d, INH	NCT04469491 (FR)		1. Balances the expression of pro- and anti-inflammatory agents; 2. Leads to a reduction of neuron inflammation.	Treatment of the relapsing-remitting and secondary-progressive forms of multiple sclerosis (MS)	
Peg IFN- λ 1 α	Immunomodulator	IM, 0.5 mL, 180 mcg	NCT04354259 (CA) NCT04344600 (US)		Involved in innate immunity against viral infection.	Antiviral treatment	

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			NCT04388709 (US)			
IL-7	Immunomodulator	IM, 10 µg/kg	NCT04407689 (FR) NCT04379076 (GB) NCT04442178 (US)	Restore lymphocyte count in several viral infections	Treatment of metastatic breast cancer.	[122]
NT-17 (efineptakin alfa)	Immunomodulator	IM	NCT04501796 (US) NCT04498325 (US)	Long Acting IL-7: Restore lymphocyte count in several viral infections	Treatment of metastatic breast cancer.	
Thymosin	Immunomodulator	SC or IV, 1.6 mg, qd, 5 d	NCT04320238 (CN) NCT04268537 (CN)	Regulate cellular immunity in sepsis patients.	Treatment of septic shock, acute respiratory distress syndrome, peritonitis, acute cytomegalovirus infection and infectious disease	[123]
Thymalfasin	Immunomodulator	SC, 1.6 mg, twice per week	NCT04428008 (US) NCT04487444 (US)	A biological response modifier which activates various cells of the immune system,	Treatment of Hepatitis B and C	
PUL-042	TLR 2/6/9 agonist	INH, 50 µg on Day 1, Day 3 and Day 6	NCT04313023 (US) NCT04312997 (US)	Amplify the innate immune defenses of the lung epithelial mucosa.	Preclinical Investigational drug	[95]
Polyinosinic:polycytidylic acid	Immunostimulant	IM, 2 mg, once every 2 days	ChiCTR2000029776	Structurally similar to double-stranded RNA, which is present in some viruses and is a "natural" stimulant of TLR3.	Used to simulate viral infections in scientific research on the immune system	[96]
Apolactoferrin	Immunomodulator	PO, 600 - 1500 mg, bid, > 8 w	NCT04412395 (EG) NCT04475120 (IT)	1. Block the viral receptors on the host cells to prevent viral entry and replication; 2. Protect against the cytokine-storm and thrombotic complications	Food supplement	
Lactoferrin	Immunomodulator	PO, 200 or 300 mg, bid	NCT04421534 (EG)	Lactotransferrin: antimicrobial activity and antiviral activity	-	
Desferal	Immunomodulator	IV	NCT04333550 (IR)	Iron Chelator: Antiviral and immunomodulatory effects in vitro and in vivo	Treatment of acute iron intoxication and of chronic iron overload due to transfusion-dependent anemias	
Nitazoxanide	Immunomodulator	PO, 1g, bid, 7 d	NCT04359680 (US) NCT04463264 (AR) NCT04498936 (EG)	Amplify cytoplasmic RNA sensing, potently augment type I interferon and autophagy-mediated antiviral responses, have immunomodulatory properties eg inhibits macrophage IL-6 production, and interferes with SARS-CoV-2 glycosylation	Antiprotozoal drug	
KB109	Immunomodulator, Glycan	PO,	NCT04486482 (US) NCT04414124 (US)	Microbiome Metabolic Therapy	Investigational drug for COVID-19	
NK cell	NK cell therapy	IV, 0.1-2x10 ⁷ cells/kg, twice a week	NCT04280224 (CN) NCT04344548 (CO)	Natural killer (NK) cells are innate lymphocytes that may serve as useful effectors against danger infection.	Anti-cancer therapy	
FT516	NK cell therapy	IV, 9 × 10 ⁷ cells, Day 1 and Day 4	NCT04363346 (US)	Natural killer (NK) cells are innate lymphocytes that may serve as useful effectors against danger infection.	-	
CYNK-001	NK cell therapy	IV	NCT04365101 (US)	An allogeneic off the shelf cell therapy enriched for	-	

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					CD56+/CD3- NK cells expanded from human placental CD34+ cells.		
	NKG2D-ACE2 CAR-NK cell	NK cell therapy	IV, 1x10 ⁸ cells/kg, once a week	NCT04324996 (CN)	Cord blood derived NKG2D-ACE2 CAR-NK cell, carried IL15 superagonist- and GM-CSF neutralizing scFv-secreting	Anti-cancer therapy	
	Stem Cell Educator-Treated Mononuclear Cells Apheresis	Stem cell therapy	IV	NCT04299152 (CN)	Stem Cell Educator (SCE) therapy functions via CB-SC induction of immune tolerance in autoimmune T cells and restore immune balance and homeostasis.	Treatment of inflammatory	
	BCG Vaccine	Immunostimulant	ID, 2x10 ⁵ to 8x10 ⁵ U	NCT04327206 (AU) NCT04348370 (US) NCT04387409 (DE)	Trained immunity, BCG induces cross-protection.	Treatment of tuberculosis, mycobacteria, and non-muscle-invasive bladder cancer	[97]
	NasoVAX	Immunostimulant	IM	NCT04442230 (US)	Efficient Adenovirus vector to express viral Spike protein.	Investigational vaccine for COVID-19	
	BACMUNE	Immunostimulant	SL, 2 spray puff every 12 hours, 45 d	NCT04452643 (MX)	A bacterial preparation that contains a mixture of Gram + and Gram - inactivated bacteria	Investigational drug for infectious disease	
	IMM-101	Immunostimulant	SC, 1.0 mg Day 1, 0.5 mg Day 2 and Day 3	NCT04442048 (CA)	made from the heat-treated bacterium Mycobacterium obuense.	Investigational drug for tumor	
	Naproxen	Inhibitor of both cyclo oxygenase (COX-2) and of Influenza A virus nucleoprotein (NP)	PO, 250 mg, bid	NCT04325633 (FR)	1. Binding competed with NP association with viral RNA and impeded the NP self-association process which strongly reduced viral transcription/replication; 2. Anti-inflammation.	Nonsteroidal anti-inflammatory drugs	[124]
	Famotidine	Histamine-2 blocker	PO, 20 mg, bid, 28 d	NCT04389567 (US)	Histamine-2 blocker, Unknown mechanism	Treatment and prevention of ulcers in the stomach and intestines	
	Linagliptin	DPP4 inhibitor	PO, 5 mg, 14 d	NCT04341935 (US)	-	Treatment of diabetes mellitus type 2	
	Niclosamide	-	PO, 2 g/d, 14 d	NCT04399356 (US) NCT04524052 (JP)	Inhibit SARS-CoV replication	Treatment of tapeworm infestations	[114]
	Povidone-Iodine	-	ISIN, 0.5% or 2%, 4 times each nare, 5 d	NCT04371965 (FR)	Highly virucidal against	Antiseptic drug	
	Iodine Complex	-	PO, 200 mg, tid	NCT04473261 (PK)	Clear viral load	-	
Corticosteroids	Dexamethasone	Corticosteroids	IV, 20 mg qd for 5 days, then 10 mg qd for 5 days	NCT04325061 (ES) NCT04327401 (BR) NCT04344730 (FR)	Inhibit excessive inflammation.	A type of corticosteroid medication	
	Ciclesonide	Corticosteroids	INH, 320 µg, bid, 14 d	NCT04330586 (KR)	Inhibit excessive inflammation.	Treatment of asthma and hay fever	[125]
	Methylprednisolone	Corticosteroids	IV, 40-80 mg, qd. 7 d	NCT03852537 (US) NCT04244591 (CN) NCT04323592 (IT)	Inhibit excessive inflammation.	A type of corticosteroid medication	[126]
	Budesonide	Corticosteroids	INH, 1mg/2mL diluted in 250mL, 30 d	NCT04361474 (FR) NCT04355637 (ES)	Inhibit excessive inflammation.	A type of corticosteroid medication	
	Hydrocortisone	Corticosteroids	IV, 200 mg/ 24 h, continuous infusion; 50 mg/ 6h, bolus injections, 7 d	NCT04348305 (DK)	Inhibit excessive inflammation.	A type of corticosteroid medication	

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Treatment of Cytokine release syndrome	Immunoglobulin	Immunomodulator	IV, 0.5g / kg / d, 5 d	NCT04261426 (CN) NCT04381858 (MX) NCT04381936 (GB)	1. Activation of complement; 2. Activation of effector cells; 3. Natural antibodies.	Treatment of rheumatoid arthritis, multiple sclerosis, psoriasis, many forms of cancer including non-Hodgkin's lymphoma, colorectal cancer, head and neck cancer and breast cancer	[118]
	Infliximab	Anti-TNF antibody	IV, 5 mg/Kg	NCT04425538 (US)	Involve in the inflammatory process, whereas the receptor fusion protein apparently lacks this capability.	Treatment of a number of autoimmune diseases	
	Emapalumab	Anti-IFN γ antibody	IV, 6 mg/kg on Day 1, Day 4, Day 7, Day 10 and Day 13	NCT04324021 (IT)	Bind and neutralize IFN- γ , preventing it from inducing pathological effects.	Treatment of hemophagocytic lymphohistiocytosis	[127]
	Tocilizumab	Anti-IL-6R antibody	IV, 8 mg/kg, 6 times in 4 weeks	Guidelines (version 8) for treatment of COVID-19 NCT04363736 (US) NCT04315480 (IT) NCT04331808 (FR)	Hinder IL-6 from exerting its pro-inflammatory effects.	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	[49]
	CMAB806	Anti-IL-6R antibody	IV	ChiCTR2000030196	Hinder IL-6 from exerting its pro-inflammatory effects.	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	[128]
	Sarilumab	Anti-IL-6R antibody	SC, 200 mg	NCT04315298 (US) NCT04324073 (FR) NCT04386239 (IT)	hinder IL-6 from exerting its pro-inflammatory effects.	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	[67]
	Siltuximab	Anti-IL-6R antibody	IV, 11 mg/kg, 28 d	NCT04330638 (BE)	hinder IL-6 from exerting its pro-inflammatory effects.	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	[129]
	Clazakizumab	Anti-IL-6 antibody	IV, 12.5 or 25mg in 50 mL infusion over 30 minutes	NCT04494724 (US) NCT04343989 (US)	Anti-IL-6, aglycosylated, humanized rabbit monoclonal antibody	Treatment of musculoskeletal aspects of psoriatic arthritis	
	Olokizumab	Anti-IL-6 antibody	SC, 64 mg	NCT04452474 (US) NCT04380519 (RU)	Hinder IL-6 from exerting its pro-inflammatory effects.	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	
	Sirukumab	Anti-IL-6 antibody	IV, 5 mg/Kg	NCT04380961 (BE)	against the proinflammatory cytokine IL- 6 (IL-6).	Treatment of rheumatoid arthritis	
	Infliximab	Anti-TNF antibody	IV, 5 mg/Kg	NCT04425538 (US)	Involve in the inflammatory process, whereas the receptor fusion protein apparently lacks this capability.	Treatment of a number of autoimmune diseases	
	Emapalumab	Anti-IFN γ antibody	IV, 6 mg/kg on Day 1, Day 4, Day 7, Day 10 and Day 13	NCT04324021 (IT)	Bind and neutralize IFN- γ , preventing it from inducing pathological effects.	Treatment of hemophagocytic lymphohistiocytosis	[127]
	BMS-986253	Immunomodulator	IV, 2400 mg	NCT04347226 (US)	Anti-IL-8	Treatment of tumor	
	Canakinumab	Immunomodulator	IV, 450-750 mg	NCT04362813 (US) NCT04510493 (CH) NCT04348448 (IT)	Anti-IL-1	Treatment of systemic juvenile idiopathic arthritis and active Still's disease, including adult-onset Still's disease	
	Anakinra	IL- 1R antagonist protein	IV, 100 mg, qid, 15 d	NCT04324021 (IT) NCT04339712	Recombinant and slightly modified version of the human IL- 1 receptor	Treatment of rheumatoid arthritis	[130]

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			(GR) NCT04364009 (FR)	antagonist protein. Bind IL1R, preventing it from inducing pathological effects.		
RPH-104	Heterodimeric fusion protein containing IL-1R1 and IL-1RAcP linked to immunoglobulin heavy chains	SC, 80 mg	NCT04380519 (RU)	Inhibit human IL-1 beta/IL-1F2 signaling pathway,	Treatment of rheumatoid arthritis (RA) and systemic juvenile idiopathic arthritis	
UTTR1147A (IL-22Fc)	IL - 22Fc protein	IV	NCT04386616 (US)	human IL - 22Fc (immunoglobulin G (IgG)4) fusion protein plays role of tissue regeneration, acting directly on epithelial cells	-	
MSTT1041A (astegolimab)	Anti-ST2 antibody	IV	NCT04386616 (US)	Inhibit binding of IL-33 (IL-33) to the ST2 receptor.	Investigational drug for moderate to severe atopic dermatitis	
Lenzilumab	Anti-GM-CSF antibody	IV, 600 mg	NCT04351152 (US) NCT04534725 (AU)	anti-human GM-CSF monoclonal antibody, alleviate the immune-mediated cytokine release syndrome	Investigational drug for treatment of chronic myelomonocytic leukemia (CMML) and juvenile myelomonocytic leukemia (JMML)	
Gimsilumab	Anti-GM-CSF antibody	IV, 10 mg/kg	NCT04351243 (US)	Recombinant anti-granulocyte colony-stimulating factor (G-CSF) receptor monoclonal antibody	Investigational drug for multiple inflammatory diseases and cancer	
Otilimab	Anti-GM-CSF antibody	IV	NCT04376684 (US)	Recombinant anti-granulocyte colony-stimulating factor (G-CSF) receptor monoclonal antibody	Investigational drug for multiple inflammatory diseases and cancer	
mavrilimumab	Anti-GM-CSF-R α antibody	IV, 6, 10 mg/kg	NCT04447469 (US) NCT04397497 (IT)	Anti-granulocyte-macrophage colony-stimulating factor receptor alpha (GM-CSF-R α) monoclonal antibody	Treatment of rheumatoid arthritis	
CSL324	Anti-G-CSF antibody	IV	NCT04519424 (AU)	Recombinant anti-granulocyte colony-stimulating factor (G-CSF) receptor monoclonal antibody	Investigational drug for rheumatoid arthritis, vasculitis, cystic fibrosis and inflammatory bowel disease	
TJ003234	Anti-G-CSF antibody	IV, 3 or 6 mg/kg	NCT04341116 (US)	Recombinant anti-granulocyte colony-stimulating factor (G-CSF) receptor monoclonal antibody	Investigational drug for rheumatoid arthritis	
Nangibotide	TREM-1 inhibitor	IV, 1.0 mg/kg/h	NCT04429334 (FR)	Inhibit TREM-1 to prevent the inflammatory activation.	Investigational drug for septic shock	
IC14	CD14 antibody	IV, initial dose of 4 mg/kg, 2 mg/kg for 3 days	NCT04391309 (US) NCT04346277 (IT)	Blockade of PAMP and DAMP interactions with CD14, thus attenuating the inflammatory cascade that leads to increased endothelial and epithelial permeability and injury resulting in alveolar injury and fluid accumulation characteristic of ARDS.	Investigational drug for amyotrophic lateral sclerosis	[131]
EB05	TLR4 antibody	IV	NCT04401475	Inhibit TLR4, which is a key component of the innate immune system		

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				which functions to detect molecules generated by pathogens, acting upstream of cytokine storm and IL-6-mediated acute lung injury.		
M5049	TLR inhibitor	PO, 100 or 200 mg, 14 d	NCT04448756 (US, BR)	A potentially first-in-class small molecule that blocks the activation of Toll-like receptor (TLR)7 and TLR8, two innate immune sensors that detect single-stranded (ss) RNA from viruses such as SARS-CoV-2, the virus responsible for COVID-19.	Investigational drug for lupus pathogenesis	
Baricitinib	JAK inhibitor	PO, 2 mg/d, 4 mg/d	Artificial intelligence search NCT04320277 (IT) NCT04340232 (US) NCT04362943 (ES)	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1 and JAK2; 2. dual antiviral and antiinflammatory activity in vitro.	Rheumatoid arthritis treatment	[132]
Ruxolitinib	JAK inhibitor	PO, 10 mg bid for 14 d, then 5 mg bid for 2 d, 5 mg qd for 1d	ChiCTR2000029580 NCT04331665 (CA) NCT04334044 (MX) NCT04348071 (US)	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1 and JAK2; 2. Antiinflammatory activity in vitro.	Treatment of intermediate or high-risk myelofibrosis	[133]
Jakotinib	JAK inhibitor	PO, 50 mg, bid, 7 d	ChiCTR2000030170	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1 and JAK2; 2. Antiinflammatory activity in vitro.	Investigational drug	[134]
Pacritinib	JAK inhibitor	PO, 400 mg/d	NCT04404361 (US)	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1 and JAK2; 2. dual antiviral and antiinflammatory activity in vitro.	Treatment of myelofibrosis	
TD-0903	JAK inhibitor	INH	NCT04402866 (GB) NCT04350736 (GB)	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1, JAK2, JAK3 and TYK2; 2. Block the release of cytokines and chemokines that may be associated with Acute Lung Injury and the initiation of a cytokine storm syndrome.	Investigational drug for acute lung injury	
Tofacitinib	Jak-1/3 inhibitor	PO, 10 mg, bid, 14 d	NCT04412252 (US) NCT04415151 (US)	1. An inhibitor of janus kinase (JAK), blocking the subtypes JAK1 and JAK2; 2. dual antiviral and antiinflammatory activity in vitro.	Treatment of rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, and ulcerative colitis	
ATI-450	MAPKAPK 2 (MK2) inhibitor	PO, 50 mgqd for 14 d	NCT04481685 (US)	Regulate pro-inflammatory cytokines associated with CRS.	Investigational drug for COVID-19 and rheumatoid arthritis	
CERC-002	LIGHT inhibitor	SC, 16 - 1200 mg/kg	NCT04412057 (US)	LIGHT inhibitor, to ameliorate the cytokine storm	Investigational drug for COVID-19	
CD24Fc	CD24Fc protein	IV, 480 mg, in 60 min	NCT04317040 (US)	1. CD24Fc comprises the nonpolymorphic regions of CD24 attached to the Fc region of human IgG1; 2. Ameliorate production of multiple inflammatory cytokines and reverse the loss of T lymphocytes.	Investigational drug for COVID-19	
Eculizumab	Immunomodulator	IV, 900 mg, once a week	NCT04288713 (US) NCT04346797 (FR)	Modulate the activity of the distal complement and prevent the formation of	Treatment of paroxysmal nocturnal hemoglobinuria	[135]

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			NCT04355494 (US)	the membrane attack complex.	(PNH), atypical hemolytic uremic syndrome (aHUS), and neuromyelitis optica	
Zilucoplan®	Complement C5 inhibitor	SC, 14 d	NCT04382755 (BE)	Improve the lung damage caused by the excessive activation of complement caused by the virus.	-	
Avdoralimab	Anti-C5aR Antibody	IV	NCT04371367 (FR)	Block C5aR and reduce the inflammatory response in the lungs.	Immunomodulator in clinical trials	
BDB-001	Anti-C5a Antibody	IV	NCT04449588 (CN)	Improve the lung damage caused by the excessive activation of complement caused by the virus.	Immunomodulator in clinical trials	[106]
Leronlimab	CCR5 antagonist	IV, 700 mg weekly	CytoDyn Inc. NCT04343651 (US) NCT04347239 (US)	1. Enhance the immune response; 2. Mitigate the “cytokine storm”.	Treatment of HIV/AIDS	[136]
Maraviroc	Chemokine receptor antagonist	PO, 300 mg, bid, 14 d	NCT04441385 (ES) NCT04475991 (MX) NCT04435522 (US)	CC Chemokine Receptor 5 (CCR5) antagonist, CCR5 antagonism prior to the 'second wave' of inflammatory mediator expression in SARS-CoV-2 may reverse lymphoid depletion and may alter cell trafficking of inflammatory cells, both increasing viral control capacity and dampening damage to lung tissue.	Investigational drug for HIV	
AMY-101	C3 Inhibitor	IV, 5 mg/Kg/d, 14 d	NCT04395456 (US)	Inhibit complement activation and contain systemic, complement-mediated inflammatory reactions by C3 interception.	Investigational drug for membranous glomerulonephritis and paroxysmal nocturnal haemoglobinuria	[137]
PD-1 blocking antibody	PD-1 antibody	IV, 200 mg	NCT04268537 (ES)	Block PD-1 or PD-L1 can prevent T cell death, regulate cytokine production, reduce organ dysfunction and reduce death in sepsis.	Treatment of cancer	[138] 2
Nivolumab	PD-1 antibody	IV, 240 mg	NCT04413838 (FR) NCT04343144 (FR) NCT04356508 (CN)	Restore exhausted T lymphocytes immunity.	Treatment of tumor	
Abatacept	Anti-CTLA-4 antibody	IV, 10 mg/kg on Day 1	NCT04477642 (US) NCT04472494 (US)	A fusion protein composed of the Fc region of the immunoglobulin IgG1 fused to the extracellular domain of CTLA-4, inhibits T cell co-stimulation.	Treatment of autoimmune diseases like rheumatoid arthritis	
Itolizumab	Anti-CD6 antibody	IV, 1.6 mg/kg	NCT04475588 (IN)	Bind to CD6, down regulates T cell activation, causes reduction in synthesis of pro-inflammatory cytokines and possibly plays an important role by reducing T cell infiltration at sites of inflammation.	Treatment of psoriasis.	
AK119	Immunomodulator	Anti-CD73 Antibody: IV	NCT04516564 (NZ)	1. 5-nucleotidase inhibitors; 2. Antibody-dependent cell cytotoxicity; 3. T lymphocyte stimulants.	Treatment of tumor	

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Fingolimod	Sphingosine 1-phosphate receptor modulator	PO, 0.5 mg, 3 d	NCT04280588 (CN)	Immune regulation effects.	Treatment of multiple sclerosis in clinical trial	[139]
Acalabrutinib	BTK inhibitor		NCT04497948 (US) NCT04380688 (US) NCT04346199 (AR, FR, DE, IT, ES, TR)	Reduce inflammation through BTK inhibition alleviates the severity of respiratory distress.	Treatment of patients with chronic lymphocytic leukemia and mantle cell lymphoma	
Abivertinib	BTK inhibitor	PO, 100 mg qd for 7 d	NCT04528667 (US) NCT04440007 (US)	Reduce inflammation through BTK inhibition alleviates the severity of respiratory distress.	Treatment of patients with chronic lymphocytic leukemia and mantle cell lymphoma	
Ibrutinib	BTK inhibitor	PO, 400 mg, bid, 7 d	NCT04439006 (US)	Reduce inflammation through BTK inhibition alleviates the severity of respiratory distress.	Treatment of patients with chronic lymphocytic leukemia and mantle cell lymphoma	
Zanubrutinib	BTK inhibitor	PO, 320 mg/d	NCT04382586 (US)	Reduce inflammation through BTK inhibition alleviates the severity of respiratory distress.	Treatment of mantle cell lymphoma	
Piclidenoson	A3 adenosine receptor agonist (A3AR)	PO, 12 mg, bid, < 28 d	NCT04333472 (IL)	modulate key signaling proteins, such as PI3K, PKA, PKB/Akt, IKK and NF-kB, resulting in de-regulation of the Wnt/ β -catenin pathway and inhibition of inflammatory cytokine production.	Anti-inflammatory drug	
Pentoxifylline	Phosphodiesterase-4 inhibitor	PO, 1200 mg/d	NCT04433988 (EG)	Anti-inflammatory role via reducing the production of proinflammatory cytokines such as TNF- α , IL-1 and IL-6.	Treatment of muscle pain in peripheral artery disease.	
Ibudilast	Phosphodiesterase-4 inhibitor	PO, 50 mg, bid, 7 d	NCT04429555 (CA)	Alleviate inflammation and apoptosis	Anti-inflammatory drug	[140]
Losmapimod	MAPKs inhibitor	PO, 15 mg, bid, 14 d	NCT04511819 (US, BR, MX)	Inhibit p38 to attenuate COVID-19 infection.	Investigational drug for facioscapulohumeral dystrophy (FSHD)	[141]
Progesterone	Hormone	SC, 100 mg, bid	NCT04365127 (US)	The anti-inflammatory actions of E2 on innate immunity includes the suppression of the production of proinflammatory cytokines, for example, IL-6, IL-1 β , and TNF- α , by monocytes and macrophages (a major factor in the COVID-19 cytokine storm) and a strong inhibition of CCL2, thus preventing innate immune cells migration into inflamed areas, particularly neutrophils and monocytes.	sex hormone	[142]
Isotretinoin	Synthetic retinoid derivative	PO, 0.5 mg/kg/d, 14 d INH, 0.2-4 mg/kg/d	NCT04353180 (EG)	Inhibit the overproduction of early response proinflammatory cytokines (IL-6 and tumor necrosis factor α)	Treatment severe acne	
LAU-7b (fenretinide)	Synthetic retinoid derivative	PO, 300 mg, 7 d	NCT04417257 (CA)	Retinoic acid receptor agonists, suppress inflammation and the progression to cytokine storms that damage vital organs	Investigational drug for prostate cancer and other tumor	

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Metformin	-	PO, 500 mg, bid	NCT04510194 (US)	Treatment of autoimmune disease and reduced macrophage cytokines synthesis.	Treatment of type 2 diabetes	
Montelukast	Leukotriene receptor antagonist	PO, 10 mg, 60 d	NCT04389411 (CA)	Block the action of leukotriene D4 in the lungs resulting in decreased inflammation and relaxation of smooth muscle	Treatment and prevention of symptoms in asthma or allergies patients	
DFV890	NLRP3 inhibitor	PO and nasogastric administration, 14 d	NCT04382053 (DK, DE, HU, RU, ES)	NLRP3 inhibitor, modulate the innate immunity.	Investigational drug for Parkinson disease, Alzheimer disease, non-alcoholic steatohepatitis	
Duvelisib	PI3K inhibitor	PO, 25 mg, bid, 10 d	NCT04372602 (US) NCT04487886 (US)	PI3K inhibitor, quell aberrant hyperactivation of the innate immune system, preferentially polarize macrophages, reduce pulmonary inflammation, and limit viral persistence, thereby improving patient outcomes.	Treatment of chronic lymphocytic leukemia (CLL) or small lymphocytic lymphoma (SLL) after other treatments have failed	
Apilimod Dimesylate	Class III PI3K inhibitor	PO, 125 mg, bid, 10 d	NCT04446377 (US)	Inhibitor of the class III PI kinase phosphatidylinositol-3-phosphate 5-kinase. Inhibit the toll-like receptor (TLR)-induced production of various cytokines, including IL-12 (IL-12) and IL-23, thereby preventing IL-12/IL-23-mediated immune responses.	Investigational drug for rheumatoid arthritis and severe Crohn's disease	
Sirolimus	Immunosuppressant	PO, Initial dose of 6 mg, then 2 mg/d, 9 d	NCT04461340 (EG) NCT04371640 (US) NCT04482712 (US)	Macrolide compound, immunosuppressant functions	medicine for preventing the rejection of kidney transplants	
Cyclosporine	Immunosuppressant	PO and IV, 9 mg/kg/day oral divided q12h, 3mg/kg/day by continuous IV infusion	NCT04412785 (US) NCT04392531 NCT04492891	calcineurin inhibitor, used as an immunosuppressant medication .	Prevent organ rejection in people who have received a liver, kidney, or heart transplant.	
TAK-671	Ulinastatin-Fc (UTI-Fc) fusion protein	IV	NCT04464460 (JP)	1. Suppress the activation of polymorphonuclear leukocytes (e.g. neutrophils), macrophages and platelets; 2. Inhibit various serine proteases; 3. Inhibit polymorphonuclear leukocytes (e.g. neutrophils) and pro-inflammatory cytokines including IL-s (e.g. IL-1, IL-6 and IL-8)	Treatment of severe acute pancreatitis	[143]
Fluoxetine	Serotonin reuptake inhibitor	PO, 20-60 mg, 14-60 d	NCT04377308 (US)	Selective serotonin reuptake inhibitor,	Antidepressant	
Fluvoxamine	Serotonin reuptake inhibitor	PO, 100 mg, tid, 15 d	NCT04342663 (US)	Selective serotonin reuptake inhibitor,	Antidepressant	
Tranilast	NLRP3 Inflammasome inhibitor	PO, 150 mg, bid	ChiCTR2000030002	Tryptophan analogue; anti-allergic, inhibits NLRP3 in the inflammasome pathway.	Treatment of asthma, keloid scars, and hypertrophic scars	[113]

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Colchicine	NLRP Inflammasome inhibitor	PO, 0.5 mg, bid for 3 d; then 0.5 mg qd for 27 d	NCT04322565 (IT) NCT04363437 (US) NCT04367168 (MX)	Inhibit inflammasome NLP3 and microtubule formation and associations to limit the myocardial necrosis and pneumonia development.	Prevention or treatment of gout attacks	[144]
Azoximer bromide	Immunomodulator	IV 3 day, followed by 12 mg, 10 times	NCT04381377 (RU)	A N-oxidized polyethylene-piperazine derivative.	Investigational drug for improving secondary immunodeficient states	
OP-101 (Dendrimer N-acetylcysteine)	Immunomodulator	IV, 2 mg/kg	NCT04458298 (US)	Reduce proinflammatory cytokines	-	
EDP1815	Monoclonal microbe	PO, 550 mg	NCT04488575 (US)	Harness the connections between intestinal mucosal immunology and systemic inflammation for broad inflammation resolution without immunosuppression.	Investigational drug for moderate psoriasis	
Dialyzable Leukocyte Extract	Immunomodulator	PO, 2 mg for 14 d, followed by 2 mg per week for 3 w, 35 d	NCT04379479 (MX)	Complexes consisting of a large number of low molecular weight substances, have antigen-independent immunorestorative properties in vitro.	-	
Nebulized Platelet Lysate	Platelet lysate	INH, 2 mL, 42 d	NCT04487691 (US)	Reduce inflammation and stimulates bronchial tree healing	-	
CAP-1002	Allogeneic Cardiosphere-Derived Cells	IV	NCT04338347 (US)	Allogeneic Cardiosphere-Derived Cells	-	
Autologous Non-Hematopoietic Peripheral Blood Stem Cells	Autologous non-hematopoietic peripheral blood stem cells	INH	NCT04473170 (AE)	The NHPBSC were characterized as CD90+, CD133+, Oct-4+ (pluripotent markers), and CD45-, CD71-, based on multiparameter flow cytometry.	Treatment of autoimmunity	[145]
Allocetra-OTS	Cell-based therapeutic composed of donor early apoptotic cells	IV, $140 \times 10^6 \pm 20\%$ cells / kg	NCT04513470 (IL)	Harness the naturally occurring activity of early apoptotic cells to induce an immuno-modulated state.	Prevention of graft vs. host disease (GvHD) in patients receiving human stem cell transplantation (HSCT)	[146]
Autologous adipose-derived stem cells	Mesenchymal Stem Cell Therapy	Autologous adipose-derived stem cells: IV, 200 million cells, 3 doses per 3 days	NCT04428801 (US) NCT04349631 (US)	(Autologous adipose-derived mesenchymal stem cells)	Treatment of inflammatory and degenerative diseases	
RAPA-501-Allo	Reprogrammed T cell	IV, $40, 160 \times 10^6$ cells	NCT04482699 (US)	Anti-inflammatory via modulate the TREG and Th2 pathways	Allogeneic off-the-shelf RAPA-501 cells	
CSTC-Exo	Specific T-cells	INH, 2.0×10^8 nano vesicle / 3 ml;	NCT04389385 (TR)	The COVID-19 specific fragment peptides activate specific T-cells and stimulate the secretion of potent mediators including IFN gamma in forms of exosomes.	-	
CK0802	T-Regulatory Cell Infusion	IV, 1×10^8 cells	NCT04468971 (US)	(Cryopreserved Cord Blood Derived T-Regulatory Cell Infusions)	-	
CASem	Immunity- and matrix-regulatory cells	IV, $3-5 \times 10^7$ cell/kg	NCT04331613 (CN)	An injectable product composed of immunity- and matrix-regulatory cells	-	

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	Stem Cell Educator-Treated Mononuclear Cells Apheresis	Stem Cell Educator-Treated Mononuclear Cells Apheresis	IV	NCT04299152 (CN)	Restore immune balance and homeostasis in inflammation-associated diseases.	-	
	Cannabidiol	Active cannabinoid	PO, 150 mg, bid, 14 d	NCT04467918 (BR)	Reduce the cytokine storm and excessive lung inflammation	Treatment of Lennox-Gastaut syndrome and Dravet syndrome	
Treatment of Acute respiratory distress syndrome	Captopril	Angiotensin-converting enzyme (ACE) inhibitor	INH, 25 mg	NCT04355429 (FR)	Decrease infectivity of COVID-19 by modulating the expression of ACE2.	Treatment of hypertension and some types of congestive heart failure.	
	Ramipril	Angiotensin-converting enzyme (ACE) inhibitor	PO, 2.5 mg/d, 14 d	NCT04366050 (US)	Lower IL-6 and peak viral load	Treatment of high blood pressure, heart failure, and diabetic kidney disease	[147]
	Losartan	angiotensin II receptor (type AT1) antagonis	PO, 25 mg, qd	NCT04312009 (US) NCT04311177 (US) NCT04328012 (US)	Inhibition of Viral Macromodain of COVID-19 and Human TRPM2.	Treatment of hypertension	[148]
	Telmisartan	Angiotensin II receptor (type AT1) antagonis	PO, 40 mg, bid, 14 d	NCT04359953 (FR) NCT04356495 (FR)	a second class RAAS inhibitors, do not affect ACE2 levels.	Treatment of hypertension	[149]
	Angiotensin peptide	Angiotensin peptide (1-7) derived plasma	IV	NCT04375124 (TR) NCT04332666 (NL) NCT04401423 (US)	Improve the mortal hyperinflammation state by supply angiotensin peptide.	-	[150]
	BIO101	MAS activator	PO, 350 mg, bid, < 28 d	NCT04472728 (US, BE, BR, FR)	Activate the MAS receptor, a key component of the protective arm of the RAS	Investigational drug for sarcopenia	
	C21	Nonpeptide angiotensin II type 2 receptor agonist	< 28 d 100 mg, bid, 7 d	NCT04452435 (IN, US)	Antifibrotic effects	Investigational drug of fibrosis	
			INH, 20 mcg, 5 d	NCT04445246 (QA)			
	Nitric Oxide Gas Inhalation Therapy	Targeted pulmonary vasodilator	INH, NO delivered through a non-invasive CPAP system, concertation maintained between 140 and 180 ppm, 20-30 min, twice a day, 14 d	NCT03331445 (CA) NCT04290858 (CN) NCT04290871 (CN) NCT04305457 (US) NCT04306393 (US) NCT04337918 (CA) NCT04358588 (US) NCT04383002 (CA) NCT04398290 (US) NCT04421508 (US) NCT04443868 (US) NCT04456088 (US) NCT04476992 (RU)	NO delivered through a non invasive CPAP system, concertation maintained between 140 and 180 ppm, 20-30 min, twice a day. Vasodilation in the lung.	Treatment of respiratory failure in premature babies	[151]

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RESP301	Targeted pulmonary vasodilator: Nitric Oxide generating solution	INH, 10 d	NCT04460183 (GB)	NO delivered through a non-invasive CPAP system, concentration maintained between 140 and 180 ppm, 20-30 min, twice a day. Vasodilation in the lung.	Treatment of respiratory failure in premature babies	
Sodium Nitrite	Targeted pulmonary vasodilator, (Methylene blue, vitamin C, N-acetyl cysteine)	IV, 30 mg/mL intravenous infusion	NCT04401527 (US)	Enhance lung airway epithelial cells wound healing	-	
Methylene Blue	Targeted pulmonary vasodilator, (Methylene blue, vitamin C, N-acetyl cysteine)	-	NCT04370288 (IR)	an inhibitor of nitric oxide synthase and guanylate cyclase	Treatment of methemoglobinemia	
GLS-1200	Targeted pulmonary vasodilator	1 mL per nostril, tid, ISIN	NCT04408183 (US)	Stimulate nasal production of nitric oxide to inhibit coronavirus activity.	Treatment of respiratory failure in premature babies	
VIB7734	Anti-ILT7 antibody	SC	NCT04526912 (US)	Anti-ILT7	Investigational drug for autoimmune diseases	
vadadustat	HIF prolyl-hydroxylase inhibitor	PO, 14 d	NCT04478071 (US)	Improve the level of HIF in endothelial damage via inhibit HIF prolyl-hydroxylase	Treatment of anemia secondary to chronic kidney disease	[152]
Iloprost	Prostacyclin	IV, 1 ng/kg/min, 3 d	NCT04420741 (DK)	Improve endothelial function and integrity	Treatment of pulmonary arterial hypertension (PAH), scleroderma, Raynaud's phenomenon	
Melatonin	Hormone	PO, 10-30 mg, tid, 14 d	NCT04474483 (US) NCT04531748 (US) NCT04353128 (ES)	An anti-oxidative and anti-inflammatory agent counters acute lung injury (ALI)/acute respiratory distress	Treatment of insomnia in children and adolescents	
Ramelteon	Melatonin Agonist	PO, 8 mg, 10 d	NCT04470297 (BR)	-	Sleep agent medication	
Thalidomide	Angiogenesis inhibitor and immunomodulator	PO, 100 mg, qd, 14 d	NCT04273529 (CN) NCT04273581 (CN)	1. Anti-inflammatory; 2. Anti-fibrotic; 3. Anti-angiogenesis; 4. Immune regulation effects.	Treatment of cancer	[153]
Bevacizumab	Anti VEGF recombinant humanized monoclonal antibody,	IV, 7.5 mg/kg, < 28 d	NCT04305106 (CN) NCT04275414 (CN) NCT04344782 (FR)	Vascular endothelial growth factor (VEGF) is known as the most potent inducing factors to increase vascular permeability.	Treatment of tumor	[154]
Garadacimab	FXIIa inhibitor	IV, 75, 200, 600 mg	NCT04409509 (US)	Factor XIIa Antagonist Monoclonal Antibody to avoid edema formation	Investigational drug for prevention of bradykinin-mediated angioedema	
Conestat alfa	C1 esterase Inhibitor	IV, 8400 U, followed by 4200 U every 8 hours	NCT04414631 (CH)	1. Dampen uncontrolled complement activation and collateral lung damage; 2. Reduce capillary leakage and subsequent pulmonary edema by direct inhibition of KK system	Treatment of acute attacks of hereditary angioedema (HAE) due to C1 esterase inhibitor deficiency	
Sildenafil	Phosphodiesterase inhibitor	PO, 20-50 mg, tid	NCT04304313 (CN)	Treat high altitude pulmonary edema.	Treatment of sexual dysfunction, pulmonary hypertension, and investigational drug	[155]

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						for high-altitude pulmonary edema	
lanadelumab	Plasma kallikrein antibody	IV, 300 mg	NCT04422509 (NL) NCT04460105 (US)	Target plasma kallikrein (pKal) in order to promote prevention of angioedema in patients with hereditary angioedema		Investigational drug for acute angioedema attacks in hereditary angioedema patients	
Zavegepant	CGRP receptor antagonist	ISIN, 10 mg, tid, 14 d	NCT04346615 (US)	CGRP receptor antagonist. CGRP might contribute to abnormal vascular reactivity observed in acute lung injury		Treatment of acute migraine	[156]
Mesenchymal Stem Cell	Mesenchymal stem cell therapy	IV, MSC: 3x10 ⁷ cells on Day 0, Day 3 and Day 6	NCT04252118 (CN) NCT04400032 (CA) NCT04525378 (BR)	Inhibit the overactivation of the immune system and promote endogenous repair by improving the lung microenvironment.		Treatment of inflammatory and degenerative diseases	
		IV, NestCell® MSC: 1x10 ⁶ cells/kg on Day 1, Day 3 and Day 7	NCT04315987 (BZ)	(produced by Cellavita)			[157]
		Wharton's Jelly-Mesenchymal Stem Cells: IV, 1x10 ⁶ cells/kg on Day 1, Day 4 and Day 7	NCT04456361 (MX) NCT04333368 (FR) NCT04390152 (CO)				
		Remestemcel-L: IV, 2 × 10 ⁶ MSC / kg	NCT04371393 (US) NCT04456439 (CH)				Treatment of inflammatory and degenerative diseases
		SBI-101: IV, 2.5 × 10 ⁹ cells	NCT04445220 (US)				Treatment of inflammatory and degenerative diseases
		Dental pulp MSC: IV, 1x10 ⁶ cells/kg on Day 1, Day 3 and Day 7	NCT04302519 (CN)	(Dental pulp derived mesenchymal stem cell)			
		Adipose tissue derived MSC: IV, 0.5-1.5 million/kg	NCT04348461 (ES) NCT04352803 (US)	(Allogeneic adipose-derived mesenchymal stem cells)			
		Hope Biosciences-ad MSC: IV	NCT04348435 (US)	(Allogeneic adipose-derived mesenchymal stem cells)			
		Allogenic pooled olfactory mucosa derived MSC: IV	NCT04382547 (BY)	(Allogenic pooled olfactory mucosa-derived mesenchymal stem cells)			
		MSC - KI-MSC-PL-205: IV	NCT04447833 (SE)	(Bone marrow derived mesenchymal stromal stem cells)			
		BM-Allo.MSC: IV	NCT04397796 (US)	(Bone marrow derived mesenchymal stromal stem cells)			
Human Umbilical Cord Mesenchymal Stem Cells	Mesenchymal stem cell therapy	IV, 0.5x10 ⁶ cells/kg on Day 1, Day 3, Day 5 and Day 7	NCT04269525 (CN) NCT04366271 (ES) NCT04490486 (US)	Inhibit the overactivation of the immune system and promote endogenous repair by improving the lung microenvironment.		Treatment of inflammatory and degenerative diseases	
		MAS825: IV, 0.5 × 10 ⁶ cells/kg, Day 1, 2, 3, 7	NCT04293692 (CN) NCT04382651 (US)				Investigational drug for inflammatory diseases
		PLX-PAD: IM	NCT04389450 (US)	(allogeneic ex vivo expanded placental mesenchymal-like adherent stromal cells)			

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MSCs-derived exosomes	Mesenchymal stem cell therapy	INH, 2.0x10 ⁸ nano vesicles/3 ml at Day 1, Day 2, Day 3, Day 4, Day 5	NCT04276987 (CN)	Inhibit the overactivation of the immune system and promote endogenous repair by improving the lung microenvironment.	Treatment of inflammatory and degenerative diseases	
Descartes 30	Mesenchymal stem cell therapy	IV	NCT04524962 (US)	Mesenchymal Stem Cells or MSCs RNA-engineered to secrete a combination of DNases.	-	
Human umbilical cord derived CD362 enriched MSCs	Mesenchymal stem cell therapy	IV	NCT03042143 (GB)	Human umbilical cord derived CD362 enriched MSCs. Inhibit the overactivation of the immune system and promote endogenous repair by improving the lung microenvironment.	Treatment of inflammatory and degenerative diseases	
MultiStem	MultiStem cell therapy	IV	NCT04367077 (US)	-	Investigational drug for diseases and conditions in the neurological, inflammatory and immune	
Bardoxolone methyl	Nrf2 Pathway Activator	PO, 20 mg, qd	NCT04494646 (US)	An activator of the Nrf2 pathway and an inhibitor of the NF-κB pathway.	Investigational drug for COVID-19 and rheumatoid arthritis	
ATYR1923	NRP2 modulator	IV, 1 or 3 mg/kg	NCT04412668 (US)	Inhibit cytokines and chemokines involved in the regulation of inflammatory and fibrotic responses.	Investigational drug for interstitial lung disease	
BLD-2660	Dimeric calpain (CAPN) 1, 2, and 9 inhibitor	PO, 150 mg, bid	NCT04334460 (US)	Reverse the overactivation of the immune system and progression of fibrosis in several organs.	Treatment of fibrosis	
PB1046	Analog of the neuropeptide vasoactive intestinal peptide	SC, 10, 40 and 100 mg per week	NCT04433546 (US)	Long-acting, sustained release human vasoactive intestinal peptide (VIP) analogue. Attenuate inflammation and fibrosis, modulate of inflammatory cell activity, based on the known mechanisms of VIP	-	
TD-139	Galectin-3 inhibitor	INH, 10 mg, bid in Day 1, 2; 10 mg, qd for 12 days	NCT04473053 (GB)	Modulate the fibrogenic response to tissue injury	Investigational drug for idiopathic pulmonary fibrosis	
Nintedanib	RTK inhibitor	PO, 150 mg, bid, 56 d	NCT04338802 (CN)	Reduce fibrotic damage driven by immune dysregulation.	Treatment of idiopathic pulmonary fibrosis	
Pirfenidone	NCT04282902 (CN)	PO, 200 mg, tid, > 28 d	NCT04282902 (CN)	Anti-SOD activity can effectively inhibit IL-1β and IL-4, and can open the prevention mode of pulmonary interstitial fibrosis.	Treatment of idiopathic pulmonary fibrosis	
Tradipitant	Neurokinin 1 antagonist	PO, 85 mg, bid	NCT04326426 (CN)	Block the neurokinin-1 receptor (NK1R), which involved in a range of neuroinflammatory processes that leads to significant lung injury.	Investigational drug for for chronic pruritus (itchiness) in atopic dermatitis	[158]
AVM0703	Immunomodulator	IV, 10 mg/mL	NCT04366115 (US)	Supercharge immune cells (natural killer T-cells, gamma delta T cells and dendritic cells)	Investigational drug for B-cell lymphoma	
Ifenprodil	N-methyl-D-Aspartate (NDMA) inhibitor that is specific for the NR2B	PO, 20 mg, tid	NCT04382924 (US)	The activation of T cells and cytokine release can be blocked in vitro by the addition of Ifenprodil	Investigational drug for idiopathic pulmonary fibrosis	

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		subunit of the NMDA Receptor					
	Aviptadil	Synthetic version of Vasoactive Intestinal Polypeptide	IV, 50 pmol, 100 pmol, 150 pmol/kg/hr	NCT04311697 (US) NCT04453839 (US) NCT04360096 (US)	1. Prevent NMDA-induced caspase-3 activation in the lung; 2. Inhibits IL6 and TNF α production, protects against HCl-induced pulmonary edema; 3. Restore barrier function at the endothelial/alveolar interface and thereby protects the lung and other organs from failure.	Treatment of erectile dysfunction	
	Ibuprofen	Nonsteroidal anti-inflammatory drug	PO, 200 mg	NCT04334629 (GB)	Improve fever and inflammation	Pain killer	
	Indomethacin	Nonsteroidal anti-inflammatory drug	PO, 50 mg, bid, 14 d	NCT04344457 (US)	Improve fever and inflammation	Pain killer	
	Estradiol	Hormone therapy	TOPp, 100 μ g/d, 7 d	NCT04359329 (US)	Estrogen, immune modulation; Reduce the damaging effects of the virus on the lung and symptom severity.	Estrogen steroid hormone	
	Sargramostim	Yeast-derived recombinant humanized granulocyte-macrophage colony stimulating factor (rhuGM-CSF)	INH and IV, 125 mcg bid for 5 d, then 125mcg/m ² by intravenous for 5d	NCT04326920 (BE) NCT04411680 (US) NCT04400929 (SG)	Stimulus to restore immune homeostasis in the lung.	Activating mature granulocytes and macrophages	
	Human Amniotic Fluid (acellular)	-	3 mL, INH and 6 mL, IV, 5 d	NCT04319731 (US)	Reduce inflammation and fibrosis.	Treatment of tissue injury	
	XC221	-	PO, 100 mg, bid	NCT04487574 (RU)	-	Investigational drug for Resp. Syncytial Virus	
Anticoagulant therapy	Aspirin	Thrombolytic medication	PO, 81 mg, bid, 45 d	NCT04498273 (US) NCT04365309 (CN) NCT04466670 (BR)	1. Inhibit virus replication; 2. Anticoagulant; 3. Anti-inflammatory.	Treatment of a number of conditions, including fever, pain, rheumatic fever, and inflammatory conditions	
	Prasugrel	P2Y12 inhibitors	PO, 60 mL, 15 d	NCT04445623 (IT)	P2Y12 inhibitor for the prevention of thrombosis in the pulmonary circulation and attenuation of inflammation.	Drug used to prevent formation of blood clots	
	epoprostenol	Prostacyclin analogue	INH, 10 d	NCT04452669 (US)	1. Vasodilate pulmonary and systemic arterial vascular beds; 2. Inhibit platelet aggregation	Treatment of pulmonary arterial hypertension	
	Crizanlizumab	P-selectin antibody	IV, 5 mg/Kg	NCT04435184 (US)	Decrease inflammation by binding to P-selectin, blocking leucocyte and platelet adherence to the vessel wall.	Drug to prevent vaso-occlusive crisis in patients with sickle cell anemia	
	Alteplase	Thrombolytic medication	IV, 100 mg or 200 mg	NCT04357730 (US)	Use of plasminogen activators to limit ARDS progression	Treatment of acute ST elevation myocardial infarction and pulmonary embolism associated with low blood pressure, acute ischemic stroke, and	

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					blocked central venous access devices (CVAD)	
	Defibrotide	Thrombolytic medication	IV, 25 mg/kg/6 h, 7 d	NCT04335201 (IT)	A mixture of single-stranded oligonucleotides, increases t-PA function and decrease plasminogen activator inhibitor-1 activity.	Treatment of veno-occlusive disease
	Bivalirudin	Thrombolytic medication	IV, 0.15-0.2 mg/kg/hr	NCT04445935 (QA) NCT04366921 (AT, BE, CS, DK, FR, DE, GR, HU, IL, IT, LT, NL, PT, PL, RU, ES, CH, SE, GB)	Direct thrombin inhibitor	Thrombolytic medication [159]
	Dipyridamole	Thrombolytic medication	PO, 100 mg, 14 d	NCT04391179 (US)	Decreases concentrations of D-dimers, increase lymphocyte and platelet recovery in the circulation, and markedly improve clinical outcomes	Drug for antiplatelet
	Heparin	Thrombolytic medication	INH, 40 or 60 mg/d	NCT04466670 (BR)	Reduce formation of microthrombi and clinically improve relevant disseminated intravascular coagulation	Anticoagulant
IV, 4000 IU / 24h			NCT04505774 (US) NCT04393805 (IT)			
SC, 1 mg/kg			NCT04485429 (BR) NCT04372589 (US) NCT04528888 (IT)			
	Tinzaparin	Thrombolytic medication	SC	NCT04412304 (SE)	Reduce formation of microthrombi and clinically improve relevant disseminated intravascular coagulation	Antithrombotic drug
	Enoxaparin	Thrombolytic medication	SC, 40 mg	NCT04366960 (IT) NCT04466670 (BR) NCT04528888 (IT)	Reduce formation of microthrombi and clinically improve relevant disseminated intravascular coagulation	Anticoagulant
	Dociparastat	Thrombolytic medication	IV, 4 mg/kg, 8 d	NCT04389840 (US)	A glycosaminoglycan derived from porcine heparin.	-
	Sulodexide	Two-compound drug: glycosaminoglycans (20 %) + heparin (80 %)	PO, 500 LSU, 21 d	NCT04483830 (MX)	Reduce formation of microthrombi and clinically improve relevant disseminated intravascular coagulation	Treatment of thromboembolic diseases
	Rivaroxaban	Thrombolytic medication	PO, 10 mg, 21 d	NCT04504032 (US) NCT04416048 (DE) NCT04394377 (BR)	Inhibit both free Factor Xa and Factor Xa bound in the prothrombinase complex. Reduce formation of microthrombi and clinically improve relevant disseminated intravascular coagulation	Treatment and prevention of stroke, heart attack, deep vein thrombosis and pulmonary embolism
	Apixaban	Thrombolytic medication and blood thinner	PO, 2.5 or 5.0 mg, bid, 45 d	NCT04498273 (US) NCT04512079	Prevent of thrombosis, pulmonary hemorrhage and high prevalence of VTE.	Treatment and prevention of stroke, heart attack, deep vein thrombosis and pulmonary embolism
	LB1148 (tranexamic acid)	Hemostatic agent	PO, 7.5 g	NCT04390217 (US)	Stop bleeding events that result from disseminated intravascular coagulation	Antifibrinolytics
Vaccine	BBV159	Inactivated vaccine	IM, 0.5 mL, twice	NCT04471519 (IN)	Whole-Virion Inactivated SARS-CoV-2 Vaccine	Investigational vaccine for COVID-19

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CoronaVac	Inactivated Vaccine	IM, 600 SU / 0.5ml or 1200 SU / 0.5ml, day 0 and day 14	NCT04352608 (CN)	Inactivated Vaccine	Investigational vaccine for COVID-19	[160]
BBIBP-CorV	Inactivated Vaccine	IM, 2 µg, 4 µg, or 8 µg on Day 0 and day	ChiCTR2000032459	Inactivated Vaccine	Investigational vaccine for COVID-19	[161]
MF59 adjuvanted SARS-CoV-2 Sclamp vaccine	Inactivated vaccine	IM, 5, 15 and 45 mcg	NCT04495933 (AU)	MF59 adjuvanted SARS-CoV-2 Sclamp vaccine	Investigational vaccine for COVID-19	[162]
Inactivated SARS-CoV-2 Vaccine	Inactivated vaccine	SC, 50 U	NCT04412538 (CN) NCT04508075 (IN)	Inactivated SARS-CoV-2 Vaccine (Vero cell)	Investigational vaccine for COVID-19	
Covax-19™	Subunit vaccine	Spike antigen (25µg) + 15 mg Advax-2 adjuvant, IM	NCT04428073 (US)	COVID19 recombinant spike protein with Advax-SM adjuvant	Investigational vaccine for COVID-19	
recombinant SARS-CoV-2 vaccine (Sf9 Cell)	Subunit vaccine	IM, 20 µg / 0.5 ml	NCT04530656 (CN)	Insect cell line Sf9 expressed vaccine	Investigational vaccine for COVID-19	[163]
AdimrSC-2f	Subunit vaccine	IM	NCT04522089 (TW)	The baculovirus-insect cells expression system to amplify and purify the recombinant receptor binding domain (RBD) of SARS-CoV-2 spike (S) protein	Investigational vaccine for COVID-19	
Intramuscular Vaccine	Subunit vaccine	IM, 3.75 µg, 7.5 µg and 15 µg VLP	NCT04450004 (CA)	Coronavirus-Like Particle COVID-19 Vaccine	Investigational vaccine for COVID-19	
MVC-COV1901	Subunit vaccine	IV	NCT04487210 (TW)	MVC-COV1901 is formulated in the different dosages of Spike (S) protein with CpG 1018 and aluminum content as adjuvant	Investigational vaccine for COVID-19	
AP TP Vaccine	Subunit vaccine	IV, 0.1mg	NCT03348670 (US) NCT03305341 (US)	COVID-19 Therapeutic Vaccine - Nucleocapsid-GM-CSF Protein Lactated Ringer's Injection	Investigational vaccine for COVID-19	
KBP-COVID-19	Subunit vaccine	IM	NCT04473690 (US)	RBD-based vaccine	Investigational vaccine for COVID-19	
SCB-2019	Subunit vaccine	IM, 3 - 30 µg, twice	NCT04405908 (AU)	S-Trimer subunit vaccine	Investigational vaccine for COVID-19	
Recombinant Novel Coronavirus Vaccine	Subunit vaccine	IM, 25 or 50 µg	NCT04445194 (CN) NCT04466085 (CN)	Recombinant new coronavirus vaccine (CHO cell)	Investigational vaccine for COVID-19	
EpiVacCorona	Subunit vaccine	IM, 0.5 mL	NCT04527575 (RU)	The vaccine relies on chemically synthesized peptide antigens of SARS-CoV-2 proteins, conjugated to a carrier protein and adsorbed on an aluminum-containing adjuvant (aluminum hydroxide).	Investigational vaccine for COVID-19	
Ad5-nCoV	Adenovirus vaccine vector	IM, 5x10 ¹⁰ U; 1x10 ¹¹ U; 1.5x10 ¹¹ U	NCT04313127 (CN) NCT04398147 (CA)	Efficient Adenovirus vector to express viral Spike protein.	Investigational vaccine for COVID-19	[164]
CTII-nCoV	Adenovirus vaccine vector	IM, 1x10 ¹¹ vp; 5x10 ¹⁰ vp	NCT04341389 (CN)	Efficient Adenovirus vector to express viral Spike protein.	Investigational vaccine for COVID-19	
Ad26.COV2.S (JNJ-78436735)	Adenovirus vaccine vector	IM, 1x10 ¹¹ virus particles (vp)	NCT04505722 (US) NCT04509947 (JP)	Efficient Adenovirus vector to express viral Spike protein.	Investigational vaccine for COVID-19	[165]
Gam-COVID-Vac	Adenovirus vaccine vector	IM, 0.5 mL	NCT04436471 (RU) NCT04437875(RU)	Adenoviral-based vaccine against SARS-CoV-2	Investigational vaccine for COVID-19	

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			NCT04530396 (RU)			
GRAd-COV2	Adenovirus vaccine vector	IM, 0.5-2 × 10 ¹¹ vp	NCT04528641 (IT)	Adenoviral-based vaccine against SARS-CoV-2	Investigational vaccine for COVID-19	
ChAdOx1 nCoV-19 (AZD1222)	Adenovirus vaccine vector	IM, 5 × 10 ¹⁰ cell	NCT04324606 (BR) NCT04400838 (BR) NCT04444674 (ZA)	Chimpanzee adenovirus-vectored vaccine (ChAdOx1 nCoV-19) expressing the SARS-CoV-2 spike protein compared with a meningococcal conjugate vaccine	Investigational vaccine for COVID-19	
COVID-19 aAPC Vaccine	Lentiviral vector system	SC, 5 × 10 ⁶ U, 3 times	NCT04299724 (CN)	Efficient lentiviral vector system (NHP/TYF) to express viral proteins and immune modulatory genes.	Investigational vaccine for COVID-19	[166]
LV-SMENP-DC vaccine/antigen-specific CTLs	Lentiviral vector system	vaccine: SC or IV, 5 × 10 ⁶ ; CTLs: 1 × 10 ⁸	NCT04276896 (CN)	Efficient lentiviral vector system (NHP/TYF) to express viral proteins and immune modulatory genes.	Investigational vaccine for COVID-19	[166]
TMV-083	Measles vector-based vaccine	IM, 2.0 mg, 2-4 times	NCT04497298 (BE, FR)	-	Investigational vaccine for COVID-19	
V591	Measles virus vector vaccine	IM	NCT04498247 (US)	SARS-CoV-2 vaccine candidate that uses a measles virus vector platform	Investigational vaccine for COVID-19	
SARS-CoV-2 Recombinant Spike Protein Nanoparticle Vaccine (NVX-CoV2373)	Subunit vaccine	IM, 25 µg	NCT04368988 (AU)	SARS-CoV-2 Recombinant Spike Protein	Investigational vaccine for COVID-19	
INO-4800	DNA vaccine	IM, 1 mg; 1.0 mg twice	NCT04336410 (US) NCT04447781 (KR)	DNA plasmid encoding S protein delivered by electroporation.	Investigational vaccine for COVID-19	[164]
AG0301-COVID19	DNA vaccine	IM, 1.0 or 2.0 mg, 2 times	NCT04463472 (JP)	-	Investigational vaccine for COVID-19	
AG0302-COVID19	DNA vaccine	IM, 2.0 mg, 2-4 times	NCT04527081 (JP) NCT04463472 (JP)	-	Investigational vaccine for COVID-19	
GX-19	DNA vaccine	IM	NCT04445389 (KR)	DNA vaccine expressing SARS-CoV-2 S-protein antigen	Investigational vaccine for COVID-19	
MRT5500	mRNA-based vaccine	IM, Day 0 and Day 28	-	RNA Vaccine	Investigational vaccine for COVID-19	[167]
BNT162	mRNA-based vaccine	IM, 0.5 mL	NCT04368728 (US) NCT04523571 (CN) NCT04380701 (GE)	RNA Vaccine (BNT162a1, BNT162b1, BNT162b2 and BNT162c2): mRNA-based vaccine, which encodes for viral spike (S) protein.	Investigational vaccine for COVID-19	[168]
CVnCoV	mRNA-based vaccine	IM, 6 µg on Day 1 and Day 29	NCT04515147 (DE)	mRNA-based vaccine, which encodes for viral spike (S) protein.	Investigational vaccine for COVID-19	
mRNA-1273	mRNA-based vaccine	IM, 100 mcg on Day 1 and Day 29	NCT04283461 (US) NCT04299724 (CN) NCT04470427 (US)	Novel lipid nanoparticle (LNP)-encapsulated mRNA-based vaccine, which encodes for viral spike (S) protein.	Investigational vaccine for COVID-19	[169]
ARCT-021	mRNA-based vaccine	IM, 0.5 mL	NCT04480957 (SG)	Vaccine comprising a self-replicating (replicon) mRNA that encodes for the prefusion spike protein of 2019-nCoV formulated in a lipid nanoparticle (LNP).	Investigational vaccine for COVID-19	
DeltaRex-G	mRNA-based vaccine	IV, 1 × 10 ¹¹ cfu/dose	NCT04378244 (US)	DeltaRex-G Retroviral Vector Encoding a Cyclin G1 Inhibitor	Investigational vaccine for COVID-19	

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	SARS-CoV-2 mRNA vaccine	mRNA-based vaccine	-	ChiCTR2000034112	-	Investigational vaccine for COVID-19	
Auxiliary medication	Bromhexine	Expectorant	PO, 8 mg, per 8h, 60 d	NCT04340349 (MX) NCT04405999 (RU)	Support the body's mechanisms for clearing mucus from the respiratory tract	Treatment of respiratory disorders associated with viscid or excessive mucus	
	N-acetylcysteine	Expectorant	PO, 600 mg	NCT04419025 (GB)	mucus-dissolving therapy	Treatment of paracetamol (acetaminophen) overdose, and thick mucus in individuals with cystic fibrosis or chronic obstructive pulmonary disease.	
	Dornase Alpha	Recombinant human deoxyribonuclease I (rhDNase)	INH, 2.5 mg, bid, 7 d	NCT04432987 (TR) NCT04402944 (US) NCT04359654 (GB)	Dornase alfa hydrolyzes the DNA present in sputum/mucus of cystic fibrosis patients and reduces viscosity in the lungs, promoting improved clearance of secretions.	Investigational drug for cystic fibrosis	
	Lucinactant	Synthetic surfactant	IV, 80 mg/kg	NCT04389671 (US)	A synthetic, peptide-containing endogenous pulmonary surfactant, lowers the surface tension at air-liquid interface of the alveolar surfaces during respiration.	Treatment of infant respiratory distress syndrome	
	CUROSURF®	Poractant alfa	ET: 30 mg/kg	NCT04502433 (GB) NCT04384731 (FR)	Surfactant covers the alveolar surface to reduce the work of breathing and prevent the lungs from collapsing.	-	
	Decidual Stromal Cells	Decidual Stromal Cells	IV, 1×10 ⁶ cells/kg, Day1, Day 5	NCT04451291 (CA)	Reduce lung inflammation and then time that patients require help with breathing (mechanical ventilation).	-	
	Almitrine	Respiratory stimulant	IV, 2 µg/kg/min for 5 d	NCT04357457 (FR)	Reduce intrapulmonary shunt by enhancement of hypoxic pulmonary vasoconstriction in combination with inhaled nitric oxide (iNO).	Treatment of chronic obstructive pulmonary disease	
	S-Nitrosylation Therapy	S-nitrosylation therapy	INH, 20, 40 and 80 ppm × 2 h, sequential increasing dose regimen	NCT04528771 (US)	S-nitrosylation therapy, improve oxygen delivery of banked blood.	-	
	Prolectin-M	Immunomodulator	-	NCT04512027 (IN)	(1-6)-alpha-D-Mannopyranose class, decrease viral load	-	
	Measles-Mumps-Rubella Vaccine	Immunomodulator	IM, 0.5 mL	NCT04357028 (EG) NCT04475081 (US)	Boost a immune response, reduce levels of SARS-CoV-2, and lessen the symptoms associated with COVID-19.	Measles-Mumps-Rubella Vaccine	
	MenACWY	Immunomodulator	IM	NCT04324606 (GB) NCT04400838 (GB)	Boost a immune response, reduce levels of SARS-CoV-2, and lessen the symptoms associated with COVID-19.	MenACWY vaccine protects against 4 different strains of the meningococcal bacteria that cause meningitis and blood poisoning (septicaemia)	
	Mycobacterium w	Immunomodulator	SC, 0.3 mL, 3 d	NCT04358809 (IN)	Autoclaved Mycobacterium w, acts through the toll-like receptors (TLRs) pathway and enhances the host-T cell responses.	Immunomodulator for leprosy	
	oral polio vaccine	Immunomodulator	PO, 0.1 mL	NCT04445428 (GN)	Boost a immune response, reduce levels of SARS-	-	

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					CoV-2, and lessen the symptoms associated with COVID-19.		
RUTI® vaccine	Immunomodulator	IM, 25 µg	NCT04453488 (ES)		fragmented, purified and liposomed heat-inactivated Mycobacterium tuberculosis bacilli.	Therapeutic vaccine for tuberculosis.	
Triiodothyronine-3	Hormone	IV, 0.8 µg/kg, < 30 d	NCT04348513 (GR)		Regulate stress via inducing p38 MAPK activation, exert antiapoptotic action and protects tissue from injury	Treatment of depressive disorders	
Prolectin-M	Immunomodulator	-	NCT04512027 (IN)		(1-6)-alpha-D-Mannopyranose class, decrease viral load	-	
AT-001	Aldose reductase inhibitor	PO, 1500 mg, bid, 14 d	NCT04365699 (US)		1. Prevent oxidative damage to cardiomyocytes; 2. Decrease oxidative-induced damage. COVID-19 can cause significant cardiac morbidities, including cardiomyopathy.	Investigational drug for diabetic cardiomyopathy	
Amiodarone	Ion channel blocker	INH, 150 mg in 10 min, infusion of 1 mg/min for 6 h, next infusion of 0.5 mg/min for 18 h, and 200-400 mg/day PO.	NCT04351763 (PL)		Intravenous amiodarone to mitigate the risk of sudden cardiac death in COVID19 patients	Treatment of ventricular and supraventricular arrhythmias	[170]
Verapamil	Non-dihydropyridine calcium channel blocker	IV, 0.075-0.15 mg/kg	NCT04351763 (PL)		Management of hypertension in COVID-19	Treatment of high blood pressure and angina	
DUR-928	Hepatoprotective drug	IV, 90 or 150 mg	NCT04447404 (US)		A sulfated oxysterol, plays an important regulatory role in cellular functions such as lipid homeostasis, inflammation, and cell survival.	Investigational drug for nonalcoholic steatohepatitis and alcoholic hepatitis	
Atorvastatin	Statin medication	PO, 40 mg	NCT04380402 (US) NCT04466241 (FR) NCT04486508 (IR)		Statins affect endothelial dysfunction and have anti-inflammatory and immunomodulatory effects.	Prevention medicine of cardiovascular disease	
Bucillamine	Thiol antioxidant	PO, 100 or 200 mg, tid	NCT04504734 (CA)		Attenuate clinical symptoms in respiratory viral infections in animals and humans, primarily via donation of thiols to increase antioxidant activity of cellular glutathione	Treatment of rheumatism	

PO: Oral administration; IV: Intravenous administration; INH: Inhalation; IM: intramuscular administration; SC: Subcutaneous administration; ISIN: Intranasal administration; ID: intradermal injection; SL: Sublingual administration; TOPp: patch applied on the skin; ET: Endotracheal instillation