COVID-19 BULLETIN

26 MAY 2020

- Corona Research Snapshot
- Corona Innovations
- #CSIRFightsCovid19
- COVID-19 Dashboard
- Corona Q&A
- COVID-19 Myth Busters

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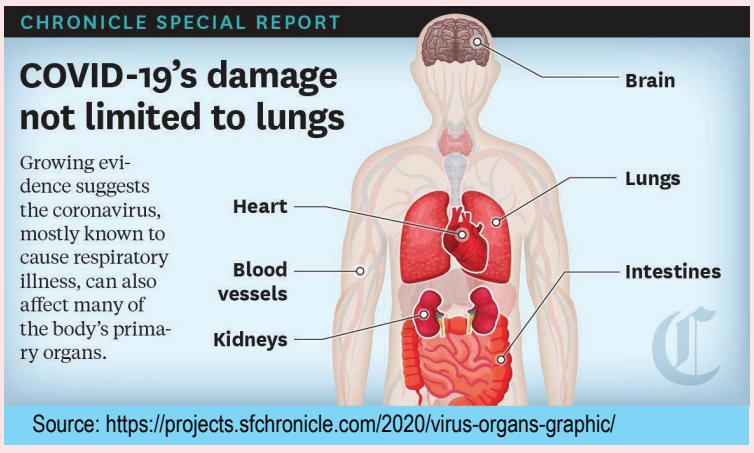
CORONA RESEARCH SNAPSHOT

Immunity develops against reinfection after recovering from COVID-19 in monkeys

Monkeys (*rhesus macaques)* could develop resistance against reinfection after recovering from COVID-19 infection. Researchers at Harvard Medical School in Boston, Massachusetts gave doses of novel coronavirus to monkeys. The monkeys developed mild symptoms such as appetite loss; antibodies developed in the monkeys. After one month approximately, the monkeys were given another dose of COVID-19 virus to reinfect them. After two weeks, the researchers detected rapidly declining levels of viral RNA in the monkeys' noses and lungs. All of the monkeys exhibited the immune response to the second dose of novel coronavirus. However, the researchers suggest that although immunity to reinfection in monkeys is visible, it is not yet clear for how long period the monkeys will remain immune to COVID-19 infection. The study was recently published in *Science* after peer review.

(Source: *Science;* 10.1126/science.abc4776)

Novel coronavirus affects many organs including heart, kidney and brain



Source: https://projects.sfchronicle.com/2020/virus-organs-graphic/

Novel coronavirus is primarily considered as a respiratory disease that affects lungs. However, researchers of University Medical Centre Hamburg-Eppendorf, Germany have found that although the virus was most abundantly present in the lungs, it was also found in liver, kidney, heart, brain and blood with lower viral loads than the lungs of humans. This study was performed during autopsies of humans who died due to novel coronavirus infection. Kidney damage was seen in several infected people due to COVID-19. The study is published as a letter to editor in the *New England Journal of Medicine*.

(Source: *New England Journal of Medicine;* http://doi.org/dv56)

An antibody is found to be blocking COVID-19

Scientists of the University of Washington, USA and Vir Biotechnology in Bellinzona, Switzerland have found an antibody (dubbed as S309) which is able to block COVID-19 and SARS 2003 (which is a far relative of COVID-19). This antibody is recognised as the immune signalling molecule that attaches to the viral spike protein. The spike protein is used by the novel coronavirus to deceive the cell membrane and enter into the human cells. Researchers have tried cocktails of different antibodies with S309 to examine its blocking behaviour against COVID-19. The results are encouraging. The research has been accepted for publication after peer review by *Nature*.

(Source: *Nature*; https://doi.org/dv4x; 2020)

Further evidence that Hydrochloroquine is not effective in clearing COVID-19

Reports published by researchers from China and France separately claim that the efficacy of the anti-inflammatory drug Hydrocholoroquine is not as good as the standard care administered to adults admitted in hospital with symptoms of COVID-19. Randomized clinical trials done in China show that Hydrochloroquine does not clear the viral load of COVID-19 in comparison to standard care given to patients in ICUs of hospitals. While lab tests showed promising results for this drug, observational evidences and accumulating trials are consistently proving the opposite. A separate study performed in France also does not support the use of Hydroxycholoroquine in critical patients of COVID-19.

(Source: BMJ; 10.1136/bmj.m1844 and 10.1136/bmj.m1849)

Cycling or walking has correlation with reduced risk of early death

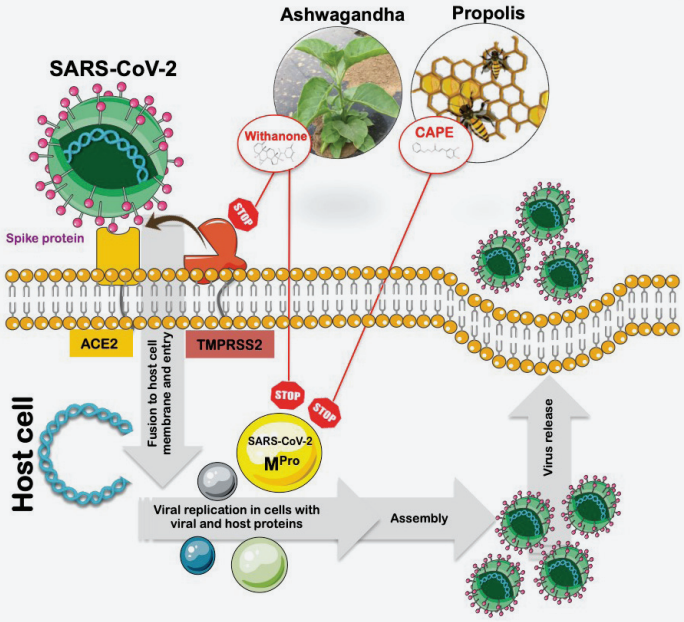
Researchers from Imperial College, London and Cambridge University have concluded through a statistical study performed over 300,000 people of England and Wales that walking and cycling is linked to reduced risk of early death. These conclusions were made after tracking people for 25 years (1991-2016). According to the scientists, the research suggests that walking and cycling in post-lockdown period may reduce deaths from heart disease and cancer also. The study has been published in journal *The Lancet Planetary Health.*

(Source: *The Lancet Planetary Health*; 10.1016/S2542-5196(20)30079-6)

Source: https://medicalxpress.com/news/2020-05-early-death-illness.html

Ashwagandha may have preventive value against COVID-19: IIT study

A collaborative research study by DAILAB @ IIT Delhi and DAILAB @ AIST (National Institute of Advanced Industrial Science and Technology), Japan, has recently discovered that Ashwagandha may hold promise as an efficient anti-COVID-19 drug. According to the team "their findings may not only connect to save time and cost required for screening for anti-COVID-19 drugs, but may also offer some preventive and therapeutic value for the management of fatal COVID-19, and hence warrant prioritized validation in the laboratory and clinical tests". They added that drug development may take a while and in the current scenario, these natural resources (Ashwagandha and Propolis) may offer some preventive or even therapeutic value.



Withanone and CAPE are predicted to block the viral protein (M^{pro}) required for its replication. Withanone is also predicted to block cell membrane receptor required for entry of virus to the cells.

(Source: *iitd.ac.in*)

Interferon (IFN)-α2b may be a good candidate to treat COVID-19

According to a recent study published in the journal *Frontiers in Immunology,* the drug Interferon (IFN)-α2b may significantly reduce the viral load of COVID-19 and reduce the inflammatory proteins in patients infected with COVID-19. This anti-inflammatory drug Interferon has already been used during SARS 2002 & 2003 outbreaks. It has been approved for clinical use over many years. The researchers claim this drug as "the first line of defence" in viral infections. The current study was conducted on a group of 77 patients, already infected with COVID-19, admitted at Union Hospital, in Wuhan, China. Although, the current study is a preliminary one with small and non-randomized group of patients, the work presents several important and novel insights about novel coronavirus.

(Source: *Frontiers in Immunology*, 10.3389/fimmu.2020.01061)

ICMR to begin trial on BCG

Indian Council of Medical Research (ICMR) is to conduct a 10-month trial on the Bacillus Calmette-Guérin (BCG) vaccine to find a vaccine for COVID-19. For decades it has been in use against tuberculosis. However, the upcoming study on BCG vaccine will focus on its potential in reducing the chance of Covid-19 death among people above 60 years of age.

(Source: *The Indian Express*)

CORONA INNOVATIONS

AA+ Covid-19 testing solution

IT solutions provider ESDS Software Solution in partnership with Deepiotics have developed an Artificial Intelligence solution to identify COVID-19 patients — "AA+ Covid-19 testing Solution". The Deep Learning and advanced AI-driven platform uses the conventional X-ray platform that helps to identify corona infection from chest X-ray within 5 minutes. The technology is to provide easy, affordable, scalable and rapid testing solution for COVID-19 for individual and health care entities.

(Source: *esds.co.in*)

Innovative 3D Products

National Institute of Pharmaceutical Education and Research (NIPER) Guwahati, has developed two 3D products — 3D-printed hands-free object and a 3D-printed antimicrobial face-shield. The products can be very useful in the fight against the COVID-19 infection.

(Source: *NIPER Guwahati*)

Affordable PPE coverall

Covid -19 PPE Coverall (Body Suit and Shoe Cover)

IIT Delhi's Department of Textile and Fibre Engineering has developed a Personal Protective Equipment (PPE) Coverall (Integrated Body Suit and Shoe Cover) for the protection of doctors, nurses, paramedical staff and others involved in the treatment of coronavirus infected patients. "The advanced version of PPE coverall that we have developed is set to emerge as an improvised product in the national and international markets, bestowing several special functional features, to meet requirements for added comfort. Breathability and feel of the coverall have been a major challenge and we have ensured we reach adequate levels of breathability and a softer feel, to support extended wearability," said Dr S.M. Ishtiaque, Professor Emeritus, Department of Textile and Fibre Engineering, IIT Delhi.

(Source: *iitd.ac.in*)

RNA extraction kit "Agappe Chitra Magna"

Agappe Chitra Magna is a magnetic nanoparticle-based RNA extraction kit for use during testing for detection of COVID-19. The kit was developed by Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum, along with Agappe Diagnostics Ltd, an *in-vitro* diagnostics manufacturing company based in Cochin. The kit has been commercially launched. The commercial launch of the kit is a major step to make India self-reliant in detecting COVID 19 and can help increase the rate of testing and bring down its costs, a crucial step for combating the pandemic.

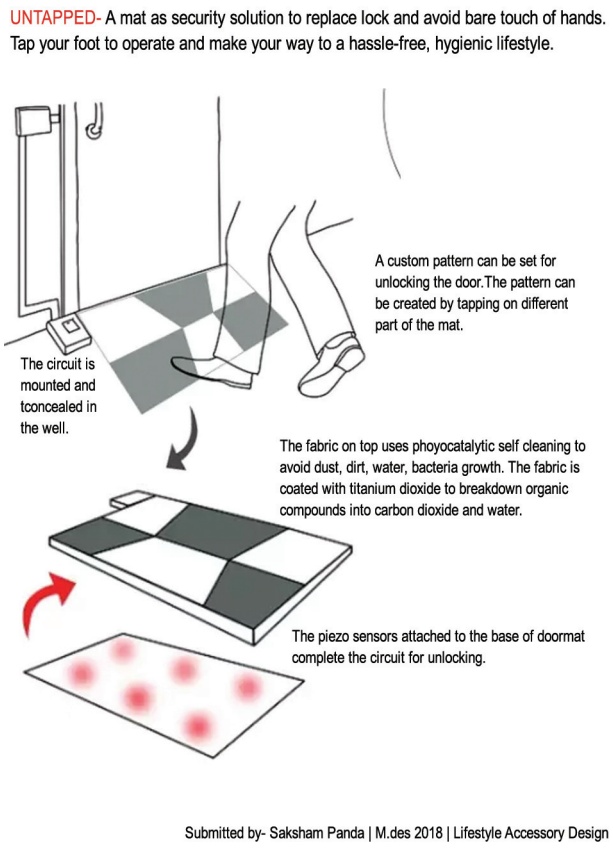
(Source: *PIB*)

Wash-resistant antiviral coating for masks

The Indian Institute of Technology, Bombay (IIT-B) has developed a wash-resistant antiviral and antibacterial coating for textiles. The institute has also filed two patents for the technology. "The coating materials are low cost and the idea is to develop and scale-up masks with antiviral activities at an affordable cost," says Rinti Banerjee, the Madhuri Sinha chair professor at IIT-B's department of biosciences and bioengineering.

(Source: *Hindustan Times*)

Global Grad Show: Innovation platform gives solutions to COVID-19



The Art Dubai Group has developed an innovation platform 'Global Grad show' for scientists and innovators to showcase their solutions to combat COVID-19 pandemic and work towards a healthier future. The Global Grad Show is a year-round Social Impact innovation initiative. The platform calls for innovative solutions from across the world aiming to tackle the escalating challenges being faced by people, communities and governments from the novel coronavirus threat. From India, three innovative entries have been submitted. One is a doormat that works based on sensors and helps in unlocking the door on its own and thus reduces the risk of infection through surfaces. This innovative technology was developed by Saksham Panda of the National Institute of Design, Gandhinagar.

(Source: *https://economictimes.indiatimes.com*)

Ray of new hope

HP has opened up its innovative design files for 3D printed parts to support containment efforts so they can be produced anywhere in the world. They are also hand-holding the end-customers to bridge the potential supply chain interruptions by expanding distributed print-on-demand capabilities. Such free design files have been posted online (https://enable.hp.com/us-en-3dprint-COVID-19-containment-applications) including a mask adjuster and a hands-free door opener. HP plans to post more applications and resources in coming days to fight the pandemic.

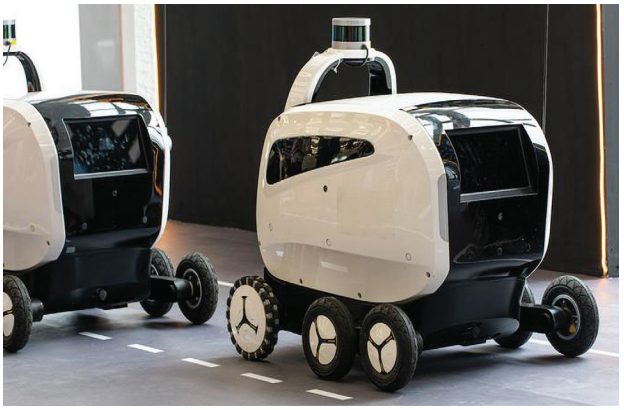
(Source: *https://www.industryweek.com*)

Free Digital Telemedicine Solution

Healthcare and treatment of OPD patients has become a big challenge during COVID-19 pandemic. To carve an innovative solution to this issue, YGL Andres Simon Gonzalez-Silen along with a team of Venezuelan doctors has developed *Telesalud COVID-19* which is a free digital telemedicine solution. This digital platform provides virtual healthcare services including remote consultations and monitoring between doctors and patients. Since its inception, Telesalud COVID-19 has supported over 80,000 Venezuelans abroad and done more than 25,000 tests. They are also referring the high-risk patients to local hospitals.

(Source: *https://www.weforum.org*)

Autonomous robot vehicles supply food & medicine



Unmanned vehicles or carts that can carry food or other items are not new. The JD.com e-commerce company in China has started unmanned delivery vehicles amid the outbreak of coronavirus. They are serving areas such as schools, gated communities, parks and hotels. JD.com is one of the largest online retailers in China which successfully utilized autonomous robot vehicles to deliver medicine, food and other essential supplies in Wuhan. Through rapidly addressing the supply of essential things, JD.com delivered over millions of masks too.

(Source: *https://www.industryweek.com*)

#CSIRFightsCovid19

Ever since the Coronavirus pandemic broke out, CSIR has mounted a strategic, well-coordinated and integrated approach towards mitigating the Coronavirus outbreak ranging from containing the spread of the virus by providing sanitisation and disinfection solutions to equipping the frontline workers and health warriors with protective gear, and from exploring repurposing of existing drugs to discovering new drugs and vaccines. Here are some major developments this week.

Highlights of the Week

- To understand the viral mutations and also track different viral strains in the country, CSIR has sequenced and deposited 166 viral genome sequences in the global database and is soon set to reach 500 sequences.
- >30,000 tests for COVID-19 have been conducted by CSIR labs till date which includes testing of 18,000 samples by labs themselves and about 13,500 that the labs have facilitated testing in the government hospitals around them.
- A new diagnostic technique of RT-LAMP for COVID-19 has been developed by CSIR-IIIM and Reliance Industries Limited (RIL). It is cost effective, fast (30 min) and needs simple instrumentation; it has been tested on patient samples and larger validation is underway.
- CSIR-CCMB has partnered with Syngene to use large scale genome testing methods using Next-Gen Sequencing which can test up to 10-20,000 samples in a day. This would be ideal for testing in containment and red zones.
- Convalescent plasma therapy clinical trial to study the efficacy of blood plasma from recovered Covid-19 patients has received approval from DCGI. CSIR-IICB in collaboration with the West Bengal government has commenced the clinical trial and screened two potential donors.
- CSIR-CDRI has achieved an improved synthesis for Umifenovir on a multi-gram scale. The technology has been transferred to industrial partners, and the Institute is progressing rapidly towards conducting a clinical trial of this molecule.
- CSIR-CCMB has set up Corona viral screening facility and is testing drugs and devices of DRDO and others.
- CSIR-NCL, Pune has developed a face mask using patented bacterial nano-cellulose technology along with nano-coating. It has better filtration efficiency and has been certified by SITRA and technology licensed to SET Labs Pune for scale up.
- CSIR-CMERI has developed mobile indoor disinfection sprayer units which can be used for cleaning and disinfecting pathogenic microorganisms effectively, especially in hospitals. The two variants of the indoor disinfection units are Battery Powered Disinfectant Sprayer (BPDS), and Pneumatically Operated Mobile Indoor Disinfection (POMID).
- The KisanSabha portal and app developed by CSIR-CRRI to connect farmers with transporters and others in the agriculture produce supply-chain is gaining popularity and nearly 30,000 transporters, 3200 farmers, and over 1000 service providers and customers have already registered.

DIGITAL AND MOLECULAR SURVEILLANCE

Surveillance at the level of the virus, humans, and geographical origins and distributions is a critical step in combating Covid-19. While *molecular surveillance* involves large-scale sequencing of viral genomes, *digital surveillance* utilizes big data at the population level. CSIR is using digital and molecular methods to conduct surveillance using a three-pronged approach; (i) gathering information about the virus (ii) pooled testing for greater outreach (iii) patient-centric approach

- **Community surveillance pilot project:** In Kolar community surveillance pilot, a survey of 1100 persons including 300 doctors and hospital staff has been carried out. RT-PCR based testing and RBD Homemade ELISA testing, which have 98% sensitivity and 99% specificity, have been deployed for the surveillance.

- **CSIR-ICMR MoU on clinical data collection and sharing:** CSIR-IGIB and ICMR have entered into an MoU for collection and sharing of clinical data, which will accelerate the digital and molecular surveillance aspect. Eighteen hospitals are part of the network for providing patient samples and metadata.

- **Genome sequencing:** CSIR-IGIB has completed sequencing of 250 genomes, of which >100 have been deposited at the Global Initiative on Sharing All Influenza Data (GISAID) database. Viral samples have been received from Kerala and the institute has tied-up with government and private hospitals for sample collection. So far 166 viral genomes have been deposited by CSIR labs in the database.

Source: http://clingen.igib.res.in/covid19genomes/

RAPID AND ECONOMICAL DIAGNOSIS

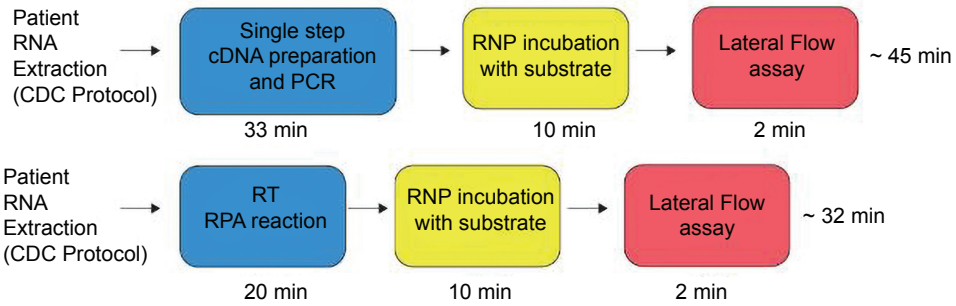
The key to flattening the curve of growth in Coronavirus cases is the detection of the infected at the earliest and isolating them. A combination of digital and molecular surveillance with rapid diagnosis is the need and CSIR is striving towards that using multiple strategies.

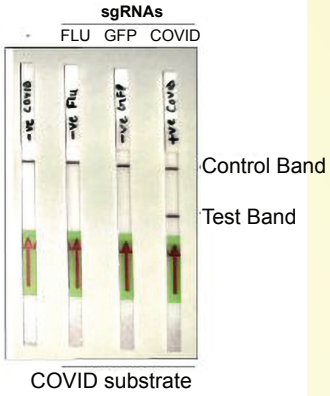
- Till date CSIR laboratories have tested more than 18,000 samples for COVID-19 and have facilitated testing of 13,500 samples in government hospitals around them taking the test tally to over 30,000 samples.

Testing Labs	Tests during last week
CSIR-IIIM	1140
CSIR-IMTECH	394
CSIR-IHBT	1672
CSIR-NEERI	271
CSIR-IITR	747
Total	**4224**

- **CSIR-CLRI as a new testing lab:** The Indian Council of Medical Research has included CSIR-Central Leather Research Institute (CSIR-CLRI) as a test lab for testing samples in the Chennai zone. Testing will commence on Monday (25 May 2020) at about 100 samples per day

FnCas9 Editor Linked Uniform Detection Assay (FELUDA) for CVID 19 Detection from Body Fluids





Fast & Sensitive
Specific Low Cost
Eliminates q-PCR machine or detector

RNP incubation with substrate

Licensed to Tata Sons

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- **Feluda Test Validation:** Feluda, the paper-based diagnostic kit developed by CSIR-IGIB for testing samples for COVID-19 is on a fast track development and commercialization. The Indian Council of Medical Research (ICMR) has devised a protocol for the approval process of the diagnostic kit.

- **RT-LAMP Diagnostic test:** A new diagnostic technique of RT-LAMP for COVID-19 has been developed by CSIR-IIIM and Reliance Industries Limited (RIL). It is cost effective, fast (30 min), needs simple instrumentation and has been tested on patient samples and larger validation is underway.

RT-LAMP Diagnostics for COVID-19: A Joint Development between RIL & CSIR

CSIR-IIIM Reliance Industries Limited

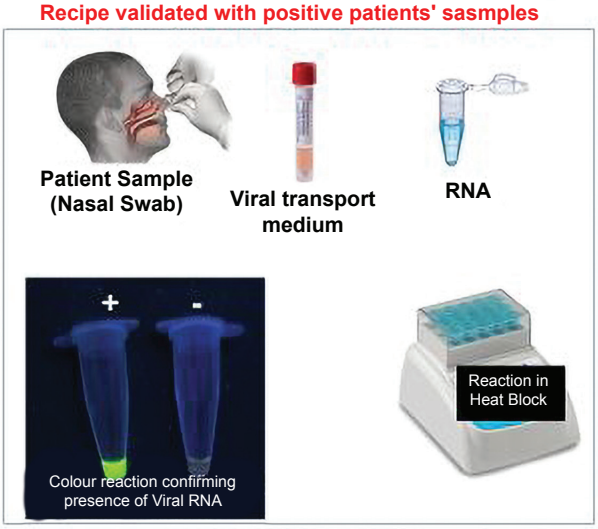
CSIR-IIIM Jammu RIL Biology

- Cost Effective- ~99 Rs
- Fast- 30 mins
- Simple instrumentation- Heat block
- Proprietary reaction condition
- 6 Specific primers for 4 genes

Next Steps

- Recipe to be validated on wider patient population
- Submission to ICMR for approval
- Scale-up of the RT-LAMP assay kit

Recipe validated with positive patients' sasmples



INDUSTRY PARTNER: RELIANCE

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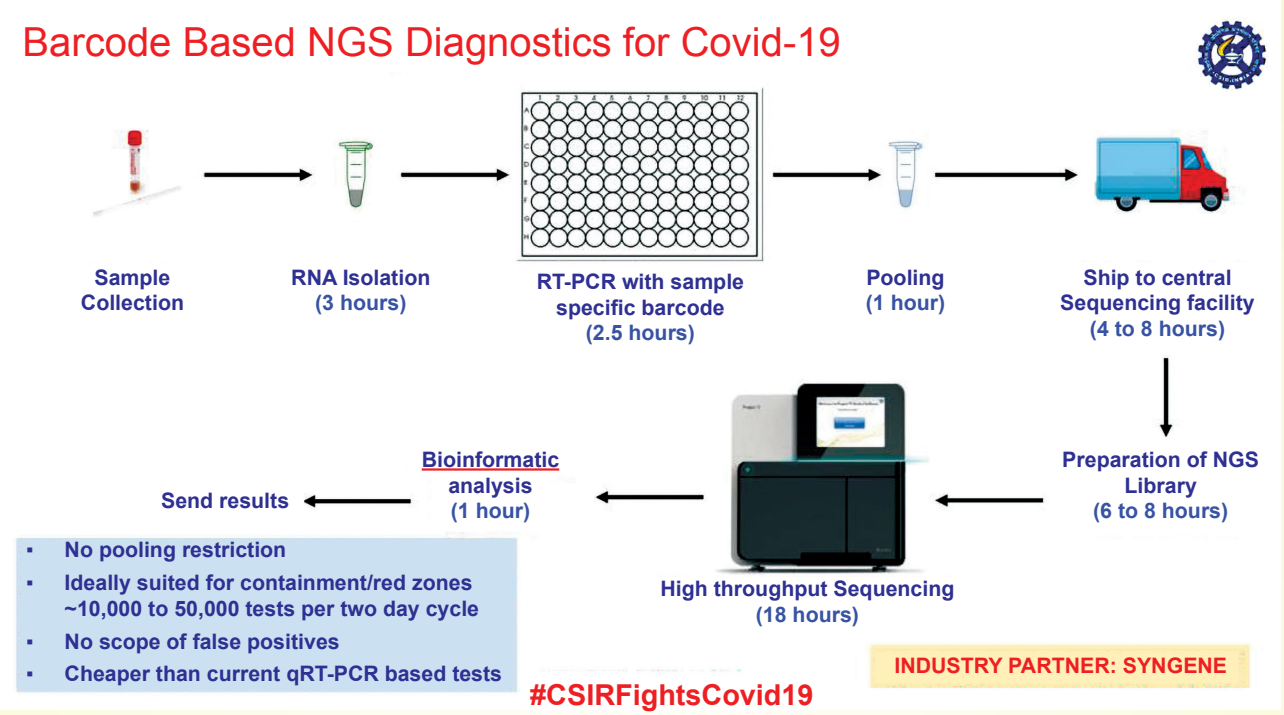


- CSIR-CCMB is optimizing protocols that can enable hospitals to send dry swabs for testing directly, and for skipping RNA extraction of the viral samples at the testing centres. These promise to reduce cost, time and efforts at the sample collection centres as well as testing centres. These will become important as we move towards mass testing.

- CSIR-CCMB has partnered with Syngene to use large scale genome testing methods using Next-Gen Sequencing which can test up to 10-20,000 samples in a day at a cost of Rs 25 per sample. This would be ideal for testing in containment and red zones.

REPURPOSED DRUGS/NEW DRUGS/ VACCINES/AYUSH PRODUCTS

To combat the virus, CSIR is exploring all avenues and supporting new ideas that have a clear deployment strategy. CSIR has further defined its strategy in this vertical by setting up focused groups to look at multiple pathways for developing drugs: i) Molecular modelling of drugs; ii) Host-target interactions; iii) Crystal engineering; iv) Batch to continuous process; v) In-silico screening of existing drugs and natural products; vi) Scouting for non-infringing routes, and vii) Host-dependent pathways for APIs.

- **Repurposed Drugs:** CSIR has identified 25 approved drugs for 'repurposing' and quick deployment for COVID-19 treatment.

- **Remdesivir:** CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad has completed the process of making two Active Pharma Ingredients (APIs) for anti-viral drugs – Umifenovir and Remdesivir. The Institute is in the process of transferring

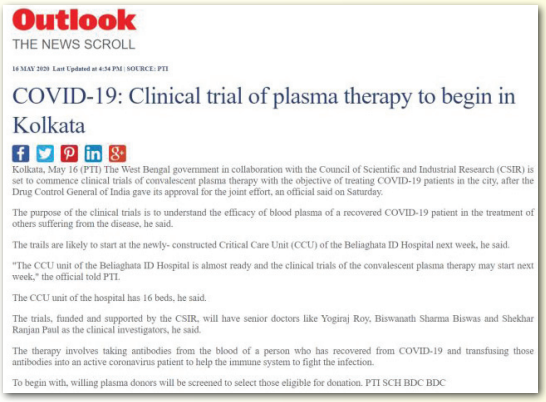
the APIs to pharma companies for them to approach the drug control authorities for conducting necessary trials and approvals before manufacturing them.

- **Favipiravir:** CSIR-IICT had earlier handed over API for anti-viral Favipiravir to Cipla which has received approval for clinical trial by DCGI. Favipiravir is a promising generic drug for the treatment of COVID-19 developed in Japan and used for the treatment of flu. Clinical trials of Favipiravir have shown positive results in China, Japan and Italy.

- **Umifenovir and other drugs in pipeline:** An improved synthesis for Umifenovir on a multi-gram scale has been achieved by CSIR-CDRI. The technology has been transferred to industrial partners, and the Institute is progressing rapidly towards conducting a clinical trial of this molecule. The synthesis of CSIR-CDRI compound centhaquin (US Patent No..US3983121A) has also been developed on multi-gram scale. This compound is reported to be immensely helpful for managing hypovolemic shock in intubated patients of COVID-19. Discussions are currently underway with an industrial partner for further development of this molecule.

Drug	Indication
Umifenovir	Broad-spectrum Antiviral
Baricitinib	Rheumatoid Arthritis
Ruxotinib	Myelofibrosis
R-20-0001	Anti-hypertensive
Camostat mesylate	Chronic pancreatitis & postoperative reflux
Niclosamide	Influenza A and influenza B flu
Ribavirin	RSV infection, hepatitis C
Tilorone	Oral Synthetic interferon inducer
EID 1931 & 2801	SARS and MERS
Galidesivir	Broad-spectrum Antiviral
Centhaquin	Hypotensive agent

- **Convalescent plasma therapy:** After the Drug Controller General of India's approval of a collaborative effort by the CSIR and the West Bengal government, clinical trial of convalescent plasma therapy began in Kolkata with the first two potential donors being screened. A doctor and a management student were the first voluntary donors. The purpose of the trial is to study the efficacy of blood plasma from recovered Covid-19 patients on a positive patient undergoing treatment. The clinical trial is being conducted on patients being treated at the Beliaghata ID Hospital.



Outlook
THE NEWS SCROLL

16 MAY 2020 Last Updated at 6:34 PM | SOURCE: PTI

COVID-19: Clinical trial of plasma therapy to begin in Kolkata

Kolkata, May 16 (PTI) The West Bengal government in collaboration with the Council of Scientific and Industrial Research (CSIR) is set to commence clinical trials of convalescent plasma therapy with the objective of treating COVID-19 patients in the city, after the Drug Control General of India gave its approval for the joint effort, an official said on Saturday.

The purpose of the clinical trials is to understand the efficacy of blood plasma of a recovered COVID-19 patient in the treatment of others suffering from the disease, he said.

The trails are likely to start at the newly- constructed Critical Care Unit (CCU) of the Beliaghata ID Hospital next week, he said.

"The CCU unit of the Beliaghata ID Hospital is almost ready and the clinical trials of the convalescent plasma therapy may start next week," the official told PTI.

The CCU unit of the hospital has 16 beds, he said.

The trials, funded and supported by the CSIR, will have senior doctors like Yogiraj Roy, Biswanath Sharma Biswas and Shekhar Ranjan Paul as the clinical investigators, he said.

The therapy involves taking antibodies from the blood of a person who has recovered from COVID-19 and transfusing those antibodies into an active coronavirus patient to help the immune system to fight the infection.

To begin with, willing plasma donors will be screened to select those eligible for donation. PTI SCH BDC BDC

- **CSIR-CCMB collaboration to develop antibody fragment-based immunotherapy:** CSIR-CCMB and University of Hyderabad (UoH) are collaborating with Vins Bioproducts Ltd, an antisera manufacturing company, to develop antibody fragment-based immunotherapy for the treatment of COVID-19. Plasma-based passive immunity against COVID-19 has several limitations. The use of antibodies has been an effective method in protecting against several human and animal diseases. Scientists are exploring alternative strategies of using horses to generate antibodies against the SARS-COV-2 viral antigens. Horse-based immunoglobulins can be produced in large quantities as a promising alternative therapy, which would be economical and can be made readily available to a larger population.

HOSPITAL ASSISTIVE DEVICES AND PPES

Ever since the pandemic reared its devastating head in the country, CSIR has been introducing low-cost and effective hospital assistive devices and PPEs and consistently improving their efficiency and design. CSIR has made considerable progress in this area and many technologies and designs have been transferred to the industry while some are at the stage of beta testing, which will be followed by certification.

Current status of PPEs and Hospital Assistive Devices

Sl. No.	Devices	Types	Unique Features	Clinical trials & Cert Status	Tech Transfers
1	Swasth Vayu Non Invasive Ventilator **(NAL)** 	**Non Invasive – BIPAP supplementary ventilator** 	• Pressure Range - 4 - 25 cm H2O • Programmable EPAP & IPAC cycles • Auto altitude comp • 3D printed "Bio " adaptor with HEPA filter to alleviate fear of spread of virus	• TuV Rheinland & TRACAAL certified for safety & performance • Bio toxicity tested & certified • Beta clinical trials completed • Clinical trials being initiated at Manipal Hospital, Bangalore	• **Remidio Innovative soln** • **BHEL, Bangalore (P)** • **Paras Defense Systems** • **Apollo Computing lab** • **Data Sole Pvt Ltd** • 3 units under evaluation
2	Oxygen Enrichment Unit **(NCL)**		• Hollow fiber membrane • Enhancement up-to 40% • Automatic	• TuV Rheinland certified & approved • Clinical trials at Naidu hospital, Pune initiated	• **BEL, Pune** • 3 units under evaluation
3	Type A Ventilators **(CSIO)**	**ReSPI–AID CSIO** 	• Automated Ambu bag (TYPE-A) double flap motorized ventilator. • Adjustable Parameters: Tidal Volume , Respiration rate , I:E ratio Compact digital control design	• Clinical trials at GH Chandigarh • Certification at Apex laboratories ,Delhi	**Potential partners** • **Forbes India , Mumbai** • **LM Health care, PK**

No.	Devices/Products	Features	Certification /status	Tech Transfers
4	Personal protective Coverall with Shoe Cover **(MAFL & NAL)**	• Polypropylene spun laminated multilayered non-woven. Single use. • Universal fit. • Soft elastic fitted around hood, wrist & ankles. • Shoe cover fitted with soft elastic at 2 levels.	**Certified at SITRA** as per ASTM F1670/ F 1670M-08(2014) standards. Received HLL order for 50,000 coveralls	• **MAFL Pvt Ltd , Bangalore** • 15,000 coveralls supplied to HLL
5	Touch Free Hand washing dispensers • **CSIR-IMMT, CSIR-NEERI** • **CSIR-CMERI** • **CSIR-CIMAP, CSIR-CSIO**	• Hands free operation, No cross contaminations; Reduced water wastage • No external power requirement • Portable, robust, hassle free and user friendly	Evaluated by Govt of Chandigarh & AIIMS More than 100 nos supplied	Transferred to **MSME**
6	Nano particles masks **(NCL)**	• Cotton cloth coated with bacterial cellulose and nano material	SITRA Approved	SET labs , Pune
7	3 /4 frill masks **(CMERI)**	• Cotton based	SITRA approved	• > 3 L masks supplied • NGO & SHG

No	Devices/Products	Features	Certification /status	Tech transfers
8	Electrostatic Disinfector **(CSIO)** Road Disinfection Unit **(CMERI)**	▪ Flow rate = 110-130 ml/min ▪ No. of nozzles = Single headed ▪ Tank capacity = 10/15 litres ▪ Battery usage hours[3] = 10-12 hour	Evaluated by Municipal corporations	• BHEL • Rite water • Power Tech Mining
9	3D face shield	CECRI	CIPET Certified	To be Identified
10	Make shift hospitals **(SERC/CBRI)**	• Modular foldable units • 50 beds can be installed in less than 5 days	Prototype ready Demonstration unit is being set up for NDRF at 8th Bn station Ghaziabad NDRF site identified near Vijayawada	Potential Partners L&T / Tata Projects

- **Biopolymer Nanocoated Medical Grade Mask:** CSIR-National Chemical Laboratory (CSIR-NCL), Pune has developed a superior face mask which has better filtration efficiency than the available face masks in the market. CSIR-NCL's patented bacterial nano-cellulose technology along with nano-coating was used for this purpose. The cotton cloth coated in a solution of bacterial cellulose and nano-material completely prevents the penetration of bacterial growth. The bacterial filtration efficiency (BFE) of CSIR-NCL mask is 99.9% and particulate filter efficiency (PFE) is 92.63% PFE. This indicates a high restriction of hazardous particulates. The masks are made for easy breathability, of medical grade and are of low flammability.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Science

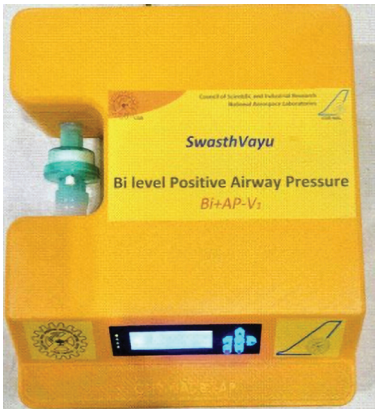
NCL develops face mask with better filtration efficiency

Umashankar Mishra | New Delhi | Updated on May 19, 2020 | Published on May 19, 2020

National Chemical Laboratory (NCL), Pune, has developed a face mask with better filtration efficiency compared to those available in the

- **Respiratory Assistance Intervention Device (Respi-AID):** Functional testing Respi-AID developed prototype by CSIR-CSIO as per targeted specifications has been completed using Ventilator calibrator and artificial test lung. Certification is under process from Apex Quality Certification Services Pvt. Ltd. (NABL Accredited Laboratory), Jaipur, Rajasthan, and is expected to be completed by May 30, 2020.

- **Bi-Level Positive Airway Pressure System (Bi+APV1):** Named 'SwasthVayu', the BiPAP Ventilator is an electronic breathing device used in the treatment of sleep apnea, lung disease, and to treat respiratory weakness and will be used for COVID-19 patients. Blower motor and controller are the critical components of the BiPAP ventilator and currently are imported from Switzerland. To lower costs, alternate sources in Taiwan and China have been identified for these critical components. The system has been certified for calibration by NABL accredited agencies as well as TUV Rheinland (meeting the minimum requirements of the German Equipment and Product Safety Act). CSIR-NAL will make 25 BiPAP devices and 100 devices will be made by licensee companies. Thus, a total of 125 devices will be made, to begin with.



BiPAP ventilator developed by CSIR-NAL

- **Personal Protective Coverall:** The production rights for the coverall developed by CSIR-NAL have been given to MAF Clothing, Bengaluru on a non-exclusive basis. The first lot of 5000 coveralls has been supplied to HLL Life Care, Trivandrum by MAF clothing. CSIR-NAL will soon sign agreements with some manufacturers to start production.

- **Mobile indoor disinfection sprayer units:** CSIR-CMERI has developed mobile indoor disinfection sprayer units. These can be used for cleaning and disinfecting pathogenic microorganisms effectively, especially in hospitals. The institute has developed two variants of the indoor disinfection units. One is the Battery Powered Disinfectant Sprayer (BPDS), and the other is the Pneumatically Operated Mobile Indoor Disinfection (POMID). The two units can be used to clean and disinfect frequently touched surfaces such as tables, doorknobs, etc.

Mobile indoor disinfection sprayer unit developed by CSIR-CMERI

- **Electrostatic Disinfection Machine:**

CSIR-CSIO has developed Electrostatic Disinfection Machine technology which was transferred to the industry a few weeks ago. As the country eases lockdown and more people get back to work, the machine will play a vital role in disinfecting and sanitizing public places especially hospitals, poultry, trains and buses, airports and aeroplanes, offices, classrooms and hotels. The industrial partner, Rite Water Solutions today announced that it is ready to mass-produce the machine.

CSIR SUPPLY CHAIN & LOGISTICS SUPPORT

- **KisanSabha App:** The KisanSabha portal and app was launched by Dr Trilochan Mahaptra, Director-General, Indian Council of Agricultural Research (ICAR) on 1 May 2020. In a short time, nearly 30,000 transporters, 3200 farmers, and over 1000 other service providers and customers have already registered. Going by the feedback received, many farmers who have used the app have received higher prices for their produce. The KisanSabha app will soon be launched in six languages – Tamil, Telugu, Kannada, Marathi, Gujarati, Bengali & Urdu.

- **Rapid Health Supply Chain Information Platform:** Aarogyapath (आरोग्यपथ), the National healthcare supply chain platform that was initiated last week is now under development. The important functionalities have been identified and the various interfaces (screens) have been finalized. As of now, three stakeholders categories, viz., Manufacturers/Suppliers, Buyers, and Hospital & Labs have been identified for the primary launch.

CSIR Media Coverage

ANI

South Asia's Leading Multimedia News Agency

AYUSH secretary Vaidya Rajesh Kotecha (left) speaking to ANI in New Delhi on Wednesday.

Trials for four Ayush formulations against COVID-19 to start within a week

ANI | Updated: May 13, 2020 22:18 IST

By Suchitra Mukherjee

New Delhi [India], May 13 (ANI): The AYUSH Ministry and the Council of Scientific and Industrial Research (CSIR) are working together on validating four

May 18, 2020 Duration: 5 min, 27 sec

CSIR के DG शेखर मांडे बोले- भारत में हुई 300 जीनोम सीक्वेंसिंग

देश में कोरोना के आंकड़े लगातार बढ़ रहे हैं. आज सुबह स्वास्थ्य मंत्रालय द्वारा जारी आंकड़ों के अनुसार, पिछले 24

'Different vaccines being tried out, will take at least six months'

Shekhar Mande, director general of the Council of Scientific and Industrial Research (CSIR), speaks to TOI on how the country is combating Covid-19, progress made towards vaccine and other initiatives.

Has CSIR been assigned a specific role by government in combating Covid-19? What is the contribution of different CSIR labs?

Being a premier research and development organization of the country, it is natural that CSIR would take a lead. We are working on five different pillars. The first one is surveillance which includes digital and molecular. The work has started and large-scale mapping of population is being done. The second pillar is diagnostics and the country's first paper-strip test for rapid diagnosis of Covid-19 is set to get commercial soon. Pharmaceuticals is the third pillar under which we have already started trials of Mw (Mycobacterium w) vaccines and few others. The fourth pillar is hospital equipment and we have been making around has been taken by major manufacturing companies. Apart from developing monoclonal antibody-based vaccine with Hyderabad's Bharat Biotech, Indian Institute of Technology (IIT) in Indore and other institutes, CSIR has also begun clinical trials for Mw. It is based on an immune boosting molecular formation which will boost the immunity of an infected person, thereby enabling him to fight the virus effectively.

By when can we expect a vaccine to be ready?

Even in the best possible scenario, I don't think any of the vaccines are going to be ready in another six months.

There are speculations regarding a rise in Covid-19 cases in the country. How can we prepare for it?

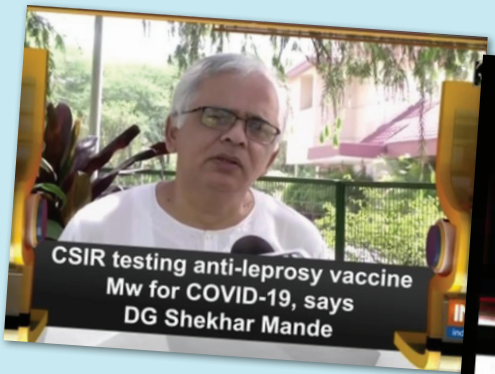
Speculation is the right word as all these talks are based on different models. But we should always be prepared for the worst to implement needed actions effectively. As of now, the testing rate in the country is sufficient. Apart from this, multiple testing strategies are coming up which will hopefully be implemented in the future.

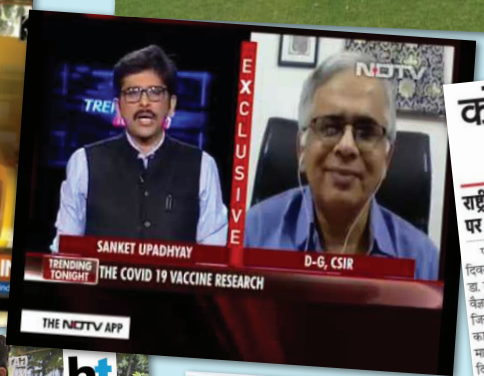
There has been an obvious ... in environ... parameters during ... How can this be ... while ensuring ... growth?

...eryone to see that the ... lockdown on the en... has been positive ...duction in anthropo... ...tivities. It is obvious ...n all of us get back to ...e environmental con... ...will go back to being ...e old. It is in our hands ...rteful and have the ne... ...resources to maintain ...thy environment.

...thinks science and ...logy will get higher ...y and better funding ...-Covid scenario?

...wishful thinking. Ho... ...I do hope that the larger ...of the society recogni... ...science and technolo... ...he can ensure well-being ...man beings. It can do ...rs for humanity.

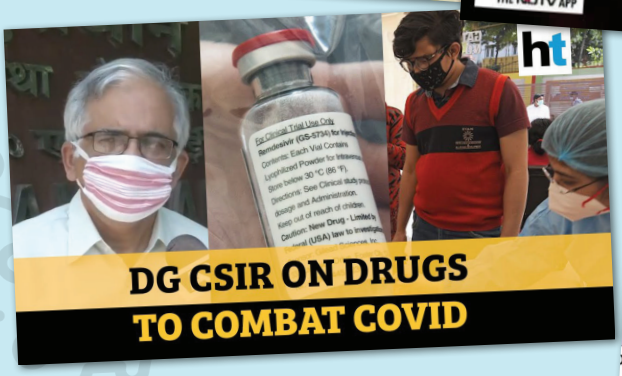


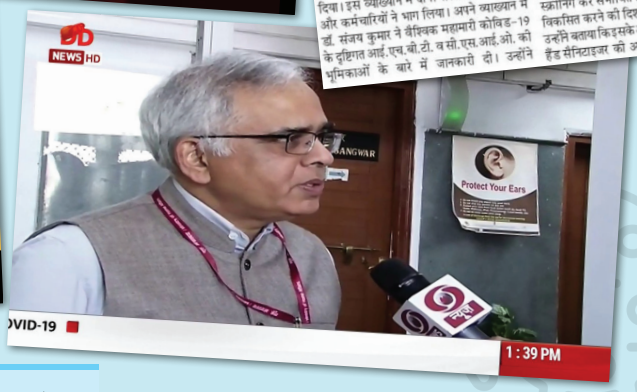


कोविड-19 को लेकर वैज्ञानिक शोध व अध्ययन कार्य जारी

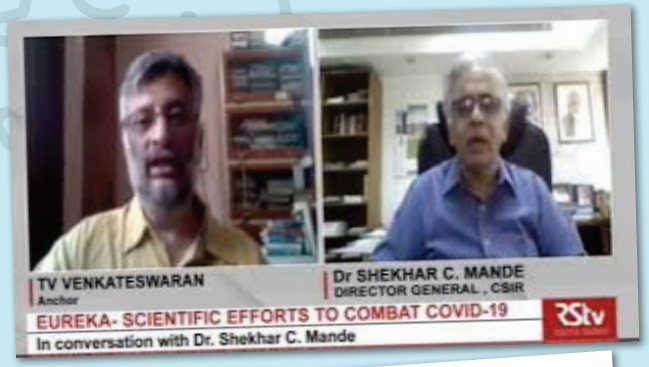
राष्ट्रीय प्रौद्योगिकी दिवस समारोह पर व्याख्यान आयोजित

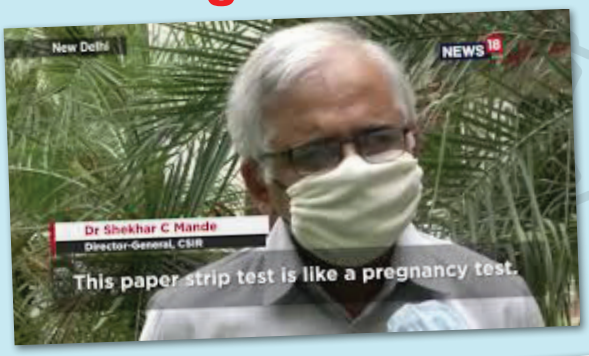
पालमपुर, 11 मई (भुप्र): राष्ट्रीय प्रौद्योगिकी दिवस के अवसर पर आई.एच.बी.टी. के निदेशक डा. संजय कुमार ने कहा कि कोविड-19 के दृष्टिगत वैज्ञानिक शोध व अध्ययन कार्य जारी है। डा. संजय जिनके पास वर्तमान में निदेशक सी.एस.आई.ओ. का अतिरिक्त प्रभार भी हैं ने वीडियो कान्फ्रैंसिंग के माध्यम से राष्ट्रीय प्रौद्योगिकी दिवस का व्याख्यान दिया। इस व्याख्यान में दोनों संस्थानों के वैज्ञानिक और कर्मचारियों ने भाग लिया। अपने व्याख्यान में डॉ. संजय कुमार ने वैश्विक महामारी कोविड-19 के दृष्टिगत आई.एच.बी.टी. व सी.एस.आई.ओ. की भूमिकाओं के बारे में जानकारी दी। उन्होंने सी.एस.आई.ओ. लैब द्वारा विकसित तकनीकों का वर्णन करते हुए बताया कि संस्थान द्वारा इलैक्ट्रोस्टैटिक कीटाणुशोधन मशीन, नॉन कांटैक्ट आई.टी. थर्मामीटर, दंत प्रक्रिया के लिए एरोसोल रिड्यूसिंग कैबीनी, पैर संचालित पानी निकालने की मशीन, पोर्टेबल वैंटीलेटर, थर्मो यू.वी. कीटाणुनाशक प्रणाली, इंडूबेशन एरोसोल आदि प्रौद्योगिकी विकसित की है जबकि आई.एच.बी.टी. प्रौद्योगिकियों के बारे में जानकारी देते हुए उन्होंने बताया कि कोविड-19 के निदान और आणविक निगरानी के लिए परीक्षण केंद्र स्थापित करने, कोविड-19 वायरस के दृष्टिगत हिमालयी औषधीय पौधों में बायो एक्टिव मॉलीक्यूल की स्क्रीनिंग कर संभावित हर्बल बेस्ड एंटीवायरल ड्रग विकसित करने की दिशा में कार्य किया जा रहा है। उन्होंने बताया कि इसके अतिरिक्त अल्कोहल आधारित हैंड सैनिटाइजर की आपूर्ति शामिल हैं।

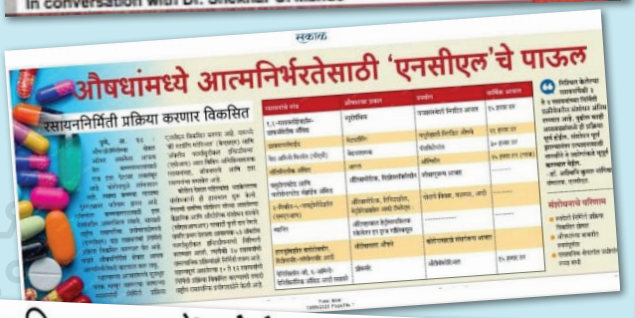




CSIR Media Coverage







सकाळ

औषधांमध्ये आत्मनिर्भरतेसाठी 'एनसीएल'चे पाऊल

रसायननिर्मिती प्रक्रिया करणार विकसित

THE HINDU

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HYDERABAD

CSIR-IICT gets two more APIs for anti-viral drugs

लोकमत

लॉकडाऊनमध्ये कौशल्य विकासाचे प्रशिक्षण

मनपाच्या निवारा केंद्रात उपक्रम : मजूर, बेघरांना मानसिक आधार

लोकमत न्यूज नेटवर्क

नागपूर : कोरोनाच्या संकटात रोजगार गमावण्याचे दुःख व भविष्याबाबत अनिश्चितेची जाणीव यामुळे कष्टकरी वर्ग प्रचंड तणावात आहे. त्यांना नैराश्यातून काढणे आणि त्यांनी स्वतः रोजगाराची संधी निर्माण करावी, यासाठी महापालिकेच्या निवारा केंद्रात विविध विषयांवर कौशल्ये व तंत्र विकासाचे प्रशिक्षण तज्ज्ञांकडून देण्यात आले.

लॉकडाऊन दरम्यान विविध राज्यातील स्थलांतरित मजूर नागपुरात अडकले. त्यांना महापालिकेने ...या निवारागृहात ठेवण्यात ...तंत्राचे सोप्या भाषेत प्रशिक्षण देखील दिले. या कौशल्याचा उपयोग अर्थार्जन व रोजगार निर्मिती साठी करू अशी हमीदेखील सहभागी लोकांनी दिली.

या कौशल्य विकास कार्यक्रमात पावसाच्या पाण्याचे नियोजन, औषधी व इतर उपयोगी रोपांची नर्सरी, पाणी व मृदा संवर्धन, शांयकाम क्षेत्रातील नवीन संधी व रद्दी पेपरपासून घरगल्या उपयोगी लिफाफे व इतर वस्तू बनवण्याची माहिती व प्रशिक्षण देण्यात आले.

जिल्हा विधी सेवा प्राधिकरणाचे सचिव न्या. अभिजीत देशमुख यांनी निवारागृहाला भेट देऊन कौशल्य विकास उपक्रमाचे कौतुक केले. कार्यक्रमात मनपाच्या उपायुक्त डॉ. ...शान मॅनेजर विनय ...टेनंशनल स्किल ...चे अर्शद तन्वीर ...केंद्रेशनचे डॉ. समीर ...मूल सिन्हा, समीर ...सामाजिक संस्थेचे ...मुद्रास चॅरिटेबल ...थम झा देवांगण, ..., पवन गजभिये व ...ारी व कर्मचाऱ्यांचा ...य सहकार्य लाभले.

अपशिष्ट जल में कोरोना का पता लगाना जरूरी

राष्ट्रीय प्रौद्योगिकी दिवस पर नीरी का 'ऑनलाइन' व्याख्यान

नागपुर। 12 मई। लोस सेवा

भारत में सभी 1.3 बिलियन लोगों की कोरोना जांच बिल्कुल संभव नहीं है. इसलिए भारत सरकार द्वारा पोलियो के लिए चलाए गए सर्वेलन्स कार्यक्रम को आधार मानकर अनुसंधानकर्ता अपशिष्ट जल में कोरोना वायरस का पता लगाने के लिए...

इससे अपशिष्ट जल स्रोतों के जरिए कोरोना वायरस को फैलने से रोका जा सकेगा. 'जलीय पर्यावरण में कोरोना वायरस के स्थानांतरण और अपशिष्ट जल आधारित निगरानी' विषय पर व्याख्यान देते हुए प्रो. मनीष कुमार ने यह बात कही.

सीएसआई आर-राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान (नीरी) द्वारा सोमवार को राष्ट्रीय प्रौद्योगिकी...

पृथ्वी विज्ञान विभाग के प्रो. मनीष कुमार तथार अतिथि वक्ता तथा सीएसआईआर-भारतीय विषविज्ञान अनुसंधान संस्थान (आईआईटीआर) , लखनऊ के प्रतिष्ठित वैज्ञानिक प्रो. अशोक पांडेय विशेष अतिथि के रूप में उपस्थित थे. नीरी के निदेशक डॉ. राकेश कुमार और मुख्य वैज्ञानिक व जलवायु परिवर्तन व कौशल विकास प्रमुख डॉ. ...

अपशिष्ट जल महामारी विज्ञान एक प्रभावी साधन है. कोई व्यक्ति कोरोना वायरस से संक्रमित है तो उसके मलोत्सर्ग से अपशिष्ट जल में कोरोना वायरस का पता लगाया जा सकता है. हम अपशिष्ट जल में जीवित कोरोना वायरस का पता नहीं लगाएंगे बल्कि अपशिष्ट जल में ...शिक पदार्थ-...गे. ...के आनुवंशिक ...नए अपशिष्ट ...ने की जीन

सीएसआईओ लैब का काम भी शानदार

वैज्ञानिकों संग मीटिंग के दौरान बोले आईएचबीटी निदेशक

कार्यालय संवाददाता - पालमपुर

सीएसआईओ इंस्ट्रूमेंटेशन लैब और आईएचबीटी में बायो रिसोर्स बेस्ड लैब संयुक्त रूप से देश में कोविड-19 महामारी से निपटने के लिए...

कार्यभार भी संभाल रहे हैं। इस मौके पर डा. संजय कुमार ने मुख्य रूप से कोविड-19 पर चर्चा की और बताया कि इस घातक बीमारी से निपटने के लिए, दोनों संस्थानों ने महत्त्वपूर्ण तकनीकों का विकास और हस्तांतरण किया है।

उन्होंने प्रदेश में कोविड-19 के ...णात्मक निगरानी के ...केंद्र स्थापित करने, ...

को राष्ट्रीय प्रौद्योगिकी दिवस मनाता है, जो विज्ञान और प्रौद्योगिकी के साथ समाज और उद्योग के एकीकरण के लिए तकनीकी रचनात्मकता और वैज्ञानिक सशक्तिकरण की खोज का प्रतीक है। यह दिन 1998 में पोखरण में भारत के विजयी परीक्षण से परमाणु मिसाइल दागे जाने और दुनिया को छठा परमाणु राज्य बनने की याद ...दिलाता है।

TheHitavada

Nagpur City Line | 2020-05-19 | Page-3

NEERI, NGO, locals enlighten homeless, migrant workers

■ Staff Reporter

NEERI scientists guiding migrant workers about water conserv

Around 1,200 homeless and migrant workers from various States are staying in 21 shelter homes of Nagpur Municipal Corporation (NMC) in the city. CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), NGOs and locals have joined hands in support of NMC initiative to engage the workers in creative and constructive activities and to ensure their psychological comfort.

CSIR-NEERI scientists, in association with NGOs and locals, organised various awareness programmes on maintaining social distancing, hygiene, environment, cleanliness, and also held interactive discussions, counselling and other activities at the shelter homes.

Also, they conducted short-term training programmes on water and soil conservation for the migrant workers staying in shelter homes. The activity was carried out under the guidance of Dr J S Pandey, Chief Scientist and Head, Climate Change and Skilling Division, CSIR-NEERI.

Other training programmes organised by NGOs included plant nursery, kitchen gardening, envelope and paper bag making etc. The homeless and migrant workers, stranded far away from their homes, are routinely easing out their stress by contributing their bit in such useful activities at the shelter homes in Nagpur, either through their skills or supporting in whatever ways their capabilities allow.

The programmes were designed in such a way that when the migrant workers move out of shelter homes, they can lead better lives with additional skills acquired., stated a press release issued by NEERI. Abhijeet Deshmukh, Judge and Secretary, District Legal Service Authority (DLSA), Nagpur also visited the shelter homes and applauded efforts of NMC, CSIR-NEERI, NGOs.

Dr Ranjana Lade, D... Municipal Commissioner ... Trikolwar, City Mission Ma... NMC; Arshad Tanvir ... International Skill Develo... Society; Dr Sameer Desh... and Dr Munmun Sinh... Econsus Foundation; ... Patel, Sarim Constru... Amitabh Pawde, Aapulki... Sanitha; Rupam Jha Dev... Mudraas Charitable ... Prabhat Dhariwal and ... Gajbhiye from CPS Em... Pvt Ltd have significan... tributed to this joint ve...

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Lokmat Times

BOTTOMLINE

Skill development training organised for 1,200 shelter home workers

LOKMAT NEWS NETWORK
NAGPUR, MAY 18

NEERI imparting training to shelter home workers.

During lockdown, more than 1,200 workers are living in shelter homes.

As many of these workers are left with no work, they are likely to pass through a phase of mental depression. Nagpur Municipal Corporation, to overcome this situation, has organised in association with NEERI and various other civil society organisations, a skill development programmes for them.

Recently, various training programmes on physical distancing, health science, environment and hygiene and cleanliness were organised in twenty-one shelter homes.

NEERI took an initiative to organise a short duration training programme on water and soil conservation.

Apart from this, the shelter home workers were given training in plant nursery, kitchen gardening, making envelopes from papers and also paper bags.

The training programmes are being organised under the guidance of chief scientist of NEERI , Dr J S Pande.

Deputy commissioner of NMC Dr Ranjana Lade, city mission manager Vinay Trikolwar, Arshad Tanwir Khan, Dr Sameer Deshpande, Dr Munmun Sinha, Sameer Patel, Amitabh Pawade, Rupam Zha Devangan, Prabhat Dhariwal and Pawar Gajbhiye worked hard for the skill development of shelter home workers.

Nagpur First
Page No. 3 May 19, 2020
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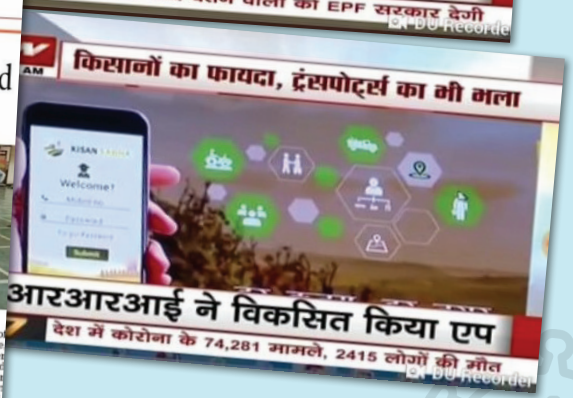


COVID-19 Dashboard

COVID-19 Cases and Deaths in India

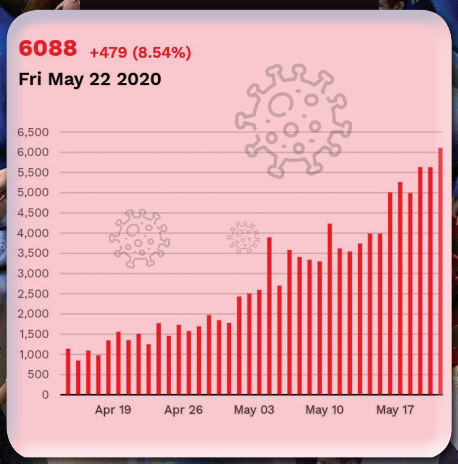
(Data as of 24 May 2020)

	India	Worldwide
Total Confirmed Cases	78003	4893186
New Cases	3722	103981
Total Death	2549	323256
Total New Death	134	4467

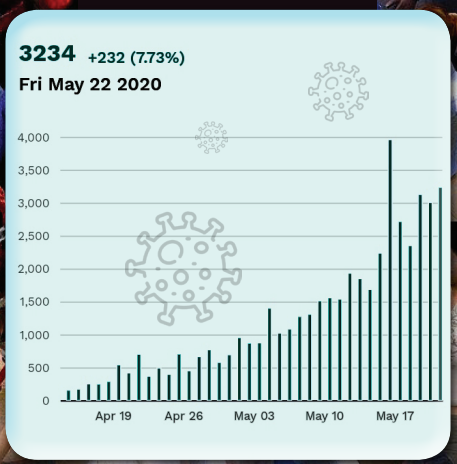
Graph

India

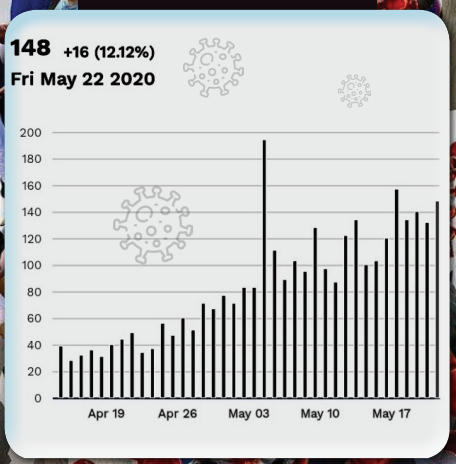
Confirmed Cases



Recovered Cases



Deceased Cases

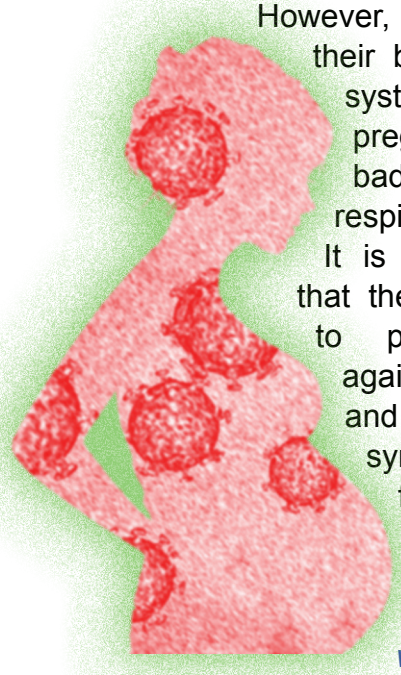


Source: *Aarogya Setu App*

CORONA Q&A

Are pregnant women at higher risk from COVID-19?

Research is currently underway to understand the impacts of COVID 19 infection on pregnant women. Data are limited, but at present there is no evidence that they are at higher risk of severe illness than the general population.



However, due to changes in their bodies and immune systems, we know that pregnant women can be badly affected by some respiratory infections. It is therefore important that they take precautions to protect themselves against COVID-19, and report possible symptoms (including fever, cough or difficulty breathing) to their healthcare provider.

www.who.int

Can a pregnant woman suffering from COVID-19 transfer the disease to her baby?

In February, according to a *Lancet* study involving nine pregnant women suffering from COVID-19 pneumonia in China, there was no evidence that babies too had the virus. However, another study in *JAMA Pediatrics* which involved thirty-three neonates born to COVID-19 positive mothers, found that 3 neonates had COVID-19. The study suggested that the "vertical transmission" (mother-to-child transmission of infection during labour, delivery or immediately afterwards) from mom to baby, may be possible. This is unusual and rare as previous studies presented no evidence on early-onset infection in neonates. In fact, samples including amniotic fluid, cord blood, and breast milk, were negative for COVID-19. There is still need for more definitive studies or evidence before any firm conclusion.

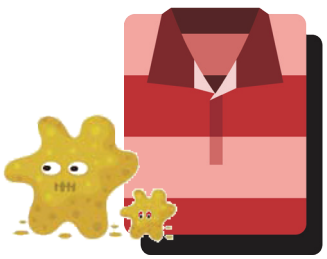
How long does the coronavirus last on a surface?

A study published in the *New England Journal of Medicine* suggested that the stability and persistence of novel coronavirus are different for different surfaces. During the study, five environmental conditions including aerosols, plastic, stainless steel, copper, and cardboard were involved to evaluate the stability and estimate the decay rate of the virus in aerosol and on other surfaces. The study concluded that novel COVID-19 virus remained viable in aerosols for 3 hours whereas it was more stable on plastic (72 hours) and stainless steel (48 hours) than on copper (4 hours) and cardboard (24 hours). The study says, "Our results indicate that aerosol and fomite transmission of SARS-CoV-2 is plausible since the virus can remain viable and infectious in aerosols for hours and on surfaces up to days." The study indicated its persistence on various surfaces up to 72 hours; however, it gets degraded with time. Therefore, as a preventive measure, various surfaces should be disinfected wherever possible.

Can shoes be carriers of coronavirus?

As shoes are always in close contact with dirt, germs, etc, they serve as breeding ground for various microbes. There is a possibility that shoes may get contaminated with the virus if one walks through a heavily crowded place or over tiny droplets on the ground from an infected person through his sneeze or cough. Although so far no case has been confirmed where novel coronavirus was transmitted via clothing or shoe but there is a lot we are not aware of about this virus. So it is better to take precautions.

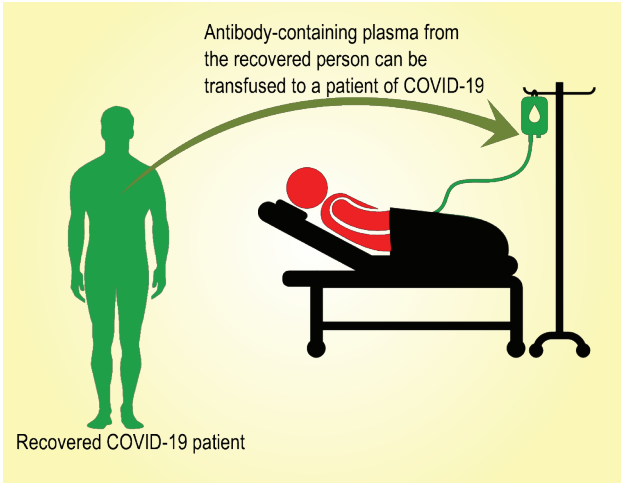
Can clothes be carriers of coronavirus?



It is believed that on fibrous and breathable fabrics, the virus becomes inactive rapidly. "The duration of the virus depends on the fabric, as some materials are more porous than others," says Robert Amler, Dean of the School of Health Sciences and Practice at the New York Medical College and a former CDC chief medical officer to *HuffPost*. "Some researchers believe the fibres in porous material catch the virus particles, dry them out and break them apart," he added. The study published in the *New England Journal of Medicine* talks about the survival duration of the virus on surfaces like plastic, steel, etc. But we should be careful that some of the clothing accessories like buttons, etc. are sometimes made of materials that may unknowingly serve as host to the virus. Therefore, keeping good hygiene and distancing are the best solutions.

What is convalescent plasma and how would it help COVID-19 patients?

Plasma is the component of blood that contains antibodies to fight against infections. However, convalescent plasma is the plasma from recovered patients of COVID-19 containing antibodies against the disease. This antibody-containing plasma from the recovered person can be transfused to a patient of COVID-19 and thus may help the sufferer to fight against the disease or reduce the severity of the illness. According to FDA (US Food & Drug Administration), the use of convalescent plasma therapy has also been studied in previous outbreaks including the 2003 SARS-CoV-1 epidemic, the 2009-2010 H1N1 influenza virus pandemic, and the 2012 MERS-CoV epidemic.



Scientists believe that convalescent plasma therapy will be effective in treating the patients of COVID-19. It is hoped that these antibodies would be able to fight the virus until the patient develops his/her own defence against the virus. A study published in the journal *Proceedings of the National Academy of Sciences* of the United States of America, suggested the effective use of convalescent plasma therapy in severe COVID-19 patients. (Source: *www.who.int*)

How long does coronavirus survive on surfaces?

3 hours:

This is the amount of time we know that coronavirus can survive and remain infectious in **airborne droplets**, but we don't know if humans produce enough in a single cough to infect another person.

Up to 72 hours:

This is the amount of time coronavirus can stay active on **hard, shiny surfaces**. Think things like play equipment, door and public transport handles and your phone.

The virus does degrade over time, but you should avoid touching these surfaces in shared spaces, and if you can't do that, avoid touching your face afterward before thoroughly washing your hands.

Up to 24 hours:

This is the amount of time it took for researchers to find no more viable traces of the virus on cardboard. This is also a good guide for other **porous surfaces**.

Porous surfaces are much less likely to hold viable amounts of the virus.

Image credit: https://theconversation.com/

World Health Organization

When to use a mask

1

If you are healthy, you only need to wear a mask if you are taking care of a person with suspected 2019-nCoV infection

2

Wear a mask if you are coughing or sneezing

3

Masks are effective only when used in combination with frequent hand-washing with alcohol-based hand rub or soap and water

4

If you wear a mask then you must know how to use it and dispose of it properly

World Health Organization

How to **put on, use, take off and dispose** of a mask

1

Before putting on a mask, wash hands with alcohol-based hand rub or soap and water

2

Cover mouth and nose with mask and make sure there are no gaps between your face and the mask

Avoid touching the mask while using it; if you do, clean your hands with alcohol-based hand rub or soap and water

3

Replace the mask with a new one as soon as it is damp and do not re-use single-use masks

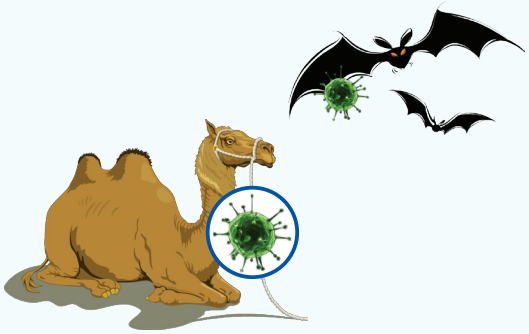
4

To remove the mask: remove it from behind (do not touch the front of mask); discard immediately in a closed bin; wash hands with alcohol-based hand rub or soap and water

COVID-19 MYTH BUSTERS

MYTH ✗

SARS-CoV-2 is just a mutated form of the common cold



FACT ✓

Coronaviruses are a large family of viruses, all of which have spiky proteins on their surface. Some of these viruses use humans as their primary host and cause the common cold. Other coronaviruses, such as SARS-CoV-2, primarily infect animals. Both Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) began in animals and passed into humans.

www.medicalnewstoday.com

You can protect yourself by gargling bleach

People should never put bleach in their mouths. There are no circumstances in which gargling bleach might benefit a person's health. Bleach is corrosive and can cause serious damage.

www.medicalnewstoday.com

Parcels from China can spread coronavirus

From previous research into similar coronaviruses, including those that cause SARS and MERS and are similar to SARS-CoV-2, scientists believe that the virus cannot survive on letters or packages for an extended period of time. The Center for Disease Control explains that "because of poor survivability of these coronaviruses on surfaces, there is likely very low risk of spread from products or packaging that are shipped over a period of days or weeks at ambient temperatures".

www.medicalnewstoday.com

MYTH ✗

The outbreak began because people ate bat soup

FACT ✓

Although scientists are confident that the virus started in animals, there is no evidence to suggest that it came from soup of any kind.

www.medicalnewstoday.com

Coronavirus is the deadliest virus known to humans

Although SARS-CoV-2 does appear to be more serious than influenza, it is not the deadliest virus that people have faced. Others, such as Ebola, have higher mortality rates.

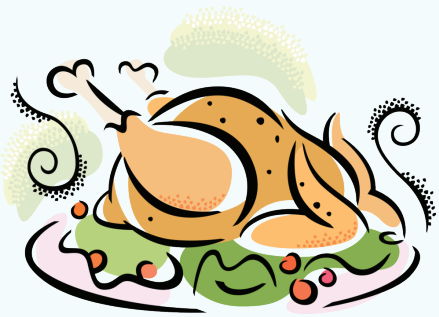
www.medicalnewstoday.com

Home remedies can cure and protect against COVID-19

No home remedies can protect against COVID-19. This goes for vitamin C, essential oils, silver colloid, sesame oil, garlic, fish tank cleaner, burning sage, and sipping water every 15 minutes. The best approach is to adopt a good hand-washing regimen and to avoid places where there may be sick people.

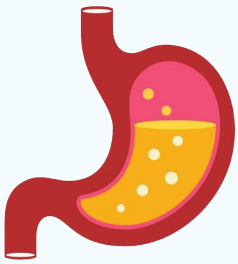
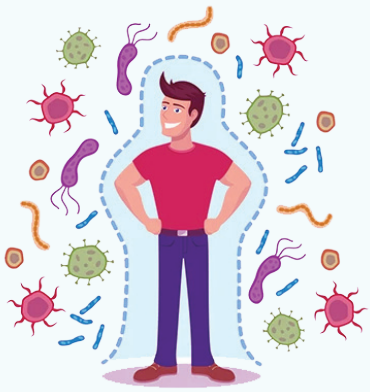
www.medicalnewstoday.com

Non-vegetarian food (meat) consumption can lead to infection



It has been established that the novel coronavirus jumped species from an animal to a human and is originally a zoonotic disease. However, no known animal species has been known to carry this virus as of yet and medical experts have asked people not to believe in rumours and eat non-vegetarian meals as long as they are prepared with utmost care for hygiene.

www.indiatoday.com

MYTH ✗	FACT ✓
COVID-19 can be treated by colloidal silver, vitamins, teas, and essential oils 	There is no evidence for any special role for colloidal silver, vitamins, teas, and essential oils in dealing with COVID-19 symptoms. *www.indiabioscience.org*
Inhaling steam can kill the virus 	There is absolutely no reason to believe this and if you are not careful, you might wind up with a bad steam burn. *www.indiabioscience.org*
The acid in our stomach kills the virus if we drink enough water 	The novel coronavirus affects our respiratory tract, leading to difficulty in breathing, which is a characteristic symptom of COVID-19. The stomach has nothing much to do with the virus and the acid in the stomach would play no role either. *www.indiabioscience.org*
Indians' immune system is better than the west and thus Indians will survive COVID-19 infection better 	For a virus that our bodies have not seen before, such as the novel coronavirus, it doesn't seem likely that there should be any component of immunity that might protect Indians but not others. *www.indiabioscience.org*