Neither the PaedF working party nor the EDQM make any recommendation to use the below listed drugs for experimental treatment of COVID-19. Available knowledge is limited. The prescriber remains responsible to make an individual assessment of risks and benefits for each patient.

Product	Strength	How to Formulate	Excipients†	Comments
Lopinavir/Ritonavir				
Expert opinion for extemporaneous preparation: Both Lopinavir and Ritonavir have a very low aqueous solubility (BCS class IV (*Intra-Agency agreement between NICHD and FDA*)) which is reflected in the use of organic co-solvents (propylene glycol and ethanol) for the Kaletra liquid and the complexity of the tablet formulation. For the liquid, the recommended maximum daily intake of propylene glycol is easily exceeded with administration of the daily dose and its use has been related with significant clinical toxicity, especially in neonates (*Boxwell D, Cao K, Lewis L, et al. Presented at: CROI 2011: 18th Conference on Retroviruses and Opportunistic Infections; Boston, MA, USA. 2011*). Toxicity due to the excipients should be monitored (*EMA Excipients in the labelling and package leaflet of medicinal products for human use*). Crushing of tablets should be avoided as it drastically reduces bioavailability (45% lower AUC in children (*Best BM, Capparelli EV, Diep H, et al. J Acquir Immune Defic Syndr 2011;58(4):385-91*)). The administration of crushed tablets would require higher (preferably more frequent) doses and therapeutic drug monitoring to ensure adequate lopinavir exposure in patients requiring this practice.				
Oral solution				
Kaletra oral solution (AbbVie, EU)	80 mg Lopinavir + 20 mg Ritonavir /mL	---	**Ethanol (42.4 % v/v)** **propylene glycol (15.3 % w/v)** purified water high **fructose** corn syrup purified water glycerol povidone **Magnasweet-100 (contains ammonium glycyrrhizinate)** vanilla flavour (contains parahydroxy benzoic acid, **parahydroxy benzaldehyde,** vanillin, **heliotropin, ethyl vanillin**) **polyoxyl 40 hydrogenated castor oil (1.02 % w/v)** cotton candy flavour (contains **ethylmaltol**, **ethyl vanillin**, **acetoin**, **dihydrocoumarine, propylene glycol**) **acesulfam potassium (4.1 mg/mL)** **sodium saccharin** sodium chloride **peppermint oil** sodium citrate citric acid **levomenthol**	Store in fridge (2 - 8 °C); outside max. 6 w below 25 °C; intake with food to increase bioavailability. Poor palatability.

Product	Strength	How to Formulate	Excipients†	Comments
Tablets				
Kaletra 100 / 25 mg film-coated tablets (AbbVie, EU)	100 mg Lopinavir /25 mg Ritonavir	Warning: Crushing of tablets reduces AUC by approx. 45% (*Best BM, Capparelli EV, Diep H, et al. J Acquir Immune Defic Syndr 2011;58(4):385-91*)	Copovidone sorbitan laurate colloidal anhydrous silica sodium stearyl fumarate polyvinyl alcohol **titanium dioxide** talcmacrogol 3350 yellow iron oxide	Store below 25 °C; intake with food to increase bioavailability
Lopinavir/Ritonavir 100 / 25 mg film-coated tablets (Mylan, EU)	100 mg Lopinavir /25 mg Ritonavir	Warning: Crushing of tablets reduces AUC by approx. 45% (*Best BM, Capparelli EV, Diep H, et al. J Acquir Immune Defic Syndr 2011;58(4):385-91*)	Copovidone sorbitan laurate colloidal anhydrous silica sodium stearyl fumarate hypromellose **titanium dioxide** talc macrogol **polysorbate 80**	Store below 25 °C; intake with food to increase bioavailability
Kaletra 200 / 50 mg film-coated tablets (AbbVie, EU)	200 mg Lopinavir /50 mg Ritonavir	Warning: Crushing of tablets reduces AUC by approx. 45% (*Best BM, Capparelli EV, Diep H, et al. J Acquir Immune Defic Syndr 2011;58(4):385-91*)	Copovidone sorbitan laurate colloidal anhydrous silica sodium stearyl fumarate hypromellose **titanium dioxide** talc macrogol 400 hyprolose macrogol 3350 **polysorbate 80** yellow iron oxide	Store below 25 °C; intake with food to increase bioavailability
Lopinavir/Ritonavir 200 / 50 mg film-coated tablets (Accord, EU; Sandoz/Hexal, DE, NL, RO)				
Lopinavir/Ritonavir 200 / 50 mg film-coated tablets (Mylan, EU)	200 mg Lopinavir /50 mg Ritonavir	Warning: Crushing of tablets reduces AUC by approx. 45% (*Best BM, Capparelli EV, Diep H, et al. J Acquir Immune Defic Syndr 2011;58(4):385-91*)	Copovidone sorbitan laurate colloidal anhydrous silica sodium stearyl fumarate hypromellose **titanium dioxide** talc macrogol 400 hyprolose macrogol 3350 **polysorbate 80**	Store below 25 °C; intake with food to increase bioavailability

Product	Strength	How to Formulate	Excipients†	Comments
Oral pellets				
40 / 10 mg oral pellets (CIPLA, tentative approval FDA under PEPFAR programme, for resource limited countries)	40 mg Lopinavir /10 mg Ritonavir in capsule	---	Unknown	Store below 25 °C; intake with food to increase bioavailability

API=active pharmaceutical ingredient; BCS=biopharmacetuical classification system; AUC=area under the curve

†Excipients raising concern for children in bold

Not Marketed

Lopinavir/Ritonavir film coated tablet 200 mg /50 mg by Farmoz - Sociedade Técnico Medicinal, S.A (PT), contains copovidone, sorbitan laurate, colloidal anhydrous silica, sodium stearyl fumarate, hypromellose, **titanium dioxide**, yellow iron oxide, macrogol 400, macrogol 3350, hydroxypropylcellulose, talc, **polysorbate 80**