



Task Force on Repurposing of Drugs (TFORD) for COVID-19

S&T Core Group on COVID19 constituted by PSA to GoI

Patent Position of Drugs studied by TFORD-COVID19-India (Ref: TFORD/Heat-Map/002)

Do patent barriers exist and how strong are they?							
Drug candidate	There are valid active patents in India for basic composition/ formulation/ processes (Yes -1; No -0)	Basic composition of API is protected in India with valid active patents (Yes -1; No -0)	Basic (Innovator's) process of manufacture of API is protected in India with valid active patents (Yes -1; No -0)	Basic (Innovator's) formulation/ drug product (not API) is protected in India with valid active patents (Yes -1; No -0)	Patent barriers exist? (Yes -1; No -0)	Strength of patent barriers (higher% means Higher barriers; weightage for composition is higher)	Drug candidate
Chloroquine	0	0	0	0	0	0%	Chloroquine
Hydroxychloroquine	0	0	0	0	0	0%	Hydroxychloroquine
Remdesivir	1	1	1	1	1	100%	Remdesivir
Lopinavir/Ritonavir	0	0	0	0	0	0%	Lopinavir/Ritonavir
Favipiravir	1	0	1	1	1	50%	Favipiravir
Baloxavir Marboxil	1	1	1	1	1	100%	Baloxavir Marboxil
Darunavir	0	0	0	0	0	0%	Darunavir
Ribavirin + IFN beta	0	0	0	0	0	0%	Ribavirin + IFN beta
Galidesivir	0	0	0	0	0	0%	Galidesivir
Oseltamivir	0	0	0	0	0	0%	Oseltamivir
Umifenovir	0	0	0	0	0	0%	Umifenovir
Camostat mesylate	0	0	0	0	0	0%	Camostat mesylate
Ruxolitinib	1	1	1	1	1	100%	Ruxolitinib
Interferon beta	0	0	0	0	0	0%	Interferon beta
Tocilizumab	0	0	0	0	0	0%	Tocilizumab
Ustekinumab	1	1	1	1	1	100%	Ustekinumab
Nigericin	0	0	0	0	0	0%	Nigericin
Teicoplanin	0	0	0	0	0	0%	Teicoplanin
Ivermectin	0	0	0	0	0	0%	Ivermectin

Source: TFORD-COVID19-India (c) Venture Center, 2020



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Is there a need for Govt action to provide FTO for Indian manufacturers?								
Drug candidate	Strength of Patent barriers exist?	Valid active patents are NOT being worked in India (directly or via licensees) (Yes- 1; No-0)	Quantity being made available in India is NOT enough to meet Indian needs and affordable (Yes-1; No-0)	There are Indian manufacturers capable of (already making or prepared to) making this drug (Yes- 1; No-0)	Will Govt action be needed to provide FTO to Indian manufacturers (if drug proven important)?	SCORE: DRUG POTENTIAL (taken from Heat map - Drug Potential)	With current info available on drug, is it worthwhile for the GoI to take action to provide FTO for Indian manufacturers?	Drug candidate
Chloroquine	0%	NA	NA	NA	0%	54%	None reqd	Chloroquine
Hydroxychloroquine	0%	NA	NA	NA	0%	54%	None reqd	Hydroxychloroquine
Remdesivir	100%	1	1	1	100%	Awaiting CT data	Await CT data	Remdesivir
Lopinavir/Ritonavir	0%	NA	NA	NA	0%	34%	None reqd	Lopinavir/Ritonavir
Favipiravir	50%	1	1	1	100%	73%	36%	Favipiravir
Baloxavir Marboxil	100%	1	1	1	100%	Awaiting CT data	Await CT data	Baloxavir Marboxil
Darunavir	0%	NA	NA	NA	0%	34%	None reqd	Darunavir
Ribavirin + IFN beta	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Ribavirin + IFN beta
Galidesivir	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Galidesivir
Oseltamivir	0%	NA	NA	NA	0%	34%	None reqd	Oseltamivir
Umifenovir	0%	NA	NA	NA	0%	42%	None reqd	Umifenovir
Camostat mesylate	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Camostat mesylate
Ruxolitinib	100%	0	1	1	67%	Awaiting CT data	Await CT data	Ruxolitinib
Interferon beta	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Interferon beta
Tocilizumab	0%	NA	NA	NA	0%	73%	None reqd	Tocilizumab
Ustekinumab	100%	1	1	1	100%	Awaiting CT data	Await CT data	Ustekinumab
Nigericin	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Nigericin
Teicoplanin	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Teicoplanin
Ivermectin	0%	NA	NA	NA	0%	Awaiting CT data	None reqd	Ivermectin

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Background information

About TFORD-COVID19

The Principal Scientific Advisor to the GoI, Dr K VijayRaghavan, has constituted a S&T Core Group on COVID19. Under the aegis of the S&T Core Group on COVID19, a Task Force has been constituted focused on Repurposing of Drugs for COVID19 (in short “TFORD-COVID19”). The Task Force is being coordinated by Dr V Premnath, Head, NCL Innovations at CSIR-NCL and Director, Venture Center and Dr Anurag Agarwal, Director, CSIR-IGIB. The Nerve Center for the Coordination is located be at Venture Center, Pune (located in the campus of CSIR-NCL).

About Advisory Group

The Nerve Center at TFORD-COVID19 has constituted an inter-disciplinary Advisory Group. This Advisory Group reviews the information compiled by the Nerve Center, provides suggestions on data, information sources, organization of data etc. while also providing inputs to refine the analysis and create a structured information base to support decision-making. The Advisory Group also provides expert input and opinions on certain selected points where experience-based inputs are needed. The members of the Advisory Group for each Discussion Paper are listed at <https://nclinnovations.org/covid19/teams/>.

Nerve Center Team

Dr Priya Nagaraj, Dr Vidula Walimbe, Dr Smita Kale, Dr Kirtee Wani, Dr. Tejas Shah, Dr Mugdha Lele, Mr Navnath Kadam, Dr Manisha Premnath, Dr Premnath V; Patent landscapes provided by Dr Gopakumar Nair and the GANLEX team is gratefully acknowledged.

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Spread sheet view and details:

<https://docs.google.com/spreadsheets/d/1v9aNCwLxymRY0ERPr80MULWbPZIQfNOArMhYQUn1Yuk/edit#gid=0>

Cautionary Note

This Heat Map is a work-in-progress document. As the information about drug candidates evolves, the Heat Map is expected to change. The data presented here is the opinion of the members contributing to the Task Force and not meant to reflect the Government’s position or that of any specific organization or individual. This information should also not be interpreted as guidance for clinical case management.