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A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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Press Information Bureau
Government of India

Ministry of Defence

Fri, 28 May 2021 1:58PM

DRDO develops critical near isothermal forging technology for aeroengines

Defence Research and Development Organisation (DRDO) has established the near isothermal forging technology to produce all the five stages of high-pressure compressors (HPC) discs out of difficult-to-deform titanium alloy using its unique 2000 MT isothermal forge press. The technology has been developed by Defence Metallurgical Research Laboratory (DMRL), a premier metallurgical laboratory of DRDO at Hyderabad. This is a crucial technology for establishing self-reliance in aeroengine technology. With this development, India has joined the league of limited global engine developers to have the manufacturing capabilities of such critical aero engine components.

To meet the bulk production requirements, DMRL technology was transferred to M/s MIDHANI through a licensing agreement for technology transfer (LATOt). Using the isothermal forge press facility available at DMRL, Hyderabad, bulk quantity (200 numbers) of HPC disc forgings pertaining to various compressor stages have been jointly (DMRL & MIDHANI) produced and successfully supplied to HAL (E), Bengaluru for fitment in to Adour Engine that powers the Jaguar/Hawk Aircrafts.



In India, the Adour engine is overhauled by HAL (E), Bengaluru under a licensed manufacturing agreement with OEM. Like in any aeroengine, the HPC Drum assembly has to be replaced after a specified number of operations or in case of damage. The annual requirements of these high value HPC discs are quite large, warranting indigenisation. HPC drum is a highly stressed sub-assembly and is also subjected to low cycle fatigue and creep at elevated temperature. The raw materials and forgings for HPC drum are required to be of the highest quality which can meet the specified combination of static and dynamic mechanical properties.

DMRL developed this forging technology by integrating various science and knowledge-based tools. The methodology adopted by DMRL is generic in nature and can be tuned to develop other similar aeroengine components. The compressor discs produced using this methodology met all the requirements stipulated by the airworthiness agencies for the desired application. Accordingly, the technology was type certified and letter of technical approval (LoTA) was accorded. Based on the exhaustive component level and performance evaluation test results, HAL (E) and Indian Air Force cleared the components for engine fitment. Apart from DMRL and HAL (E), various

agencies such as MIDHANI, CEMILAC and DGAQA worked in unison to establish this crucial technology.

Raksha Mantri Shri Rajnath Singh has congratulated the scientists of DRDO, Industry and all other agencies involved in the development of this critical Aero Engine related technology.

Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy expressed his satisfaction on achieving this crucial milestone and congratulated the teams involved.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722418>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 28 May 2021 1:58PM

डीआरडीओ ने एयरोइंजन के लिए क्रिटिकल नियर आइसोथर्मल फोर्जिंग टेक्नोलॉजी विकसित की

रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) ने अपने अद्वितीय 2000 मीट्रिक टन आइसोथर्मल फोर्ज प्रेस का उपयोग करके कठिन-से-विकृत टाइटेनियम मिश्र धातु से उच्च दबाव कंप्रेसर (एचपीसी) डिस्क के सभी पांच चरणों का उत्पादन करने के लिए निकट आइसोथर्मल फोर्जिंग तकनीक विकसित की है।

टेक्नोलॉजी का विकास हैदराबाद स्थित डीआरडीओ की प्रमुख धातुकर्म प्रयोगशाला रक्षा धातुकर्म अनुसंधान प्रयोगशाला (डीएमआरएल) द्वारा विकसित की गई है। एयरोइंजन प्रौद्योगिकी में आत्मनिर्भरता प्राप्त करने के लिए यह एक महत्वपूर्ण तकनीक है। इसके साथ ही भारत ऐसे महत्वपूर्ण एयरोइंजन घटकों की निर्माण क्षमता रखने के लिए सीमित वैश्विक इंजन विकास करने वालों की लीग में शामिल हो गया है।



थोक उत्पादन आवश्यकताओं को पूरा करने के लिए डीएमआरएल प्रौद्योगिकी को प्रौद्योगिकी हस्तांतरण (एलएटीओटी) के लिए लाइसेंस समझौते के माध्यम से मैसर्स मिधानी को हस्तांतरित किया गया था। डीएमआरएल, हैदराबाद में उपलब्ध आइसोथर्मल फोर्ज प्रेस सुविधा का इस्तेमाल करके विभिन्न कंप्रेसर चरणों से संबंधित एचपीसी डिस्क फोर्जिंग की थोक मात्रा (200 नंबर) का उत्पादन संयुक्त रूप से (डीएमआरएल और मिधानी द्वारा) किया गया है और एचएएल (ई), बंगलुरु को जगुआर/हॉक विमान को शक्ति देने वाले एडोर इंजन में फिट करने के लिए सफलतापूर्वक आपूर्ति की गई है।

भारत में एडोर इंजन को एचएएल (ई), बंगलुरु द्वारा ओईएम के साथ लाइसेंस प्राप्त मैनुफैक्चरिंग समझौते के तहत ओवरहाल किया गया है। किसी भी एयरोइंजन की तरह एचपीसी ड्रम एसेंबली को अनेक बार काम लिए जाने और क्षतिग्रस्त होने की स्थिति में बदलना होता है। उच्च मूल्य के इन एचपीसी डिस्क की वार्षिक जरूरतें काफी अधिक होती हैं। एचपीसी ड्रम एक अत्यधिक स्ट्रेसड सब-एसेंबली है और इसे कम चक्र थकान और ऊंचे तापमान पर धीरे-धीरे काम करना पड़ता है। एचपीसी ड्रम के लिए कच्ची सामग्री और

फोर्जिंग उच्च गुणवत्ता की होनी चाहिए जो स्थिर और गतिशील यांत्रिक गुणों के निर्दिष्ट संयोजन को पूरा कर सके।

डीएमआरएल ने विभिन्न विज्ञान और ज्ञान-आधारित उपकरणों के एकीकरण से इस फोर्जिंग तकनीक को विकसित किया है। डीएमआरएल द्वारा अपनाई गई पद्धति साधारण प्रकृति की है और इसे अन्य समान एयरोइंजन घटकों को विकसित करने के लिए अनुकूल ट्यून किया जा सकता है। इस पद्धति के उपयोग से उत्पादित कंप्रेसर डिस्क वांछित कार्य के लिए उड़ान योग्य एजेंसियों द्वारा तय सभी आवश्यकताओं को पूरा करती हैं। इसी के अनुसार इस टेक्नोलॉजी को प्रमाणित किया गया और तकनीकी स्वीति प्रदान की गई। संपूर्ण घटक स्तर और प्रदर्शन मूल्यांकन परीक्षण परिणामों के आधार पर, एचएएल (ई) और भारतीय वायु सेना ने इंजन फिटमेंट के लिए घटकों को मंजूरी दी। डीएमआरएल और एचएएल (ई) के अलावा, मिथानी, सेमिलैक और डीजीएक्यूए जैसी विभिन्न एजेंसियों ने इस महत्वपूर्ण तकनीक को स्थापित करने में एक होकर काम किया।

रक्षा मंत्री श्री राजनाथ सिंह ने इस महत्वपूर्ण एयरो इंजन से संबंधित प्रौद्योगिकी के विकास में शामिल डीआरडीओ, उद्योग और अन्य सभी एजेंसियों के वैज्ञानिकों को बधाई दी है।

रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष डॉ. जी सतीश रेड्डी ने इस महत्वपूर्ण उपलब्धि की प्राप्ति पर संतोष व्यक्त किया और इसमें शामिल टीमों को बधाई दी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722482>

Business Standard

Sat, 29 May 2021

DRDO develops near-isothermal forging technology for aero-engines

This technological breakthrough was achieved by the DRDO's premier metallurgical laboratory, the Hyderabad-based Defence Metallurgical Research Laboratory

By Ajai Shukla

New Delhi: The Defence Research and Development Organisation (DRDO) has announced a modest step towards achieving the ultimate aeronautical challenge, one that even resource-rich China is struggling to achieve: Developing a jet engine with the thrust to power a fighter in combat.

“The DRDO established the near-isothermal forging technology to produce all the five stages of high-pressure compressor (HPC) discs out of difficult-to-deform, titanium alloy, using its unique 2000 MT (metric tonne) isothermal forge press,” announced the Ministry of Defence (MoD) on Friday.

This technological breakthrough, which involves developing complex titanium and nickel-based alloys that can withstand temperatures of more than 1,000 degrees Celsius, was achieved by the DRDO's premier metallurgical laboratory, the Hyderabad-based (DMRL).



DMRL, which developed the technology to produce the five-stage HPC discs, is a laboratory without the facilities for bulk production

Defence Metallurgical Research Laboratory

“With this development, India has joined the league of limited global engine developers to have the manufacturing capabilities of such critical aero-engine components,” said the MoD.

A fighter jet engine functions by sucking in a large volume of air, compressing it rapidly in several stages, injecting aviation fuel into the air and then setting it alight to create a high-pressure, high-temperature gaseous mix. That is expelled backward through the exhaust, its reaction propelling the aircraft forward.

To achieve this, jet engines have seven modules, which from front to rear are: the input fan, low pressure and high pressure compressors, the combustion chamber, high pressure and low pressure turbines and the exhaust.

An aero-engine requires finely tuned design and manufacture. For over three decades the DRDO’s Gas Turbine and Research Establishment (GTRE) has spearheaded a multi-laboratory effort to design the so-called Kaveri engine, but with only limited success.

“The (Kaveri) project was sanctioned in March 1989 at an estimated cost of Rs 382.81 crore and Probable Date of Completion (PDC) of December 1996. The PDC was extended to December 2009 and cost was revised and enhanced to Rs 2,839 crore,” Defence Minister AK Antony told Parliament on December 10, 2012.

Even so, the Kaveri’s has achieved a thrust of just about 65 Kilo Newtons (KN), well short of the 95 KN that its premier rivals, the Eurojet EJ200 and the General Electric GE-F414 develop. The DRDO is now exploring the possibility of using the Kaveri as a marine propulsion turbine for warships.

DMRL, which developed the technology to produce the five-stage HPC discs, is a laboratory without the facilities for bulk production. To manufacture the discs in the volumes required, DMRL has transferred technology to defence public sector undertaking (DPSU) MIDHANI through a licensing agreement for technology transfer (LAToT).

“Using the isothermal forge press facility available at DMRL, Hyderabad, DMRL & MIDHANI have jointly produced 200 HPC disc forgings pertaining to various compressor stages. These have been supplied to HAL’s Engine Division in Bengaluru for fitting into the Adour 804/811 and 871 engines that power the Indian Air Force’s (IAF’s) Jaguar/Hawk Aircrafts.

The Adour engine is overhauled by HAL, Bengaluru under a licensed manufacturing agreement with Rolls-Royce, the original equipment manufacturer (OEM). With the HPC Drum assembly required to be replaced at regular intervals, their annual requirements is large, warranting indigenisation for larger export earnings.

The HPC Discs produced by HAL have met all the requirements stipulated by airworthiness agencies. Accordingly, the technology has been type certified and a letter of technical approval (LoTA) accorded.

https://www.business-standard.com/article/economy-policy/drdo-develops-near-isothermal-forging-technology-for-aero-engines-121052801779_1.html

DRDO develops critical aero engine technology

*Developed by the DMRL, this technology helps
establishing self-reliance in aero engine technology*

Development Organisation (DRDO) has established the near isothermal forging technology to produce all the five stages of high-pressure compressor (HPC) discs out of difficult-to-deform titanium alloy using its unique 2000 MT isothermal forge press.

The technology has been developed by the Defence Metallurgical Research Laboratory (DMRL), a premier metallurgical laboratory of DRDO at Hyderabad. This is a crucial technology for establishing self-reliance in aero engine technology. With this development, India has joined the league of limited global engine developers to have the manufacturing capabilities of such critical aero engine components, according to a statement.

To meet the bulk production requirements, DMRL technology was transferred to MIDHANI through a licensing agreement for technology transfer (LAToT). As a result, using the isothermal forge press facility available at DMRL, bulk quantity (200 numbers) of HPC disc forgings of various compressor stages have been jointly produced and successfully supplied to HAL (E), Bengaluru for fitment in to Adour Engine that powers the Jaguar/Hawk Aircrafts.

In India, the Adour engine is overhauled by HAL (E), Bengaluru, under a licensed manufacturing agreement with OEM. Like in any aero engine, the HPC Drum assembly has to be replaced after a specified number of operations or in case of damage. The annual requirements of these high-value HPC discs are pretty large, warranting indigenisation. HPC drum is a highly stressed sub-assembly and is also subjected to low cycle fatigue and creep at elevated temperature. The raw materials and forgings for the HPC drum must be of the highest quality, which can meet the specified combination of static and dynamic mechanical properties.

DMRL developed this forging technology by integrating various science and knowledge-based tools. The methodology adopted by DMRL is generic and can be tuned to create other similar aero engine components. The compressor discs produced using this methodology met all the requirements stipulated by the airworthiness agencies for the desired application. Accordingly, the technology was type certified, and a letter of technical approval (LoTA) was accorded. Based on the exhaustive component level and performance evaluation test results, HAL (E) and Indian Air Force cleared the components for engine fitment. Apart from DMRL and HAL (E), various agencies such as MIDHANI, CEMILAC and DGAQA worked in unison to establish this crucial technology.

Raksha Mantri Rajnath Singh congratulated the scientists of DRDO, Industry and all other agencies involved in developing this critical Aero Engine related technology.

Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy expressing happiness on achieving this crucial milestone, congratulated the teams involved.

<https://www.thehindubusinessline.com/news/science/drdo-develops-critical-aero-engine-technology/article34670165.ece>

DRDO ने विमानों के इंजन पार्ट्स बनाने की टेक्नोलॉजी विकसित की, दुनिया के चुनिंदा देशों में शामिल हुआ भारत

यह टेक्नोलॉजी हैदराबाद स्थित डीआरडीओ की प्रमुख मेटलर्जिकल प्रयोगशाला डिफेंस मेटलर्जिकल रिसर्च लैब (DMRL) द्वारा डेवलेप की गई है।

Edited By साकेत आनंद

रक्षा अनुसंधान और विकास संगठन (DRDO) ने आइसोथर्मल टेक्नोलॉजी विकसित की है, जिसका इस्तेमाल विमानों के इंजनों के पार्ट्स बनाने में किया जाता है। डीआरडीओ की इस उपलब्धि के साथ ही भारत इस तरह की टेक्नोलॉजी हासिल करने वाले चुनिंदा देशों की लीग में शामिल हो गया है।

रक्षा मंत्रालय ने शुक्रवार को बताया कि डीआरडीओ ने अपने यूनिट 2000 मीट्रिक टन आइसोथर्मल फोर्ज प्रेस का उपयोग करके कठिन-से-विकृत टाइटेनियम मिश्र धातु (अलॉय) से उच्च दबाव कंप्रेसर (एचपीसी) डिस्क के सभी पांच चरणों का उत्पादन करने के लिए आइसोथर्मल फोर्जिंग टेक्नोलॉजी विकसित की है। इसके साथ ही भारत उन वैश्विक इंजन मैनुफैक्चरर्स में शामिल हो गया है, जिनके पास विमानों के इंजनों पार्ट्स बनाने की क्षमताएं हैं।



DRDO द्वारा विमानों के इंजन के लिए विकसित की गई टेक्नोलॉजी (फोटो- DRDO/Twitter)

रक्षा मंत्रालय ने कहा, “टेक्नोलॉजी का विकास हैदराबाद स्थित डीआरडीओ की प्रमुख मेटलर्जिकल प्रयोगशाला डिफेंस मेटलर्जिकल रिसर्च लैब (DMRL) द्वारा की गई है। एयरोइंजन टेक्नोलॉजी में आत्मनिर्भरता प्राप्त करने के लिए यह एक महत्वपूर्ण तकनीक है।”

मंत्रालय के एक बयान के मुताबिक, “DMRL ने अलग-अलग विज्ञान और ज्ञान-आधारित टूल्स को साथ लाकर इस फोर्जिंग तकनीक को डेवलप किया है। लैब द्वारा अपनाई गई तकनीक साधारण प्रकृति की है और इसे दूसरे एयरोइंजन पार्ट्स को विकसित करने के लिए भी इस्तेमाल किया जा सकता है। इस तकनीक के उपयोग से बनाई गई कंप्रेसर डिस्क जरूरी काम के लिए उड़ान योग्य एजेंसियों द्वारा तय सभी आवश्यकताओं को पूरा करती हैं।”

रक्षा मंत्रालय के मुताबिक, इसी के अनुसार इस टेक्नोलॉजी को प्रमाणित किया गया और तकनीकी अप्रूवल दी गई। सभी पार्ट्स लेवल और उसकी क्षमता के परिणामों के आधार पर, HAL(E) और भारतीय वायु सेना ने इंजन फिटमेंट के लिए इसे मंजूरी दी। डीएमआरएल और एचएएल (ई) के अलावा, मिथानी, सेमिलैक और डीजीएक्यूए जैसी अलग-अलग एजेंसियों ने इस महत्वपूर्ण टेक्नोलॉजी को विकसित करने में मदद की है।

<https://www.tv9hindi.com/india/drdo-develops-isothermal-technology-for-manufacturing-aero-engine-parts-674279.html>



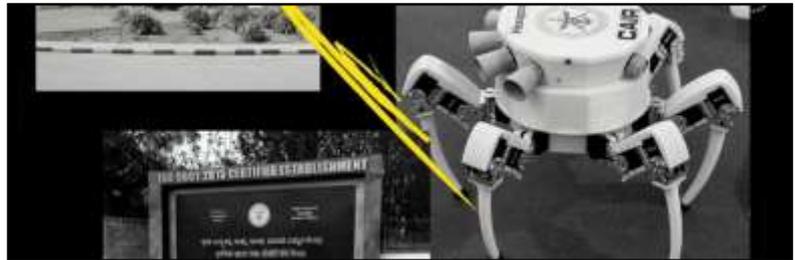
Sun, 30 May 2021

Everything you need to know about India's Centre for Artificial Intelligence and Robotics

CAIR is involved in research and development in AI, robotics, command and control, networking, information and communication security

Did you know India had an exclusive centre for robotics since 1986? Yes, it's true. The Centre for Artificial Intelligence and Robotics (CAIR) lab started with just three staff in a tiny office in Bengaluru. Today, the centre has more than 300 employees.

CAIR is involved in research and development in AI, robotics, command and control, networking, information and communication security, along with the development of mission-critical



products for battlefield communication and management systems. CAIR was appraised for Capability Maturity Model Integration (CMMI) Maturity Level 2 in 2014 and has ISO 9001:2015 certification.

As part of the Defence Research and Development Organisation (DRDO), robotics was one of the priority areas of CAIR, said V S Mahalingam, former director, CAIR.

Mahalingam joined DRDO in 1986 and served in Electronics & Radar Development Establishment (LRDE) till 2000 before he moved to CAIR.

“Concentrating on the development of totally indigenous robots, the lab developed a variety of controllers and manipulators for Gantry, Scara, and other types of robots. With the experience gained from these initial years, the lab developed an autonomous guided vehicle (AGV). The expertise in control systems required for robotics was applied to the development of control laws for Tejas fighter,” Mahalingam added.

CAIR's current focus areas include Netcentric systems for tactical command control and communication systems, intelligent systems, unmanned systems, information security, AI and robotics. In 2012, scientist Sanjay Burman assumed charge as Director of CAIR.

Here, we take a look at a timeline of major CAIR projects over the years.

Nipuna

CAIR scientists developed an artificial intelligence expert system shell called Nipuna in the early 1990s. Nipuna was a computer programme designed to solve complex problems and offer human-like decision-making abilities. Nipuna could monitor the health of radars.

Neural network-based software

Around the same time, the facility's scientists developed a neural network-based software for processing application forms. “The software can correct various human errors in handling forms and also correct spelling mistakes committed by the applicants. After processing, the software would automatically update a database,” Mahalingam added.

Command and control system

Around early 2000, CAIR started the development of a command and control system for decision support. Mahalingam told media that the system was handed to the Indian Army. CAIR also provided software for the fusion of sensor information for battlefield surveillance. Later, the

centre started working on a versatile geographical information system (GIS) for the diverse requirements of defence forces.

Natural Language Processing

CAIR lab supported many research and development efforts related to natural language text processing (NLPs), intelligent data mining, and inferencing engines to benefit the next generation C3I systems.

Command, Control, Communication, and Intelligence (C3I) system integrates computing machines, communication networks and sensors. These systems are predominantly used in military operations to enable information superiority and efficacy.

Mahalingam explained how the centre also established a 3D virtual reality terrain visualisation system with fly-through capability. The lab's current focus is on miniature and micro miniature mobile robotic platforms for futuristic reconnaissance and combat support.

Netra

Designed by a team of 40 scientists at CAIR, Netra is an Internet spy system to capture any dubious voice traffic in Skype or Google Talk.

It intercepts messages with keywords such as 'attack', 'bomb', 'blast' or 'kill' in real-time from tweets, status updates, emails, instant messaging transcripts, internet calls, blogs and forums. "The specifications of the 'Netra' system can be taken as frozen following tests by the Intelligence Bureau and cabinet secretariat, and can be considered for providing multiple user access to security agencies," a press note released in 2014 said.

Initially, RAW was the only user of this monitoring system. However, in 2013, the Ministry of Home Affairs felt that domestic law enforcement agencies should use a second Netra system.

<https://analyticsindiamag.com/everything-you-need-to-know-about-indias-centre-for-artificial-intelligence-and-robotics/>

DRDO fights COVID pandemic

By Dr Sudershan Kumar

As the second wave is wreaking havoc and the nation is grappling with the second wave of the SARS-Cov-2 Coronavirus, some notorious elements of the society have initiated a vicious campaign aimed at demeaning and depreciating all the efforts of the Central Government in tackling the crisis. The second wave has been more devastating, with the number of cases rising manifold. Each day nearly 4000 people are losing their battle against the Coronavirus. Everyone, including those at the helm of the affairs, has been surprised given the sudden unexpected surge. The influx of COVID cases has further choked the already overwhelmed existing health infrastructure. People are running pillar to post in search of beds in hospitals.



The shortage of oxygen, medicines and vaccines have further compounded their miseries. But many organizations and NGOs have come forward, and so has the DRDO. It is one of the country's premier organization, whose "Motto" is with the Sanskrit word "BALSAYA MOOLAM VIGYANAM" which means "Strength's Origin is in Knowledge". Moreover, as is also known, DRDO is for developing cutting-edge indigenous technologies for armed forces has now outreached to lend its support to the government, which is struggling to tackle the devastating second wave of the pandemic. The process has offered several products and facilities that could help the government tackle the COVID-19 pandemic.

DRDO has come forward to install oxygen plants, augment the health infrastructure, and develop and arrange 2DG anti-COVID medicine production for the masses. Besides, DRDO has also developed several other products that prove to be of immense use for front line workers. First and foremost, to address the shortage of oxygen at various hospitals and also to overcome the logistics issues of transporting oxygen, DRDO has installed oxygen generation plants at multiple hospitals as per requirement. This oxygen plant can generate up to 1000litre oxygen per minute and can charge 195 cylinders per day. This can cater to 190 patients at a flow rate of 5 LPM time. This technology is an offshoot of the onboard oxygen generation system (OBOGS) project for medical grade oxygen onboard Tejas fighter aircraft. It utilizes the Pressure Swing Absorption (PSA) technique and molecular sieve technology to generate oxygen from atmospheric air. Further, two PSA based oxygen generation plants have been installed in Delhi at the instance of Prime Minister. Besides, oxygen plant with low flow rate has also been developed. DRDO has also taken the initiative to rope in more industry partners for ramping up production. The salient features of these plants are: high reliability, full independency and automation, low cost, minimum maintenance, safe to operate with reduced logistic support. These oxygen plants work 24x7x365 days. Moreover, 330 plants will be installed in three month's time from PM's Care fund. Secondly, to augment the health care infrastructure, DRDO has also made COVID hospitals at various locations across the country. DRDO in consultation with state health authorities has worked out the specifications of infrastructure especially on ICU beds, Oxygen beds and normal beds etc. All these hospitals are made as per specific standards. These makeshift hospitals comprise of negative pressure chambers, required to contain the spread of the virus. In addition to this pharmacy and diagnostic laboratory required for COVID tests have also been provided in the hospitals.

Simultaneously, required logistic as well as necessary support is also provided to the medical team so that there is no interruption of medicare. As of date, DRDO has established six make and shift tented hospitals and also upgraded three existing hospitals. Thirdly and most importantly, concerning saving lives of human beings from the SARS-Cov-2 virus infection, work for the development of anti-COVID therapeutic application of 2-DG molecule was also undertaken by INMAS (Institute of Nuclear medicine and Allied Sciences) scientists in the year 2020 itself. These scientists conducted experiments with the support of the Centre for Cellular Molecular Biology (CCMB) Hyderabad. During experiments, it was observed that this 2-DG molecule is effective against the SARS-Cov-2 virus by inhibiting virus growth. Consequently, based on the aforementioned experimental findings the Drug Controller General of India (DCGI) gave clearance for its clinical trials. Accordingly, Phase-1, Phase-2a and Phase-2b trials were conducted on several COVID patients in different hospitals across the country and encouraging results were obtained. It proved beyond doubt that the drug is safe to administer, and patients have shown significant recovery. Based on these significant results, DCGI further permitted clinical trials. Accordingly, Phase-3 trials were conducted between December 2020 and March 2021 at COVID designated hospitals across the country. Again the data was presented to DCGI. In the 2-DG arm, a significantly higher proportion of patients improved symptomatically and became free from supplemented oxygen dependence (42% vs 31%) in comparison to standard of care (SOC), indicating early relief from oxygen therapy. Based on these findings, DCGI granted permission for the emergency usage of the drug. Being a generic molecule and analogue of glucose, 2-DG can be easily produced and made available in plenty within the country.

The drug comes in powder form in sachets. It is taken orally by dissolving in water. It accumulates in virus-infected cells and prevents virus growth by stopping viral synthesis and energy production. Its selective accumulation in virally accumulated cells makes the drug unique. In the ongoing COVID wave, this drug is expected to save precious lives due to drug operation in infected cells. Lastly, one of the DRDO laboratories, Centre for Artificial Intelligence and Robotic (CAIR) Bangalore in collaboration with 5C Network & HCG Academics, developed an Artificial Intelligence (AI) based intelligent, secure web-based SARS-Cov-2 virus detection application software called ATMAN-AI. This software has the ability to detect Covid-19 infection by analyzing X-rays images. This web-based COVID detection software has a detection accuracy of around 96.4 percent. This will prove useful for early detection of COVID infection in patients. Needless to mention here, the DRDO fraternity had started developing products for the support of corona warriors and front line workers from March 20th 2020 itself, the time when coronavirus was first detected in India.

The number of products developed are: Five layered 99 masks for doctors treating COVID-19 patients in hospitals, Personnel Sanitizer Enclosures commonly known as “Full Body Disinfection Chamber, Bio suits the most unique the fire-fighting equipment as an area sanitizer, multi-patient ventilators, hand sanitizers, face mask and many others. The author is of the view that in this country, there is no dearth of talent. The innovative minds working in DRDO and other scientific organizations can produce wonders. There is a need for proper coordination and channelization among all the stakeholders. Moreover, change in mindset to accept the use of advanced technologies for the welfare of human beings and with a sense of responsibility is also required. Therefore, it is high time, when the nation is society should join hands to fight this invincible enemy and extend support to people in all possible ways rather than criticizing each other for selfish motto.

(The author is former Director General & Special Secretary DRDO, MoD GoI)

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<https://www.dailyexcelsior.com/drdo-fights-covid-pandemic/>

DRDO's anti-Covid drug priced at Rs 990 per sachet

The drug was approved by the Drugs Controller General of India (DGCI) earlier this month for emergency use as an adjunct therapy in moderate to severe coronavirus patients

New Delhi: The anti-Covid drug developed by the Defence Research and Development Organisation (DRDO) has been priced at Rs 990 per sachet, news agency ANI reported citing officials.

The drug, developed in collaboration with Hyderabad-based pharma company Dr Reddy's Laboratories (DRL), will be provided to central and state government hospitals at a discounted price, officials said.

Earlier, Union Defence Minister Rajnath Singh had said that 10,000 sachets of the anti-Covid drug, known by the name 2-deoxy-D-glucose (2-DG), will be available in the market initially.

"This 2-DG drug developed by DRDO and DRL is a perfect example of India's scientific prowess and a milestone in the efforts towards self-reliance," Singh had said.

The drug was approved by the Drugs Controller General of India (DGCI) earlier this month for emergency use as an adjunct therapy in moderate to severe coronavirus patients.

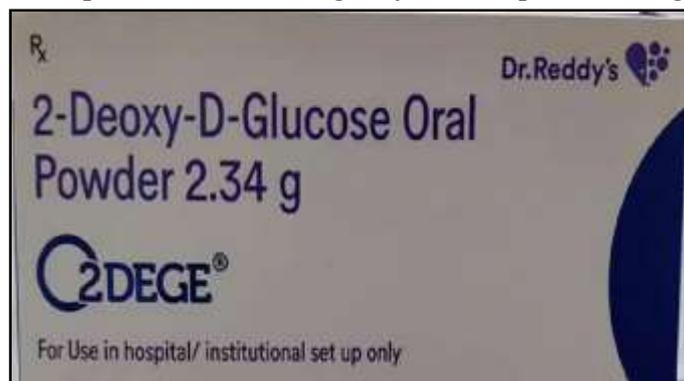
During its release, the government said that clinical trial data show that the molecule helps in faster recovery of patients hospitalised with Covid-19, and reduces their dependence on supplemental oxygen.

The drug accumulates in virus-infected cells, and prevents the growth of the virus by stopping viral synthesis and energy production. Its selective accumulation in virally-infected cells makes this drug unique, a government release said.

"The drug will be of immense benefit to the people suffering from Covid-19," it added.

The drug is available in powder form in a sachet, and can be taken orally after dissolving in water.

<https://indianexpress.com/article/india/drdo-covid-drug-2dg-price-market-7334330/>



The drug is available in powder form in a sachet, and can be taken orally after dissolving in water.

Price of DRDO's 2DG anti-COVID-19 drug fixed at Rs 990, government hospitals to get discount

INMAS-DRDO Scientists in April 2020, conducted lab experiments with the Centre for Cellular and Molecular Biology (CCMB), Hyderabad

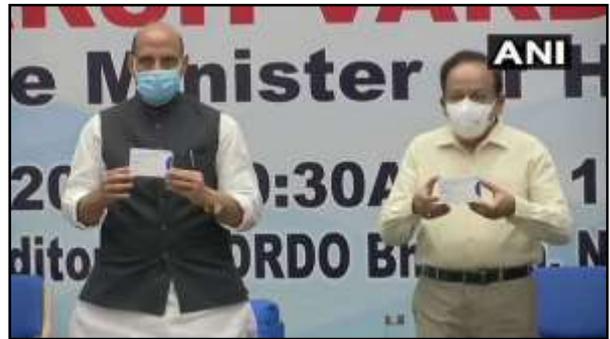
Edited By Shampa Sen

The 2DG anti-COVID-19 drug by Defence Research and Development Organisation (DRDO) has been priced at Rs 990 per sachet by Dr Reddy's lab. As per ANI, the Central and state government hospitals would be provided with the medicine at a discounted price.

2DG (2 Deoxy-D-glucose) anti-COVID-19 drug has been developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of the Defence Research and Development Organisation (DRDO), in collaboration with Hyderabad-based pharma company Dr Reddy's Laboratories (DRL).

Union Defence Minister Rajnath Singh on Thursday said that 10,000 sachets of the anti-COVID-19 drug will be available in the market. Karnataka Health Minister Dr K Sudhakar last week said that the 2DG drug developed by DRDO could be a game-changer in the fight against the COVID-19 virus.

The 2-DG drug developed by DRDO is a big breakthrough and could be a game-changer in the battle against the pandemic as it helps in faster recovery of the hospitalised patients and reduces oxygen dependence. A higher proportion of patients treated with 2DG showed RT-PCR negative conversion in COVID-19 patients.



(Image Source: ANI)

The experiment

INMAS-DRDO Scientists in April 2020, conducted lab experiments with the Centre for Cellular and Molecular Biology (CCMB), Hyderabad.

They found that this molecule works effectively against the SARS-CoV-2 virus and inhibits viral growth.

Based on these results, the DCGI and CDSCO permitted Phase-II clinical trial of 2-DG in COVID-19 patients in May 2020.

The DRDO, along with DRL, Hyderabad, started the clinical trials to test the safety and efficacy of the drug in COVID-19 patients.

In Phase-II trials conducted during May-October 2020, the drug was found to be safe and showed significant improvement in their recovery.

Phase-II trial was conducted on 110 patients in six hospitals. Phase IIb (dose-ranging) clinical trial was conducted at 11 hospitals across India.

<https://www.dnaindia.com/india/report-price-of-drdo-2dg-anti-covid-19-drug-fixed-at-rs-990-government-hospitals-to-get-discount-2892321>

सरकारी अस्पतालों, केंद्र और राज्य सरकार को कम दाम पर मिलेगी DRDO की कोरोना दवा 2-डीजी, जानें क्या है कीमत

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की ओर से विकसित की गयी कोविड-19 रोधी दवा 2-डीजी (Covid-19 Medicine 2DG) की दूसरी खेप गुरुवार को जारी की गई थी। जानकारी के मुताबिक अब ये दवा बाजार में भी उपलब्ध हो सकेगी।

By Shashank pandey

नई दिल्ली: रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की ओर से विकसित की गयी कोविड-19 रोधी दवा 2-डीजी (Covid-19 Medicine 2DG) को लेकर एक बड़ी खबर सामने आई है। (डीआरडीओ) की कोरोना दवा 2-डीजी सरकारी अस्पतालों, केंद्र और राज्य सरकारों को कम कीमत पर मुहैया कराई जाएगी। समाचार एजेंसी एएनआइ ने सरकारी अधिकारी के हवाले से जानकारी दी है कि डॉ रेड्डीज़ लैब द्वारा विकसित वि DRDO की 2DG एंटी-कोविड 19 दवा की कीमत 990 रुपये प्रति पाउच रखी गई है। सरकारी अस्पतालों, केंद्र और राज्य सरकार को रियायती मूल्य पर दवा उपलब्ध कराई जाएगी।

क्या है कीमत ?

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की ओर से विकसित की गयी कोविड-19 रोधी दवा 2-डीजी (Covid-19 Medicine 2DG) की एक पाउच की कीमत 990 रुपये रखी गई है। हालांकि, इसे सरकारी अस्पतालों, केंद्र और राज्य सरकारों को कम कीमत पर दिया जाएगा।

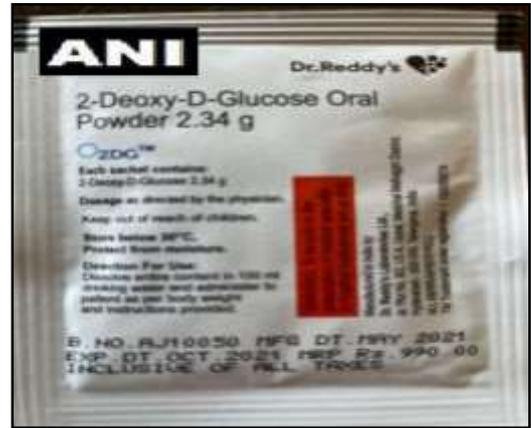
डीआरडीओ द्वारा विकसित की गई कोरोना दवा 2-डीजी (Covid-19 Medicine 2DG) की दूसरी खेप गुरुवार को जारी की गई। डॉ रेड्डीज़ लैब ने इसे जारी किया। इस खेप में 2डीजी दवा के 10,000 सैशे जारी किए गए। जानकारी के मुताबिक अब ये दवा बाजार में भी उपलब्ध हो सकेगी। कोविड-19 की दूसरी लहर से देश में जारी संघर्ष के बीच डीआरडीओ की ओर से विकसित की गई ये दवा 2-डीजी की पहली खेप 17 मई को जारी की गई थी।

कोरोना के मध्यम लक्षण वाले और गंभीर लक्षण वाले मरीजों पर 2-डीऑक्सी-डी-ग्लूकोज (2-डीजी) दवा के आपातकालीन इस्तेमाल को भारत के औषधि महानियंत्रक (डीजीसीआई) की ओर से मंजूरी मिल चुकी है।

ऑक्सीजन की निर्भरता को कम करती है ये दवा

रक्षा मंत्रालय ने आठ मई को एक बयान में बताया था कि 2-डीऑक्सी-डी-ग्लूकोज (2-डीजी) के क्लिनिकल ट्रायल में पता चला है कि इससे अस्पताल में भर्ती मरीजों की ऑक्सीजन पर निर्भरता को कम करने में मदद मिलती है। साथ ही इस दवा से मरीज जल्दी ठीक होते हैं।

<https://www.jagran.com/news/national-drdo-anti-covid-19-drug-2dg-would-provide-the-medicine-at-a-discounted-price-to-government-hospitals-central-and-state-know-price-here-21684978.html>



दिल्ली: कोरोना मरीजों को राहत, DRDO ने सरदार वल्लभभाई पटेल कोविड हॉस्पिटल में और 250 बेड्स बढ़ाए

पिछले महीने 19 अप्रैल को 500 बेड्स की सुविधाओं के साथ इसकी शुरुआत हुई थी। इससे पहले कोरोना के मामलों में आई कमी को देखते हुए इसी साल फरवरी के पहले हफ्ते में डीआरडीओ ने इस फैसिलिटी को बंद कर दिया था।

Edited By: दीपक पोखरिया

रक्षा अनुसंधान और विकास संगठन (DRDO) की ओर से दिल्ली छावनी में शुरू किए गए सरदार वल्लभभाई पटेल कोविड अस्पताल में और बेड्स बढ़ाए हैं। एक सरकारी अधिकारी ने रविवार को बताया कि डीआरडीओ ने दिल्ली छावनी के सरदार वल्लभभाई पटेल कोविड अस्पताल में 250 और बेड्स बढ़ाए हैं। साथ ही कहा कि आवश्यकता पड़ने पर अस्पताल में और भी बेड्स बढ़ाए जाएंगे।

पिछले महीने 19 अप्रैल को 500 बेड्स की सुविधाओं के साथ इसकी शुरुआत हुई थी। इससे पहले कोरोना के मामलों में आई कमी को देखते हुए इसी साल फरवरी के पहले हफ्ते में डीआरडीओ ने इस फैसिलिटी को बंद कर दिया था, लेकिन देश में कोरोना की दूसरी लहर में संक्रमण के मामले बढ़ने पर इसे शुरू करने का फैसला किया था।



दिल्ली में DRDO ने सरदार वल्लभभाई पटेल कोविड हॉस्पिटल में और 250 बेड्स बढ़ाए

डीआरडीओ की तरफ से शुरू किए गए इस कोविड अस्पताल में सभी बेड ऑक्सीजन की सुविधा के साथ होंगे। इसके अलावा यहां बड़ी संख्या में वेंटिलेटर मौजूद हैं, जिनका कोई चार्ज नहीं लगेगा। यहां पर बेसिक टेस्टिंग सुविधाएं उपलब्ध होंगी। साथ ही डब्लूएचओ मानकों के अनुसार एयर-कंडीशनिंग होगी। वहीं अगर न्यूरो या कार्डियक केस हैं, तो मरीज को एम्स में भेजा जाएगा।

वहीं दिल्ली के मुख्यमंत्री अरविंद केजरीवाल ने शनिवार को कहा कि दिल्ली में पिछले 24 घंटे में कोरोना वायरस के करीब 900 नए मामले सामने आए हैं और अगर नए मामलों की संख्या में गिरावट जारी रहती है तो शहर में ज्यादा गतिविधियों को मंजूरी दी जाएगी। केजरीवाल ने शुक्रवार को घोषणा की थी कि राजधानी में सोमवार से धीरे-धीरे लॉकडाउन खत्म करने की प्रक्रिया शुरू हो जाएगी।

<https://www.tv9hindi.com/state/delhi-ncr/delhi-relief-for-corona-patients-drdo-raises-250-beds-at-sardar-vallabhghai-patel-covid-hospital-676261.html>

DRDO's 500-bed Covid hospital inaugurated in Jammu

Synopsis

Of the total 500 beds here at Bhagwati Nagar Centre, 125 would be Intensive Care Unit (ICU) beds, while others would be a set of Covid beds with 24 hours oxygen facility.

Jammu and Kashmir Lt Governor Manoj Sinha on Saturday inaugurated the Defence Research and Development Organisation's (DRDO) 500-bed Covid hospital in Jammu to ramp up the healthcare infrastructure to effectively deal with the coronavirus pandemic.

Of the total 500 beds here at Bhagwati Nagar Centre, 125 would be Intensive Care Unit (ICU) beds, while others would be a set of Covid beds with 24 hours oxygen facility.

The hospital would be equipped with ventilators, monitors, in-house pharmacy, diagnostic facility, X-Ray and CT Scan machines.

"I am grateful to Prime Minister Narendra Modi, Home Minister Amit Shah and Defence Minister Rajnath Singh for extending all possible assistance to Jammu and Kashmir," the Lt Governor said after inaugurating the hospital.

Speaking on the management of ongoing pandemic and future challenges, Sinha observed that the DRDO hospital, with efficient mechanisms, would play an important role in adding to the government's efforts in the fight against the pandemic.

"I must congratulate and appreciate Chairman, DRDO, G Satheesh Reddy and his entire team working round-the-clock to build this well-equipped medical facility in record time," Sinha said.

He said the health infrastructure in Jammu and other areas of the division continues to be the backbone of healthcare services.

"This hospital too is expected to become fully operational in 3-4 days, after trial run of all the facilities," he said.

Underlining the importance of providing best healthcare services to the people, especially those living in remote areas, the Lt Governor remarked that the robust health infrastructure in Jammu division with decentralised community health system in the form of panchayat covid care centres has an extensive outreach even in several far-flung locales.

"We have also devised an effective and rapid response system to quickly mobilise the physical and human resources within the healthcare delivery apparatus," he said.

Seeking support of the people in the fight against the pandemic, he said, "We all as a society must fight the pandemic together and recalibrate our priorities, giving utmost importance to Covid protocol and vaccination."

"So, I urge every citizen of Jammu and Kashmir to follow Covid-appropriate behaviour for weeks and months to effectively tackle this health crisis," he said.

Meanwhile, Sinha went around the various sections of the newly established hospital, including patient's block, ICU ward, general wards, pharmacy, wherein, he inspected and enquired about the facilities available for the patients. He directed the health functionaries to ensure strict compliance of the hospital referral policy for effective patient care management.

<https://economictimes.indiatimes.com/news/india/drdo-500-bed-covid-hospital-inaugurated-in-jammu/articleshow/83063885.cms>



J & K Lt Governor Manoj Sinha during the inauguration of a 500-bedded COVID-19 hospital, prepared by the DRDO, at Bhagwati Nagar in Jammu.

Lt Governor, Manoj Sinha inaugurates DRDO's 500-bedded Covid Hospital, dedicates the facility to Jammu

Jammu: In yet another move to ramp up the healthcare infrastructure to effectively deal with Covid-19 pandemic, Lieutenant Governor, Manoj Sinha today inaugurated the Defence Research and Development Organisation's (DRDO) 500-bedded Covid Hospital and dedicated the facility to Jammu.

Of the total 500 beds here at Bhagwati Nagar Centre, 125 would be Intensive Care Unit (ICU) beds, while others would be a set of covid- beds with 24 hours oxygen facility. The Hospital would be equipped with Ventilators, Monitors; in-house Pharmacy, Diagnostic Facility, X Ray and CT Scan facility.



“I am grateful to Prime Minister Narendra Modi, Home Minister Amit Shah and Defence Minister Rajnath Singh for extending all possible assistance to J&K”, said the Lt Governor.

Speaking on the management of ongoing pandemic and future challenges, the Lt Governor observed that the DRDO hospital, with efficient mechanism will play an important role in adding to the government's efforts in the fight against Covid pandemic.

“I must congratulate and appreciate Chairman, DRDO Dr. G Satheesh Reddy and his entire team working round-the-clock to build this well-equipped medical facility in record time”, the Lt Governor added.

Our health infrastructure in Jammu and other areas of the division continues to be the backbone of healthcare services. This hospital too is expected to become fully operational in 3-4 days, after trial run of all the facilities, said the Lt Governor.

Underlining the importance of providing best healthcare services to the people, especially those living in remote areas, the Lt Governor remarked that the robust health infrastructure in Jammu division with decentralized community health system in the form of Panchayat Covid Care Centres has an extensive outreach even in several far-flung locales. We have also devised an effective and rapid response system to quickly mobilize the physical and human resources within healthcare delivery apparatus, he added.

We all as society must fight the pandemic together & recalibrate our priorities, giving utmost importance to Covid protocol and vaccination. So, I urge every citizen of J&K to follow Covid Appropriate Behaviour for weeks & months to come to effectively tackle this health crisis, said the Lt Governor.

Meanwhile, the Lt Governor went around the various sections of the newly established Hospital including Patient's block, ICU ward, General wards, Pharmacy, wherein, he inspected and enquired about the facilities available for the patients.

He directed the health functionaries to ensure strict compliance of the hospital referral policy for effective patient care management.

It was informed that all the Information and Record would be maintained through Hospital Management Software for effective management of Hospital's functioning. Wi-Fi facility, water

Supply with RO facility, camera surveillance with all safety norms and other essential facilities would be extended to the patients.

Along with Sh. Jugal Kishore Sharma, Member Parliament; Sh. Chander Mohan Gupta, Mayor, Jammu Municipal Corporation and Sh. Bharat Bhushan, DDC Chairperson Jammu, prominent among others present on the occasion were Sh. Rajeev Rai Bhatnagar, Advisor to Lt Governor; Sh. BVR Subrahmanyam, Chief Secretary; Sh. Atal Dulloo, Financial Commissioner, Health & Medical Education Department; Sh. Nitishwar Kumar, Principal Secretary to the Lt Governor; Dr. Raghav Langer, Divisional Commissioner Jammu; Dr. Shashi Sudhan Sharma, Principal & Dean GMC & AH's Jammu; Sh. Anshul Garg, Deputy Commissioner Jammu; Choudhary Mohammad Yasin, Mission Director, NHM and Dr. Renu Sharma, Director Health Services Jammu.

DRDO Officers present were Dr. Lokesh Kumar Sinha, Director DGRE, Dr. Anil Khurana, Chief Engineer R&D North and Sh. Harpreet Singh, Senior Administrative Officer TBRL.

<https://indiaeducationdiary.in/lt-governor-manoj-sinha-inaugurates-drdo-500-bedded-covid-hospital-dedicates-the-facility-to-jammu/>

अमर उजाला

Sun, 30 May 2021

डीआरडीओ का कमाल: रिकॉर्ड 20 दिन में बना दिया इन सुविधाओं से लैस अस्पताल, देखिए तस्वीरें

जम्मू: प्रदेश में डीआरडीओ के पहले 500 बेड कोरोना अस्पताल का शनिवार को उप-राज्यपाल मनोज सिन्हा ने लोकार्पण किया। अस्पताल रिकॉर्ड 20 दिनों में बनकर तैयार हुआ है। अस्पताल में 125 बेड का आईसीयू वार्ड है। इसके साथ ही यहां 24 घंटे ऑक्सीजन की आपूर्ति की व्यवस्था की गई है। तीन से चार दिन के ट्रायल रन के बाद यहां मरीजों को सेवाएं मिलने लगेंगी। एक अन्य अस्पताल श्रीनगर में भी बन रहा है।

जम्मू के भगवती नगर में रक्षा शोध और विकास संगठन (डीआरडीओ) की ओर से बनाए गए अस्पताल का लोकार्पण करने के बाद उप-राज्यपाल ने कहा कि कोरोना वायरस संक्रमण के खिलाफ लड़ाई में डीआरडीओ का अस्पताल अहम रोल अदा करेगा। तीन से चार दिन के ट्रायल रन के बाद अस्पताल मरीजों को सेवाएं देने के लिए खोल दिया जाएगा। उप-राज्यपाल ने लोगों को बेहतर स्वास्थ्य सुविधाओं के महत्व को दर्शाते हुए कहा कि दूरदराज के क्षेत्रों में रहने वाले लोगों को भी अपने घरों के पास ही कोरोना काल में चिकित्सा सुविधा मिले इसके लिए प्रत्येक पंचायत में कोविड केयर सेटर तैयार किए जा रहे हैं।



DRDO hospital jammu - फोटो : अमर उजाला

उन्होंने कहा कि कोरोना महामारी से समाज को मिलकर लड़ना है। कोविड प्रोटोकॉल व वैक्सीन इस लड़ाई में अहम रोल अदा कर रही हैं। ऐसे में सभी नागरिकों को कोविड उपयुक्त व्यवहार का पालन करना चाहिए। कहा कि अगले कुछ महीने तक प्रोटोकॉल का पालन कर स्वास्थ्य संबंधी संकट पर काबू पर पाया जा सकता है।

सिन्हा ने अस्पताल के विभिन्न वार्डों का दौरा कर उपलब्ध सुविधाओं का जायजा लिया। उन्होंने स्वास्थ्य अधिकारियों को मौके पर ही निर्देश भी दिए कि प्रभावी मरीज केयर प्रबंधन के तहत अस्पताल रेफरल पालिसी का कड़ाई से पालन किया जाए। प्रधानमंत्री नरेंद्र मोदी, गृह मंत्री अमित शाह और रक्षा मंत्री

राजनाथ सिंह का आभार प्रकट करते हुए कहा कि कोरोना काल में उन्होंने जम्मू कश्मीर के लोगों की स्वास्थ्य सुविधाओं का पूरा खयाल रखते हुए डीआरडीओ अस्पताल का निर्माण करवाया है। उन्होंने डीआरडीओ के चेयरमैन डॉक्टर जी. सतीश रेड्डी व उनकी पूरी टीम को रिकार्ड समय में 500 बेड वाला अस्पताल जम्मू के लोगों के लिए तैयार करने पर बधाई दी।

अस्पताल में वेंटिलेटर, मॉनिटर, अंदर ही दवा की दुकान, जांच की सुविधा, एक्स-रे, सीटी स्कैन की सुविधा उपलब्ध होगी।

इसके साथ ही अस्पताल में सभी सूचना व रिकॉर्ड का प्रभावी प्रबंधन हॉस्पिटल मैनेजमेंट साफ्टवेयर के जरिये किया जाएगा। कोविड अस्पताल में वाईफाई सुविधा के अलावा आरओ से पेयजल आपूर्ति, कैमरा सर्विलांस और अन्य सुरक्षा नियमों का अपनाया गया है।

<https://www.amarujala.com/photo-gallery/jammu/drdo-set-a-record-of-500-beds-corona-hospital-in-jammu-in-20-days?pageId=5>

KASHMIR READER

Mon, 31 May 2021

LG visits DRDO's under-construction Covid Hospital at Khonmoh

Srinagar: Lieutenant Governor Manoj Sinha on Sunday visited the construction site of Defence Research and Development Organisation's (DRDO) 500-bed COVID Hospital at Khonmoh and inspected the work done.

While reviewing the progress made so far, the Lt Governor directed the DRDO and district officials to expedite the pace of work and complete the Hospital by 5th June for trial-run of all the facilities.

Emphasising the importance of developing specialized critical care for infants and children, the Lt Governor directed the officials to prepare a 25-bed Paediatric Intensive Care Unit (PICU) in the facility with a dedicated team of doctors, nurses, dieticians and coordinators.

Take comprehensive measures to ensure that staffing, medical supplies, durable equipment, diagnostic tools, and other logistics are ready within the timeline, the Lt Governor told the officers. "My focus is to ensure high quality of care with sincere effort, rapid and efficient interventions, while integrating emergency response of healthcare services at the Hospital to fight Covid-19 pandemic", observed the Lt Governor.

Nothing is more important than people's lives and the administration is working round-the-clock for the best healthcare facilities for everyone and in every corner of J&K, added the Lt Governor. During his visit, the Lt Governor was informed that the hospital has the capacity for 125 ICU beds and 375 beds with oxygen connectivity.

The Lt Governor asked the officials to equip the facility with CT Scan machines and other medical imaging techniques.

The Lt Governor reiterated that the operationalization of DRDO's Hospitals in twin cities of Jammu and Srinagar would strengthen Government's efforts against Covid pandemic, besides substantially increasing the Covid dedicated bed capacity and treatment in J&K.

The Lt Governor, on May 29, had inaugurated the DRDO's 500-bedded Covid hospital in Jammu to ramp up the healthcare infrastructure to effectively deal with the Corona virus pandemic.

<https://kashmirreader.com/2021/05/31/lg-visits-drDOS-under-construction-covid-hospital-at-khonmoh/>



जनरल बीसी जोशी के नाम से जाना जाएगा डीआरडीओ द्वारा बनाया जा रहा कोविड अस्पताल

मेडिकल कॉलेज हल्द्वानी के मैदान में डीआरडीओ द्वारा बनाए जा रहे 500 बेड के अस्पताल को जनरल बीसी जोशी कोविड अस्पताल के नाम से जाना जाएगा। इसका संचालन एसटीएच के डॉक्टर नर्सिंग व पैरा मेडिकल स्टाफ ही करेगा।

By Skand Shukla

हल्द्वानी: मेडिकल कॉलेज हल्द्वानी के मैदान में डीआरडीओ द्वारा बनाए जा रहे 500 बेड के अस्पताल को जनरल बीसी जोशी कोविड अस्पताल के नाम से जाना जाएगा। इसका संचालन एसटीएच के डॉक्टर, नर्सिंग व पैरा मेडिकल स्टाफ ही करेगा। मेडिकल कॉलेज के प्राचार्य डॉ. सीपी भैसोड़ा ने मामले में पत्र जारी किया है।

प्राचार्य ने बताया कि जनरल बीसी जोशी कोविड अस्पताल में 125 आईसीयू एवं 375 ऑक्सीजन बेड उपलब्ध होंगे। इसका संचालन एसटीएच प्रबंधन द्वारा किया जाएगा। पूरे अस्पताल की देखरेख का जिम्मा एसटीएच के एमएस के पास होगा। इसके अलावा एसटीएच की नर्सिंग सुपरिटेण्डेंट के सुपरविजन में नर्सिंग सेवाओं व हाउस कीपिंग का संचालन होगा। इस काम के लिए कोई विशेष वेतन-भत्ता देय नहीं होगा। हालांकि यह अभी पूरी तरह से साफ नहीं हो पाया है कि अस्पताल का शुभारंभ कब होगा।



लखनऊ की एजेंसी कर रही नर्सिंग-पैरामेडिकल स्टाफ की भर्ती

नर्सिंग-पैरामेडिकल स्टाफ की भर्ती का काम लखनऊ की एक कंपनी को दिया गया है। एजेंसी ने कुछ नर्सों की भर्ती कर जवाइनिंग के लिए भी भेज दिया है। जबकि जानकारों का कहना है कि कुछ डाटा इंटी ऑपरेटर समेत कुछ स्टाफ की भर्ती मेडिकल कॉलेज स्तर पर भी हो रही है।

एसटीएच पैक होने के बाद शिफ्ट किए जाएंगे मरीज

एसटीएच में डॉक्टरों की पहले से कमी हैं। ऐसे में नए अस्पताल से डॉक्टरों को दोहरा दबाव झेलना पड़ेगा। हालांकि सूत्रों का कहना है कि एसटीएच में कोरोना के मरीजों के लिए करीब 200 से ज्यादा बेड उपलब्ध हैं। ऐसे में जब यह 200 बेड पैक होंगे, उसके बाद ही जनरल बीसी जोशी कोविड अस्पताल में मरीजों को भर्ती किया जाएगा।

<https://www.jagran.com/uttarakhand/nainital-covid-hospital-being-built-by-drdo-to-be-known-as-general-bc-joshi-21690848.html>

DRDO to hand over 300 bedded COVID hospital in Guwahati by June this year

By Bikas Singh

Synopsis

Assam Chief Minister Himanta Biswa Sarma visited Sarusajai Sports Complex in the city and took stock of ongoing construction of the 300 bedded COVID hospital being set up by Defence Research and Development Organisation (DRDO) there for COVID patients.

Defence Research and Development Organisation (DRDO) which is constructing 300 bedded COVID Hospital in Guwahati will hand over to state government the facility by June this year.

Assam Chief Minister Himanta Biswa Sarma visited Sarusajai Sports Complex in the city and took stock of ongoing construction of the 300 bedded COVID Hospital being set up by Defence Research and Development Organisation (DRDO) there for COVID patients.

The Chief Minister informed that Assam Government had signed an MoU with DRDO to set up a 300 bed COVID hospital with 100 ICU beds and 200 beds with oxygen facility. DRDO is expected to hand over the facility to the state Government in the first week of June, he said. The Chief Minister thanked DRDO for completing the project in short time and said this facility would greatly augment the COVID treatment infrastructure.

Exuding confidence that COVID positivity rate and death rate would soon come down in the state, Sarma said that 5 lakh people in Kamrup Metro have been vaccinated so far out of the target of 12 lakh. Likewise, direction is given to conduct COVID inoculation at a fast pace in cities like Dibrugarh, Tinsukia etc where positivity rate is high, he added.

<https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/drdo-to-hand-over-300-bedded-covid-hospital-in-guwahati-by-june-this-year/articleshow/83038102.cms>



Representative Image

Gujarat: DRDO hospital primed for swift response

Gandhinagar: Chief minister Vijay Rupani had a look at the 900-bed Covid hospital, set up in conjunction with the Defence Research and Development Organisation (DRDO), at the Mahatma Mandir premises on Saturday, to inspect preparedness and to make sure it can be made fully operational in 24 hours.

He expressed satisfaction at the facilities, including ICU wards and the captive pressure swing adsorption (PSA) plant which will produce 300 metric tonnes of oxygen from the atmosphere.

Rupani said the state administration is fully alert despite the steady decline in the number of Covid cases in the state from 14,000 last month to about 2,500 yesterday. He said there should be no shortage of oxygen in the state.

He said the health department has planned a separate paediatric ward, ready with extra beds, medicines, injections etc to meet a likely third wave of Covid which may affect children more, in consultation with the expert doctors task force on the basis of their experiences in the first and second wave. The administration is also ready make changes if required.

Describing vaccines as an infallible weapon against the coronavirus, he said over 1.20 lakh vaccines are being given every day to the 18-44 age group in 10 cities of the state, with prior registration and intimating of place and date through SMSes. The CM said 15 lakh such persons have been covered so far.

<https://timesofindia.indiatimes.com/city/ahmedabad/drdo-hosp-primed-for-swift-response/articleshow/83074402.cms>



Sat, 29 May 2021

Odisha Govt places order for DRDO's 2DG anti-covid drug

Bhubaneswar: The Odisha government on Saturday placed the order for 2-deoxy-D-glucose (2DG), the oral antiviral drug for COVID-19 patients developed by Defence Research and Development Organisation (DRDO).

Informing the media here, Additional Chief Secretary (Health) Pradipta Mohapatra said that the state government has placed an order with Hyderabad-based Dr Reddy's Laboratories (DRL) for purchasing 5000 sachets of 2DG drugs.

It was launched on May 17.

The oral drug developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a leading laboratory of DRDO in collaboration with the DRL was approved by the Drugs Controller General of India (DGCI) earlier this month for emergency use as an adjunct therapy for the treatment of critical COVID patients.

Clinical trials of the drug showed that it facilitates faster recovery of critical COVID patients and reduces dependence on supplemental oxygen. A higher proportion of patients treated with 2-DG showed RT-PCR negative conversion in COVID patients.

<https://odishabytes.com/odisha-govt-places-order-for-drdo-2dg-anti-covid-drug/>



Courtesy: republicworld.com

Oxygen production unit in Perambalur GH to be ready soon

By Kathelene Antony

Perambalur: Work to set up a Pressure Swing Adsorption plant, a special oxygen production unit to augment the existing oxygen capacity at the District Headquarters Hospital here, is underway. The plant, being installed under the PM-Cares Fund, is expected to be ready by Monday, senior officials in the district said.

A Pressure Swing Adsorption (PSA) plant uses a technology where a specific gas can be separated from a mixture of gases under pressure. The plant, manufactured by Defence Research and Development Organisation (DRDO) using the PM-Cares Fund costs ₹ 25 lakhs and will be the first to be installed in the region.

Speaking to *The Hindu*, P. Sri Venkata Priya, District Collector, said that following a site inspection by a team of authorities from the National Highway Authority of India, the project was approved. Once approval was given, the district authorities were asked to do civil works, including electricity and power back-up. "Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) installed a transformer within 48 hours and other necessary works including laying of pipelines were done efficiently," she said.

DRDO is expected to despatch the plant from their unit in Bengaluru and have it delivered to the hospital campus by Sunday. "We are expecting that it will be installed and ready to use by Monday," the Collector said.

Perambalur Joint Director of Health Services, G.Thirumal said the PSA plant would be able to supply 960 litres of oxygen per minute. "This means that 150 to 170 patients can be supplied with oxygen at a time. "We only have about 140 patients who need oxygen supply on an average day, so we will have more oxygen supply than our need," he said.

At present, the hospital has a 1,250-litre liquid oxygen plant. "However, it is drained out very quickly and needs to be refilled. An additional 130 oxygen cylinders are available but when deployed, they get over quickly too," he said.

Dr. Thirumal said the district had been managing a reasonable amount of oxygen supply from private and government sources. "With this new PSA, we will not only be able to have sufficient oxygen, we will also be able to give our cylinders to other hospitals which need it and also give out some oxygen from the plant itself," he said.

<https://www.thehindu.com/news/cities/Tiruchirapalli/oxygen-production-unit-in-perambalur-gh-to-be-ready-soon/article34676713.ece>



Minister for Backward Classes S.S. Sivasankar inspects preliminary work undertaken for installation of an oxygen plant at Perambalur District Headquarters Hospital.

DRDO to set up oxygen plants in six cities

In Mysuru, the plant would be set up at K.R. Hospital or District Hospital; NHAI plans to complete work before June 20

Mysuru: Mysuru is among six cities identified by the Centre in the State for installing Pressure Swing Absorption (PSA) medical oxygen generation plants.

The Defence Research and Development Organisation (DRDO) is executing the key project based on the recommendations of the sites by the Union Ministry of Health and Family Welfare.

Besides Mysuru, Bengaluru (two plants), Hassan, Mangaluru, Karwar and Belagavi are the other cities where PSA oxygen plants of 1,000 LPM (Litres Per Minute) capacity each are being set up for the benefit of COVID-19 patients.

The National Highways Authority of India (NHAI) is identifying the location in each city to facilitate the DRDO for setting up the plants at the earliest.

Mysore Medical College and Research Institute (MMCRI), which is managing multiple COVID-19 hospitals in Mysuru, has been identified by the Ministry for the oxygen plant. MMCRI has 1,005 bed strength.

The plant will either be set up on the premises of K.R. Hospital or the District Hospital, both of which have been treating COVID-19 patients since the last wave.

In Bengaluru, the two plants have been proposed at the Command Hospital Air Force and ESIC PGIMS and Model Hospital, Rajajinagar.

Meanwhile, the NHAI has written to the Deputy Commissioner, Mysuru, for providing suitable land and power supply connection for commissioning the oxygen plant.

NHAI Project Director B.T. Sridhara had visited the K.R. Hospital recently to finalise the site for the plant. However, Mysuru MP Pratap Simha suggested setting up the plant at District Hospital on KRS Road instead of K.R. Hospital.

The project director has therefore written to the Deputy Commissioner to discuss with the MP, DHO and the Dean of MMCRI and finalise the site as the construction would be taken up at the earliest. NHAI, in its letter to the Deputy Commissioner on Thursday, said the plant would be constructed before June 20.

<https://www.thehindu.com/news/national/karnataka/drdo-to-set-up-oxygen-plants-in-six-cities/article34668712.ece>

K.R. Hospital to host DRDO's Oxygen Plant

Mysore/Mysuru: It's final now. The Defence Research and Development Organisation's (DRDO) Oxygen-producing Plant will be set up at K.R. Hospital.

The DRDO is setting up Liquid Medical Oxygen plant in Mysuru and the project is sponsored by PM-CARES Fund. Across the country, 500 such plants will come up and Karnataka has got seven.

Speaking to Star of Mysore this morning, Dean and Director of Mysore Medical College and Research Institute (MMC & RI) Dr. C.P. Nanjaraj said that though there were discussion to set up the Oxygen Plant at the District Hospital, it will now be established at K.R. Hospital.

“Officials from National Highways Authority of India (NHAI) that is preparing the site and implementing the project had visited the K.R. Hospital recently and have decided to set it up near a vacant place next to Emergency Ward,” he said. The Emergency Ward is located between Ophthalmology Department and Medical Superintendent's Office.

“Establishing the Plant here near the heritage building will facilitate oxygen supply to the Out Patient Department (OPD), emergency wards, ENT and other critical care units that have over 40 to 50 beds. The oxygen supplied by the Oxygen Storage Plant — having a capacity of 13 KL — installed in the Stone Building premises can supply oxygen to the rest of the wards,” he added.

<https://starofmysore.com/k-r-hospital-to-host-drdo-oxygen-plant/>



Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Fri, 28 May 2021 2:44PM

Defence Secretary launches DG NCC mobile training App 2.0

Defence Secretary Dr Ajay Kumar launched Directorate General National Cadet Corps (NCC) Mobile Training App Version 2.0 in New Delhi on May 28, 2021. The app will assist in conducting countrywide online training to NCC cadets during the COVID-19 pandemic conditions. It is aimed at providing NCC-related basic information and entire training material (Syllabus, Précis, Training Videos, Frequently Asked Questions) on one platform. It provides the NCC cadets easy access to training material and assists in carrying out training during the pandemic.

Speaking on the occasion, the Defence Secretary congratulated NCC for continuing to impart training to its cadets through online mode, in line with COVID-19 protocols. He said the NCC Training App Version 2.0 will be useful to the cadets in digital learning, overcoming the difficulties posed by COVID-19 restrictions on physical contact. Using this app, the cadets will be able to attend online training, appear in certificate exams and prevent loss of academic year. Complimenting the NCC staff for developing the app, Dr Ajay Kumar said it will certainly be a positive step towards automation of NCC training, in line with 'Digital India' vision of the Prime Minister Shri Narendra Modi.

Dr Ajay Kumar termed digital technology as a lifeline in these COVID-19 times, stating that now it is a way of life and way of training for NCC cadets. He listed out various steps taken by Ministry of Defence to impart training to cadets through digital means, including the increase in number of different types of simulators in all NCC Directorates. He added that soon NCC cadets will be imparted training on satellite imagery and GIS-based mapping. Dr Ajay Kumar further said Direct Benefit Transfer (DBT) for uniforms will soon be made available wherein uniform allowances will be directly transferred to the bank accounts of the cadets.

The Defence Secretary urged the NCC cadets to adopt and maintain the statues of the Armed Forces personnel who sacrificed their lives in the service of the nation, under #NCCforStatues which, he said, will be a fitting tribute to the martyrs for their supreme sacrifice. He also praised the cadets who have volunteered and participated in Ex-NCC YOGDAN in combating COVID-19 last year and those who are participating this year.

In his welcome address, DG NCC Lt Gen Tarun Kumar Aich said a need was felt that training to NCC cadets should be imparted utilising the digital medium after restrictions were imposed due to COVID-19 in March 2020. DG NCC Mobile App Version 1.0 for training was launched by Raksha Mantri Shri Rajnath Singh on August 27, 2020 in order to assist online cadet training. The DG NCC stated that regular feedback was obtained on the functioning of the app, based on which it was upgraded to Version 2.0 to make it more useful to the cadets.

Lt Gen Tarun Kumar Aich added that DG NCC Mobile Training App Version 2.0 will be bilingual (Hindi and English). New pages have also been included for ease of navigation on the app. Precis and Frequently Asked Questions in Hindi have also been added. The DG NCC said

there is also an addition of 130 training videos to make the classes more interesting. The app has been made interactive by including a query option. By using this option, a cadet can post his/her question related to the training syllabus and the same will be answered by a panel of qualified instructors.

During the event, NCC cadets also shared their experiences of using Version 1.0 of the app and gave suggestions to further improve the services of the app. They thanked NCC for conducting online training even in challenging times.

Officers and cadets of all 17 NCC Directorates attended the event virtually from across the country. Senior civil & military officials of Ministry of Defence were also present on the occasion.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722440>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 28 May 2021 2:44PM

रक्षा सचिव ने डीजी एनसीसी मोबाइल ट्रेनिंग एप 2.0 शुरू किया

रक्षा सचिव डॉ. अजय कुमार ने 28 मई, 2021 को नई दिल्ली में महानिदेशालय राष्ट्रीय कैडेट कोर (एनसीसी) मोबाइल प्रशिक्षण एप वर्जन 2.0 की शुरुआत की। यह एप कोविड-19 महामारी की स्थिति के दौरान एनसीसी कैडेटों को देशव्यापी ऑनलाइन प्रशिक्षण आयोजित करने में सहायता करेगा। इसका उद्देश्य एनसीसी से संबंधित बुनियादी जानकारी और संपूर्ण प्रशिक्षण सामग्री (पाठ्यक्रम, सारांश, प्रशिक्षण वीडियो, अक्सर पूछे जाने वाले प्रश्न) को एक मंच पर उपलब्ध कराना है। यह एनसीसी कैडेटों को प्रशिक्षण सामग्री तक आसान पहुंच प्रदान करता है और महामारी के दौरान प्रशिक्षण देने में सहायता करता है।

इस अवसर पर रक्षा सचिव ने एनसीसी को कोविड-19 प्रोटोकॉल के अनुरूप ऑनलाइन मोड के माध्यम से अपने कैडेटों को प्रशिक्षण जारी रखने के लिए बधाई दी। उन्होंने आगे कहा कि एनसीसी प्रशिक्षण एप वर्जन 2.0 कैडेटों के लिए डिजिटल लर्निंग और शारीरिक संपर्क पर कोविड-19 प्रतिबंधों से उत्पन्न कठिनाइयों पर नियंत्रण पाने में उपयोगी होगा। इस एप का उपयोग करके, कैडेट ऑनलाइन प्रशिक्षण में हिस्सा ले सकेंगे, प्रमाणपत्र परीक्षाओं में शामिल हो सकेंगे और शैक्षणिक वर्ष के नुकसान को रोक पाएंगे। एप विकसित करने के लिए एनसीसी कर्मचारियों की सराहना करते हुए, डॉ. अजय कुमार ने कहा कि यह निश्चित रूप से प्रधानमंत्री श्री नरेंद्र मोदी के 'डिजिटल इंडिया' दृष्टिकोण के अनुरूप एनसीसी प्रशिक्षण के स्वचालन की दिशा में एक सकारात्मक कदम होगा।

डॉ. अजय कुमार ने कोविड-19 समय में डिजिटल तकनीक को जीवन रेखा करार देते हुए कहा कि अब यह एनसीसी कैडेटों के लिए जीवन का एक तरीका और प्रशिक्षण का तरीका है। उन्होंने सभी एनसीसी निदेशालयों में विभिन्न प्रकार के प्रणालियों की संख्या में वृद्धि सहित डिजिटल माध्यमों के जरिए कैडेटों को प्रशिक्षण प्रदान करने के लिए रक्षा मंत्रालय के विभिन्न कदमों को सूचीबद्ध किया। उन्होंने कहा कि जल्द ही एनसीसी कैडेटों को सैटेलाइट इमेजरी और जीआईएस आधारित मैपिंग का प्रशिक्षण दिया जाएगा। डॉ. अजय कुमार ने आगे कहा कि वर्दी के लिए प्रत्यक्ष लाभ हस्तांतरण (डीबीटी) जल्द ही उपलब्ध कराया जाएगा, जहां वर्दी भत्ते सीधे कैडेटों के बैंक खातों में स्थानांतरित किए जाएंगे।

रक्षा सचिव ने एनसीसी कैडेटों से #NCCforStatues के तहत देश की सेवा में अपने प्राणों की आहुति देने वाले सशस्त्र बलों के जवानों की प्रतिमाओं को अपनाने और उनकी देखभाल करने का आग्रह किया। उन्होंने कहा कि यह शहीदों को उनके सर्वोच्च बलिदान के लिए एक उचित श्रद्धांजलि होगी। उन्होंने उन कैडेटों की भी प्रशंसा की, जिन्होंने पिछले साल कोविड-19 का मुकाबला करने में स्वेच्छा से सेवा की और पूर्व-एनसीसी योगदान में हिस्सा लिया और जो इस वर्ष भाग ले रहे हैं।

वहीं अपने स्वागत भाषण में एनसीसी के महानिदेशक लेफ्टिनेंट जनरल तरुण कुमार आइच ने कहा कि इस बात की एक जरूरत महसूस की गई थी कि मार्च 2020 में कोविड-19 के कारण प्रतिबंध लगाए जाने के बाद डिजिटल माध्यम का उपयोग करते हुए एनसीसी कैडेटों को प्रशिक्षण दिया जाना चाहिए। रक्षा मंत्री श्री राजनाथ सिंह ने 27 अगस्त, 2020 को प्रशिक्षण के लिए डीजी एनसीसी मोबाइल एप वर्जन 1.0 को ऑनलाइन कैडेट प्रशिक्षण में सहायता के लिए शुरू किया था। एनसीसी के महानिदेशक ने कहा कि एप के कामकाज पर नियमित प्रतिक्रिया प्राप्त की गई थी, जिसके आधार पर इसे कैडेटों के लिए और अधिक उपयोगी बनाने के लिए वर्जन 2.0 में अपग्रेड किया गया था।

लेफ्टिनेंट जनरल तरुण कुमार आइच ने कहा कि डीजी एनसीसी मोबाइल प्रशिक्षण एप वर्जन 2.0 दोनों भाषाओं (हिंदी और अंग्रेजी) में होगा। इस एप पर नेविगेशन में आसानी के लिए नए पेज भी शामिल किए गए हैं। इसके अलावा सारांश और हिंदी में अक्सर पूछे जाने वाले प्रश्न भी जोड़े गए हैं। एनसीसी के महानिदेशक ने आगे कहा कि कक्षाओं को और अधिक रोचक बनाने के लिए 130 प्रशिक्षण वीडियो भी शामिल किए गए हैं। वहीं एक सवाल विकल्प को शामिल करके एप को आपसी संवादात्मक बनाया गया है। एक कैडेट इस विकल्प का उपयोग करके प्रशिक्षण पाठ्यक्रम से संबंधित अपने सवाल कर सकता है और योग्य प्रशिक्षकों का एक पैनल इस सवाल का जवाब देगा।

इस कार्यक्रम के दौरान, एनसीसी कैडेटों ने एप के वर्जन 1.0 का उपयोग करने के अपने अनुभव भी साझा किए व एप की सेवाओं को और बेहतर बनाने के लिए सुझाव दिए। इसके अलावा उन्होंने इस चुनौतीपूर्ण समय में भी ऑनलाइन प्रशिक्षण आयोजित करने के लिए एनसीसी को धन्यवाद दिया।

देशभर के सभी 17 एनसीसी निदेशालयों के अधिकारियों और कैडेटों ने इस कार्यक्रम में वर्चुअल माध्यम के जरिए हिस्सा लिया। इस अवसर पर रक्षा मंत्रालय के वरिष्ठ नागरिक और सैन्य अधिकारी भी उपस्थित थे।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722544>



Press Information Bureau
Government of India

Ministry of Defence

Sat, 29 May 2021 9:10PM

Indian Coast Guard Offshore Patrol Vessel Sajag commissioned by National Security Advisor Shri Ajit Doval

In line with the Prime Minister Shri Narendra Modi's vision of AtmaNirbhar Bharat, National Security Advisor Shri Ajit Doval commissioned Indian Coast Guard (ICG) Offshore Patrol Vessel (OPV) Sajag through digital means and dedicated it to the nation for safeguarding the maritime interests on May 29, 2021. OPV Sajag is constructed by M/s Goa Shipyard Limited. Defence Secretary Dr Ajay Kumar, Indian Coast Guard Director General K Natarajan and CMD Goa shipyard Cmde BB Nagpal (Retd) were among those who attended the event.

In his address, Shri Ajit Doval said the concept of forming ICG came into being post 1971 war, when it was assessed that maritime borders are equally vital as land borders. The blueprint for a multi-dimension Coast Guard was conceived by the visionary Rustamji Committee even as the United Nations Convention of the Laws of the Sea (UNCLOS) was being negotiated and India's assets off Mumbai high were growing. The ICG, which was created through an Act of Parliament in 1978, has traversed a long journey in the last four decades.

Shri Ajit Doval commended Goa shipyard for indigenously developing ships for the Maritime Armed forces on time with state-of-the-art machinery and latest technology sensors and equipment that will enable ICG to undertake varied charter of duties within and beyond Indian Ocean Region (IOR).

ICG ships are being built within the country in various shipyards, including private yard in line with Government's vision of 'Make in India'. NSA was impressed to witness the ICG OPV Sajag, which was looking magnificent during the commissioning ceremony.

ICG is a multifarious force, undertaking concurrent operations and being the first responder for any developing situation at sea. Their personnel work in very diverse conditions and circumstances to safeguard the vast coastline. Shri Doval lauded Coast Guard for the support to Coastal populace as also to undertake diverse roles like rescue operations during cyclones, marine pollution response and anti-narco operations. He said Indian Coast Guard has contributed significantly towards Saving precious lives at sea in the recent disaster in Mumbai High.

Shri Ajit Doval said ICG plays an important role for supporting the neighbouring countries in IoR. He added that this lean and visible service plays critical role in anti-smuggling and anti-narcotics, both nationally and internationally. The service has recently undertaken various pollution response, firefighting and interdiction operations beyond IoR, when called upon by littoral countries.

Director General K Natarajan briefed the NSA about the massive firefighting operation being undertaken by the Indian Coast Guard onboard a container vessel X-Press Pearl off Colombo. Looking at the onsite clips, Shri Doval praised the efforts of the service, showcasing its reach and professionalism.

Referring to ICG being the 4th largest in the world with almost 160 ships and 62 aircraft, he was pleased with the efforts of Ministry of Defence to make this maritime service as one of the premium Coast Guards of the world with 200 ships and 100 aircraft.

The National Security Advisor said the nation feels confident with Coast Guard safeguarding nearly 7500 kms of coastline. He added that the future will see a more complex security scenario and ICG will have greater responsibilities in years to come as India's maritime zones expand to include entitlements in the Extended Continental Shelf.

In his concluding remarks, Shri Doval commended the present leadership of Indian Coast Guard and the highly motivated Tatrakshaks. He was confident that the service will gear-up for any challenge that comes its way in safeguarding India's maritime interests.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1722788>

Army ready to thwart any mischief by China, while talks underway to resolve remaining 'friction points': General M M Naravane

By Rajat Pandit

New Delhi: The Army is maintaining high operational readiness to 'thwart' any 'unusual activity' by China all along the northern borders, said General M M Naravane on Friday, while rejecting concerns that India squandered its leverage by vacating the Kailash Range heights without extracting any concession on Depsang Plains in eastern Ladakh.

The Army Chief, in an exclusive interview to TOI, asserted the Rezang La-Rechin La heights in the Kailash Range were vacated as part of the troop disengagement plan on both sides of Pangong Tso in February after "analyzing all military implications and the ground situation".

"There is no question of India having come under any pressure or having compromised," said Gen Naravane. Diplomatic and military negotiations are in progress for resolution of the remaining face-off sites like Hot Springs, Gogra and the strategically-located Depsang Plains.

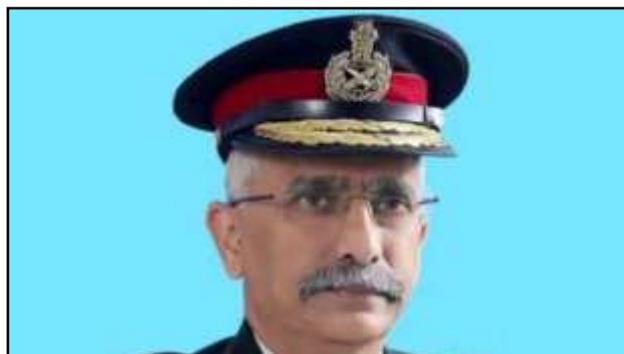
"Negotiations are being conducted for resolution of other friction points in a firm but non-escalatory manner. Negotiations do take time. We will resolve them by and by," he said. India has made its position very clear to China that "both sides should restore the status quo ante as prevailing on or before April 2020", he added.

But with the People's Liberation Army (PLA) digging in its heels to even complete the stalled disengagement at patrolling points (PPs) 15, 17 and 17A in the Hot Springs-Gogra-Kongka La area, Gen Naravane acknowledged troop de-induction and the consequent de-escalation along the frontier would take some time.

The PLA also continues to block Indian patrols from going to their traditional PPs-10, 11, 11A, 12, and 13 in Depsang, which are well short of India's perception of the Line of Actual Control in the region.

"Depsang Bulge is a legacy issue where the differing perception and obstruction to patrolling has been there for some time. The issue needs to be amicably resolved at the earliest," said Gen Naravane.

The Army is maintaining a force-level of around 50,000-60,000 soldiers in forward areas to take care of all contingencies. "Our forces are ready to thwart any unusual activity on part of our



The Army chief General M M Naravane, in an exclusive interview to TOI, asserted the Rezang La-Rechin La heights in the Kailash Range were vacated as part of the troop disengagement plan on both sides of Pangong Tso in February after "analyzing all military implications and the ground situation".

“ (Kailash range heights) were vacated after analysing all military implications and the ground situation. There is **no question of India having come under any pressure or having compromised. Negotiations are being conducted for resolution of other friction points in a **firm but non-escalatory manner.** Negotiations do take time**

—Gen M M Naravane, Indian Army chief

A small version of the portrait of General M M Naravane, showing him from the chest up, wearing his military uniform and cap.

neighbour. Things are stable as of now, but we cannot be complacent. We have to keep a strict watch. We are doing it,” he said.

Excerpts from the interview:

Q: What is the current ground situation in eastern Ladakh?

A: Partial disengagement has been undertaken in the areas on the north and south banks of Pangong Tso and the Kailash Range. In these areas, the troops from either side, as per agreement, have been pulled back to their respective permanent locations in February. There has been no infringement of the pact from either side till now.

The troop disengagement from the rest of the stand-off points is being deliberated by the military commanders on both sides, augmented by the diplomatic machinery.

Notwithstanding the disengagement, China continues to deploy its mechanized elements (tanks and armoured vehicles) and troops in immediate depth areas. Overall, the force-levels remain the same...around 50,000-60,000 each. There has been some disengagement, but de-induction of troops and de-escalation has not happened.

We are aware the PLA is also carrying out summer exercises in their traditional training areas opposite eastern Ladakh, with additional formations having come in there. We are keeping an eye out for any activity that may be interpreted as out of the ordinary. Our forces are ready to thwart any unusual activity on part of our neighbour.

Q: Can the situation escalate again?

A: Things are stable and under control as of now. But inadvertent incidents can happen due to over-enthusiasm of local commanders, which have to be guarded against. We, of course, cannot be complacent. We have to keep a strict watch. We are doing it. Negotiations are being conducted for resolution of other friction points in a firm but non-escalatory manner.

Q: But the 11th round of corps commander-level talks on April 9 failed to achieve any breakthrough? PLA refused to complete the stalled disengagement at Gogra, Hot Springs and Demchok as well as stop blocking Indian patrols in Depsang?

A: We should not expect a result from every round. The disengagement at Pangong Tso happened after 10 rounds. The next round will take place.

Q: The Doklam confrontation in 2017 lasted for 73 days...

A: The Sumdorong Chu face-off (in the 1980s) lasted for some years. It's difficult to give a timeframe. Issues remain to be resolved at the friction points. Negotiations do take time. We will resolve them by-and-by.

Q: There are major concerns that India should not have vacated the Chushul-Kailash Range heights without extracting concessions from China on Depsang Plains, where access of Indian patrols to hundreds of sq km of territory has been cut off?

A: Vacation of Kailash Range as part of the Pangong Tso disengagement plan was undertaken after analyzing all military implications and the ground situation. There is no question of Indian side having come under any pressure or having compromised.

Depsang Bulge is a legacy issue where the differing perception and obstruction to patrolling has been there for some time. The issue needs to be amicably resolved at the earliest.

Q: You recently said the threat from China has 'only abated' but 'not gone away altogether'. The PLA continues with force levels as before. Will de-escalation take place or will the LAC turn into another LoC (with Pakistan) with permanent deployments?

A: It is true the Chinese troops who had mobilized from depth areas continue to be deployed in intermediate depth areas opposite the LAC in eastern Ladakh. Hence, the threat continues to exist.



Talks during the 10th round of meeting between the senior military commanders led to a disengagement (at Pangong Tso), which has been monitored and verified by both sides.

However, the discussions over the remaining areas need to be expedited to reflect the status quo ante of April 2020. Success in these discussions will create a positive and trustful environment for both countries to resolve their remaining issues peacefully. Our stance is very clear: both sides should restore "status quo ante" as prevailing on or before April 2020 and avoid reoccurrence of such incidents.

Q: What about other stretches of the LAC like Arunachal Pradesh and Sikkim? China is also building villages and settling civilians in border areas?

A: In other stretches, the situation remains peaceful with normal deployments of the PLA. As for the villages, China is building them but they have not encroached on Indian territory. It's part of some grand design, which is difficult to deduce...possibly to populate their areas which were earlier not occupied.

<https://timesofindia.indiatimes.com/india/army-ready-to-thwart-any-mischief-by-china-while-talks-underway-to-resolve-remaining-friction-points-general-m-m-naravane/articleshow/83046308.cms>

THE TIMES OF INDIA

Mon, 31 May 2021

Modernisation of Indian Army well on course: Army Chief Gen MM Naravane

New Delhi: The modernisation of the Indian Army is well on course, Army Chief Gen MM Naravane has said, dismissing apprehensions that the need for devoting more resources to guard the Line of Actual Control in the face of the prolonged standoff with China in eastern Ladakh may starve the force of funds for buying new weapons and platforms.

Emphasising his point, Gen Naravane said that 59 contracts worth Rs 21,000 crore have been concluded since last fiscal while a number of other capital acquisition proposals are in the pipeline.

In an exclusive interview to PTI, he said the modernisation drive in the Army has been going on without facing any difficulty and that required resources are being provided by the government.

"The modernisation drive of Indian Army is well on course. Recently 15 contracts worth more than Rs 16,000 crore have been concluded under normal schemes of procurement and 44 contracts worth Rs 5,000 crore have been concluded in 2020-21 under emergency procurements," Gen Naravane said.

"A number of capital acquisition proposals too are underway concurrently," the Chief of Army Staff said.

He was replying to a question on whether the much-needed modernisation of the Army has been impacted due to the need for allocation of greater resources to keep a large number of troops for guarding the LAC in eastern Ladakh and elsewhere in the wake of the standoff since last one year.

"We are not facing any difficulty," he said, referring to the modernisation drive.

In February, the government allocated Rs Rs 4.78 lakh crore for the defence budget for 2021-22. Out of the total allocation, Rs 1,35,060 crore was set aside for capital expenditure that includes purchasing new weapons, aircraft, warships and other military hardware.

The capital outlay for 2021-22 is an increase of 18.75 percent compared to last year's allocation of Rs 1,13,734 crore.



In the last few years, military experts have been pitching for rapid modernisation of the Indian armed forces to effectively deal with China's increasing assertiveness.

It has been more than a year since the military standoff between the two sides erupted in eastern Ladakh on May 5 during which there were fatalities on both sides for the first time in 45 years.

They have made limited progress in achieving disengagement at the Pangong lake area while negotiations for similar steps at other points remained deadlocked.

Gen Naravane said that the Indian Army is currently holding onto all important areas in the high-altitude region and it has adequate personnel in the form of "reserves" to react to any contingencies.

Each side currently has around 50,000 to 60,000 troops along the LAC in the sensitive sector.

The ties between the two countries came under severe strain after the deadly clashes at the Galwan valley following which both sides rushed in thousands of additional troops as well as battle tanks and other large weapons to the region.

Nine months after the military standoff at multiple friction points, both sides completed the withdrawal of troops and weapons from the North and South banks of the Pangong lake in February as part of an agreement reached following a series of military and diplomatic talks.

The two sides have held 11 rounds of military talks to ensure disengagement and de-escalation at the friction points. Both the militaries are now engaged in talks to extend the disengagement process to the remaining friction points.

<https://timesofindia.indiatimes.com/india/modernisation-of-indian-army-well-on-course-army-chief-gen-mm-naravane/articleshow/83086072.cms>

THE TIMES OF INDIA

Mon, 31 May 2021

Some countries portrayed Quad as military alliance to raise 'unsubstantiated fears': Army Chief

New Delhi: Chief of Army Staff Gen MM Naravane has said that some countries have portrayed the Quad or Quadrilateral coalition as a military alliance to raise "unsubstantiated fears" despite no concrete evidence to back their claims.

Asserting that the Quad does not intend to become a military alliance, Gen Naravane said it is meant to be a plurilateral grouping delving into issues specific to the Indo-Pacific region.

The Quad comprising India, the US, Japan and Australia has been focusing on promoting shared democratic ideologies and ensuring a free, open and inclusive Indo-Pacific against the backdrop of rising global concerns over China's growing assertiveness in the region.

"The Quad neither intends nor attempts to be a military alliance. It is meant to be a plurilateral grouping which focuses on issues specific to the Indo-Pacific," he told PTI in an interview.

"Some countries have portrayed the Quad as a military alliance to raise unsubstantiated fears despite no concrete evidence to show the same," the Army Chief added.

China has been severely critical of the Quad, claiming that the grouping is aimed at containing it in the Indo-Pacific.



Russia has also been criticising the Quad, saying it would be detrimental to inclusive dialogue for peace and stability in the region.

Russian foreign minister Sergey Lavrov last month had used the term 'Asian NATO' in the context of emerging alliances in Asia that was seen as an indirect reference to Quad.

The Chief of Army Staff also referred to the first Quad summit held in March that pledged to strengthen cooperation in dealing with present challenges that are not limited to military and defence cooperation but encompass all security challenges that the region faces.

"The Quad believes in free and open Indo-Pacific and a number of sub-issues form the basis for its operationalisation such as health and economic impact of COVID 19, climate change, cyberspace, infrastructure development, counter-terrorism and humanitarian assistance and disaster relief," he said.

Gen Naravane also elaborated on his recent comments that the Quad will not be a NATO-like alliance.

"NATO's origins as a military alliance lie in the bipolar confrontational world order that existed between the end of the Second World War and the dissolution of the Soviet Union," he said, adding Quad does not aim to become a military alliance.

The evolving situation in the Indo-Pacific region in the wake of China's increasing military muscle-flexing has become a major talking point among leading global powers.

In the first Quad summit in March, Prime Minister Narendra Modi, US President Joe Biden, Australian PM Scott Morrison and Japanese PM Yoshihide Suga vowed to strive for an Indo-Pacific region that is free, open, inclusive, healthy, anchored by democratic values, and unconstrained by coercion, in an apparent message to China.

The deliberations at the Quad summit, held in the virtual format, included vaccine collaboration, climate action, emerging technologies, resilient supply chain, counter-terrorism and maritime security cooperation among others.

India has always been maintaining that Quad is not aimed at any country.

The foreign minister of the four countries held their first meeting under the 'Quad' framework in New York in September 2019.

In November 2017, the four countries gave shape to the long-pending proposal of setting up the Quad to develop a new strategy to keep the critical sea routes in the Indo-Pacific free of any influence, besides cooperating on other issues.

India's approach to the Indo-Pacific was enunciated by Prime Minister Modi in his address at the Shangri-La Dialogue in Singapore in 2018.

Inclusiveness, openness and ASEAN centrality and unity lie at the heart of India's Indo-Pacific vision. The 10-nation Association of Southeast Asian Nations (ASEAN) is a key stakeholder in the Indo-Pacific region.

<https://timesofindia.indiatimes.com/india/some-countries-portrayed-quad-as-military-alliance-to-raise-unsubstantiated-fears-army-chief/articleshow/83086163.cms>

Need to engage adversary in all domains — land, sea, air, space and cyber: Navy Chief

Admiral Singh was speaking at the National Defence Academy (NDA), at Khadakwasla in Pune on Saturday morning, where he reviewed the Passing Out Parade of 140th course of the academy

Pune: Highlighting that the nature of warfare is changing, Navy Chief Admiral Karambir Singh stressed on the need to engage with the enemy in all domains — land, sea, air, space and cyber and for which, he said, the jointness among the forces is far more important than in the past.

Admiral Singh was speaking at the National Defence Academy (NDA), at Khadakwasla in Pune on Saturday morning, where he reviewed the Passing Out Parade of 140th course of the academy. He is an alumnus of the 56th course of the academy along with Chief of Army Staff General MM Naravane and Chief of Air Staff Air Chief Marshal RKS Bhadauria.

The Admiral presented medals to awarding-winning cadets from the course and also presented the Chiefs of Staff Banner to the winning squadron for its overall performance.

In his address to the cadets, Admiral Singh said, “The NDA has been the symbol of jointness for 72 years. Its existence reinforces the core values of jointmanship, which are the founding principles of the academy. The nature of war is changing and it is important to engage the adversary in all domains. Land, sea, air, space and cyber. It is for this reason that jointness among the three services is far more important now than in the past.”

He further said, “The armed forces are seeing landmark defence reforms. The establishment of the Department of Military Affairs, the institution of the Chief of Defence Staff, and soon to be formed theatre commands. Traditions, identity, uniforms and customs of each service matter as do the requirements generated by the distinctive role of the three services. But jointness in the armed forces is paramount for the most synergised and effective application of force in today’s complex battlefield.”

He continued, “At the same time, you all must remember, no matter how future warfare evolves, few personal abilities or attributes remain key to effective leadership. Leadership, as you know, is the essence of being an officer and let me today share some thoughts you could imbibe and embrace in your careers, indeed in life, that always stand you in good state. First, always remember the NDA prayer, it clearly lays out expectations from you and serves as a constant source of inspiration and beacon whenever you are in doubt. Second, walk your talk. Be an example for the men and women you lead, a role model in professional knowledge, conduct and bearing. Your men should feel inspired to work with you, not just for you and that comes only if the leader practices what he preaches. Third, understand that there is no faster way to gain your men’s trust than to approach every situation with honesty of intent and integrity of purpose. Fourth, there is no substitute for intellectual curiosity. Do not hesitate to ask questions to your juniors and seniors and regularly challenge the status quo of professional matters.”

The Admiral added, “To my mind, the role of an officer can be encapsulated in taking complete ownership of two basic responsibilities – looking after men and looking after material. Looking after men involves looking after their professional development, morale, well-being and their



Chief of Naval Staff Admiral Karambir Singh. (File)

safety. Looking after material involves looking after machinery under your charge and keeping it fully combat worthy.”

Push-ups with cadets

In an impromptu gesture on Friday afternoon, Chief of Naval Staff Admiral Karambir Singh did push-ups with the cadets and some senior officers present when he visited the barracks of the academy’s Hunter Squadron, an NDA officer told The Indian Express. Admiral Singh belonged to the squadron during his NDA days.

In his speech at the Passing out Parade, the Admiral remembered his passing out parade. “I am sure that the cadets of the passing out course are experiencing a mix of emotions. Nerves, excitement, exhilaration, pride, relief and possibly exhaustion. It is exactly the same feeling I experienced on a hot summer day in 1979, when I stood on this very parade ground for my course’s POP. And incidentally, the reviewing officer for my POP was the then Chief of Naval Staff Admiral Ronnie Pereira.”

This is the third occasion when the prestigious Passing Out Parade of the NDA was held in the shadow of COVID-19 pandemic. The ceremony was conducted with COVID-appropriate norms in place. Every year, two courses of cadets pass out from India’s premier tri-services military academy at Khadakwasla in Pune to continue with the one more year of pre-commissioning training at the academies of their respective forces – Indian Military Academy in Dehradun for Army, Air Force Academy in Dundigal and Indian Naval Academy in Ezhimala.

<https://indianexpress.com/article/cities/pune/need-to-engage-adversary-in-all-domains-land-sea-air-space-and-cyber-navy-chief-7335543/>



Press Information Bureau
Government of India

Ministry of Science & Technology

Sat, 29 May 2021 1:00PM

A natural dye extract may protect our eyes from harmful laser

Scientists have found that the natural indigo dye extracted from leaves of a plant of the bean family is capable of protecting human eyes from harmful laser radiation. It could be used to develop optical limiters useful in weakening the potentially harmful radiation and protecting the human eyes or other sensitive optical devices from accidental damage in an environment where such lasers are in use.

The blue dye extracted from *Indigoferatinctoria* or the famed Indigo plants has been used over the years to colour clothes and clothing materials. Although synthetic indigo dyes are now available, the natural variety also is in common use. It is extracted from the leaves of the plant, following standard protocols in scientific laboratories.



The *Indigoferatinctoria* plant.

Researchers from the Raman Research Institute (RRI), Bengaluru, and Kensri School and College, Bengaluru, studied the optical properties of the natural Indigo dye and found that it can act as a device to protect human eyes from harmful laser radiation. The study, funded by the Department of Science and Technology, Government of India, was published in the journal '*Optical Materials*'.

The researchers extracted the dye and stored it in a refrigerator below 4° Celsius to preserve its natural properties. Their study on how much it absorbed light at different wavelengths of the electromagnetic spectrum showed that the absorption is maximum in the ultraviolet region of the spectrum, at a wavelength close to 288 nanometres, and in the visible region, close to 660 nanometres. The absorption is comparatively high for the green light as well. "Indigo absorbs light because of molecular absorption bands. The maximum absorption wavelength can vary over several nanometers depending on the dye's solvent and concentration," explains Reji Philip, professor at RRI and a co-author of the study. The absorption's variation with wavelength indicated that chlorophyll, an organic compound that takes part in photosynthesis, is present in the dye.

The researchers wanted to study whether the organic dye showed additional absorption when the input light intensity is high.

The team found that when they increase the intensity of the laser pulse, the dye absorbs more light. That is, it is more opaque to higher intensity light. Scientists refer to such materials as an 'optical limiter'.

Optical limiters are useful in weakening the potentially harmful radiation emitted by powerful lasers and protecting both eyes and sensitive optical instruments. "Making a prototype optical limiter using natural Indigo is the next logical step, followed by a commercially viable product," Reji pointed out.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722641>



पत्र सूचना कार्यालय
भारत सरकार

विज्ञान एवं प्रौद्योगिकी मंत्रालय

Sat, 29 May 2021 1:00PM

प्राकृतिक डार्क रस हमारी आंखों को हानिकारक लेजर विकिरण से बचाने में सक्षम

वैज्ञानिकों ने पाया है कि बीन परिवार के पौधे की पत्तियों से निकाली गई प्राकृतिक नील डार्क मानव आंखों को हानिकारक लेजर विकिरण से बचाने में सक्षम है। इसका उपयोग संभावित हानिकारक विकिरण को कमजोर करने और मानव आंखों या अन्य संवेदनशील ऑप्टिकल उपकरणों को ऐसे वातावरण में अचानक क्षति से बचाने के लिए उपयोगी ऑप्टिकल लिमिटर विकसित करने के लिए किया जा सकता है जहां ऐसे लेजर उपयोग में हैं।

इंडिगोफेरैटिनक्टोरिया या प्रसिद्ध इंडिगो पौधे से निकाली गई नीली डार्क का उपयोग वर्षों से कपड़े और कपड़ों की सामग्री को रंगने के लिए किया जाता रहा है। हालांकि, सिंथेटिक इंडिगो डार्क अब आम उपयोग के लिए प्राकृतिक किस्म में भी उपलब्ध है। इसे वैज्ञानिक प्रयोगशालाओं में स्टैंडर्ड प्रोटोकॉल का पालन करते हुए पौधे की पत्तियों से निकाला जाता है।



इंडिगोफेरैटिनक्टोरिया पौधा।

रमन रिसर्च इंस्टीट्यूट (आरआरआई), बंगलुरु और केंसरी स्कूल एंड कॉलेज, बंगलुरु के शोधकर्ताओं ने प्राकृतिक इंडिगो डार्क के ऑप्टिकल गुणों का अध्ययन किया और पाया कि यह मानव आंखों को हानिकारक लेजर विकिरण से बचाने के लिए एक उपकरण के रूप में कार्य कर सकता है। भारत सरकार के विज्ञान और प्रौद्योगिकी विभाग द्वारा वित्त पोषित अध्ययन, 'ऑप्टिकल मैटेरियल्स' पत्रिका में प्रकाशित हुआ था।

शोधकर्ताओं ने डार्क को निकाला और इसके प्राकृतिक गुणों को संरक्षित करने के लिए इसे 4°C सेल्सियस से नीचे के रेफ्रिजरेटर में संग्रहीत किया। इलेक्ट्रोमैग्नेटिक स्पेक्ट्रम के विभिन्न तरंग दैर्ध्य में प्रकाश को कितना अवशोषित करता है, इस पर उनके अध्ययन से पता चला है कि अवशोषण स्पेक्ट्रम के पराबैंगनी क्षेत्र में अधिकतम 288 नैनोमीटर के तरंग दैर्ध्य पर और दृश्य क्षेत्र में 660 नैनोमीटर के करीब होता है। हरी बत्ती के लिए भी अवशोषण तुलनात्मक रूप से अधिक होता है। "आणविक अवशोषण बैंड के कारण इंडिगो प्रकाश को अवशोषित करता है। आरआरआई के प्रोफेसर और अध्ययन के सह-लेखक, रेजी फिलिप ने बताया कि डार्क के विलायक और एकाग्रता के आधार पर अधिकतम अवशोषण तरंगदैर्ध्य कई नैनोमीटर से भिन्न हो सकता है। तरंग दैर्ध्य के साथ अवशोषण की भिन्नता ने संकेत दिया कि क्लोरोफिल, एक कार्बनिक यौगिक प्रकाश संश्लेषण में भाग लेता है जो डार्क में मौजूद है।

शोधकर्ता यह अध्ययन करना चाहते थे कि क्या इनपुट प्रकाश की तीव्रता अधिक होने पर कार्बनिक डार्क ने अतिरिक्त अवशोषण दिखाया है।

टीम ने पाया कि जब वे लेजर पल्स की तीव्रता बढ़ाते हैं, तो डार्क अधिक प्रकाश को अवशोषित करता है। अर्थात्, यह उच्च तीव्रता वाले प्रकाश के लिए अधिक अपारदर्शी है। वैज्ञानिक ऐसी सामग्री को 'ऑप्टिकल लिमिटर' कहते हैं।

ऑप्टिकल लिमिटेर्स शक्तिशाली लेजरों द्वारा उत्सर्जित संभावित हानिकारक विकिरण को कमजोर करने और दोनों आंखों और संवेदनशील ऑप्टिकल उपकरणों की रक्षा करने में उपयोगी होते हैं। रेजी ने बताया, "प्राकृतिक इंडिगो का उपयोग करके एक प्रोटोटाइप ऑप्टिकल लिमिटर बनाना अगला तार्किक कदम है, इसके बाद एक व्यावसायिक जरूरत के ध्यान में रखकर उत्पाद बनाना है।"

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722702>

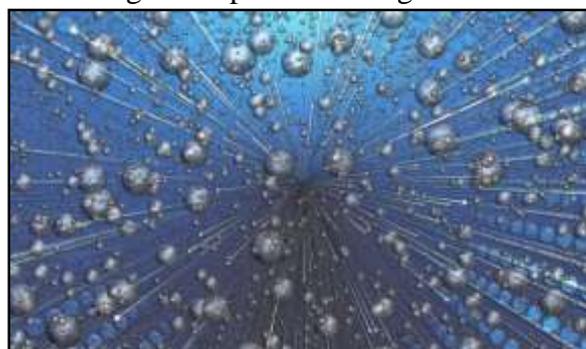


Sat, 29 May 2021

Using the environment to control quantum devices

Singapore University of Technology and Design (SUTD) researchers have uncovered how the environment can impact highly sensitive quantum behaviors like localisation. Their findings, published in *Chaos*, could lead to future innovations in the design of superconducting materials and quantum devices, including super precise sensors.

Quantum technology, in particular quantum sensing, promises to measure and capture our world at levels of precision never before possible. Such precision has diverse applications, from speedier and more sensitive medical imaging to recording time on high-frequency market trades, and even the development of sensors that can determine whether the ground beneath us is solid rock or a natural oil-and-gas reservoir.



Credit: CC0 Public Domain

Yet for all its theoretical potential, one considerable practical challenge remains when producing quantum measuring devices: controlling how they respond to the environment. Real devices are extremely sensitive to noise, which at best reduces their level of precision and at worst leads to unacceptable levels of error. When it comes to crafting ultra-precise sensors, such noise could overwhelm any useful signals.

Understanding how quantum devices respond to noise would help researchers find new ways to protect them from noise, making novel measurement and sensing technologies more feasible. Beyond increasing their accuracy, researchers may even be able to give quantum devices new properties. "If you could tune the amount of noise that these devices experience, you can make them function very differently and get an even more interesting device," explained Associate Professor Dario Poletti from SUTD, who led the study.

For example, scientists have known for decades that disorder in a system can cause a phenomenon called localisation, where a system gets 'stuck' to its initial state. On the other hand, when the particles in a system interact with each other strongly, there is a possibility that they can become 'unstuck,' that is, delocalised.

To study this tug-of-war between disorder and interaction, Poletti and Ph.D. student Xiansong Xu added a third variable: the environment. Beginning with a theoretical model known as the XXZ spin chain, the researchers showed that the environment can have contrasting effects on localisation, depending on the strength of both the disorder and interaction in the system.

Performing numerical computations on the model, the researchers found that putting the system in contact with a dissipative environment such as a bath of photons pushed it towards delocalisation and made it more mobile, fluid and uniform, like water.

Importantly, they also found that while both weakly and strongly interacting systems still showed signs of localisation, the types of localisation were surprisingly different: one grainier and stuck, like sand, and the other, more uniform while still stuck, like ice.

This theoretical discovery suggests that the properties of certain materials can be tuned through changes in the external environment. For example, researchers might be able to turn a material from an insulator into a conductor by shining light on it—or turn the material from one kind of insulator into another, with applications that go beyond quantum technologies to materials science and nanoelectronics.

"There are already quantum devices out there, and we will likely see more and more of them," Poletti said. "Devices are never truly isolated from their environments, so we would like to better understand how they can work in conjunction with the environment."

"Now the quest is to dig deeper and look for different systems, or go towards real materials and see what else can happen there," he added. "This kind of research is done over many years. We're trying to build fundamental knowledge and tools so that eventually, industry can take over."

More information: Xiansong Xu et al, Localization-delocalization effects of a delocalizing dissipation on disordered XXZ spin chains, *Chaos: An Interdisciplinary Journal of Nonlinear Science* (2021). DOI: [10.1063/5.0038401](https://doi.org/10.1063/5.0038401)

Journal information: [Chaos](#)

<https://phys.org/news/2021-05-environment-quantum-devices.html>



Sat, 29 May 2021

Electrons waiting for their turn: New model explains 3D quantum material

Scientists from the Cluster of Excellence ct.qmat—Complexity and Topology in Quantum Matter have developed a new understanding of how electrons behave in strong magnetic fields. Their results explain measurements of electric currents in three-dimensional materials that signal a quantum Hall effect—a phenomenon thus far only associated with two-dimensional metals. This new 3D effect can be the foundation for topological quantum phenomena, which are believed to be particularly robust and therefore promising candidates for extremely powerful quantum technologies. These results have just been published in the scientific journal *Nature Communications*.

Dr. Tobias Meng and Dr. Johannes Gooth are early career researchers in the Würzburg-Dresdner Cluster of Excellence ct.qmat that researches topological quantum materials since 2019. They could hardly believe the findings of a recent publication in *Nature* claiming that electrons in the topological metal zirconium pentatelluride (ZrTe₅) move only in two-dimensional planes, despite the fact that the material is three-dimensional. Meng and Gooth therefore started their own research and experiments on the material ZrTe₅. Meng from the Technische Universität Dresden (TUD) developed the theoretical model, Gooth from the Max Planck Institute for Chemical Physics of Solids designed the experiments. Seven measurements with different techniques always lead to the same conclusion.



Electrons in a topological quantum metal waiting to be activated by a magnetic field. Once they start moving, they follow a spiraling helix upwards – in contrast to the previously proposed picture of electrons moving in circles in a two-dimensional plane. This creates a special effect that is the foundation for promising topological quantum phenomena. Credit: Jörg Bandmann

Electrons waiting for their turn

The research by Meng and Gooth paints a new picture of how the Hall effect works in three-dimensional materials. The scientists believe that electrons move through the metal along three-dimensional paths, but their electric transport can still appear as two-dimensional. In the topological metal zirconium pentatelluride, this is possible because a fraction of the electrons is still waiting to be activated by an external magnetic field.

"The way electrons move is consistent in all of our measurements, and similar to what is otherwise known from the two-dimensional quantum Hall effects. But our electrons move upwards in spirals, rather than being confined to a circular motion in planes. This is an exciting difference to the quantum Hall effect and to the proposed scenarios for what happens in the material ZrTe₅," comments Meng on the genesis of their new scientific model. "This only works because not all electrons move at all times. Some remain still, as if they were queuing up. Only when an external magnetic field is applied do they become active."

Experiments confirm the model

For their experiments, the scientists cooled the topological quantum material down to -271 degree Celsius and applied an external magnetic field. Then, they performed electric and thermoelectric measurements by sending currents through the sample, studied its thermodynamics by analyzing the magnetic properties of the material, and applied ultrasound. They even used X-ray, Raman and electronic spectroscopy to look into the inner workings of the material. "But none of our seven measurements hinted at the electrons moving only two-dimensionally," explains Meng, head of the Emmy Noether group for Quantum Design at TUD and leading theorist in the present project. "Our model is in fact surprisingly simple, and still explains all the experimental data perfectly."

Outlook for topological quantum materials in 3D

The Nobel-prize-winning quantum Hall effect was discovered in 1980 and describes the stepwise conduction of current in a metal. It is a cornerstone of topological physics, a field that has experienced a surge since 2005 due to its promises for the functional materials of the 21st century. To date, however, the quantum Hall effect has only been observed in two-dimensional metals. The scientific results of the present publication enlarge the understanding of how three-dimensional materials behave in magnetic fields. The cluster members Meng and Gooth intend to further pursue this new research direction: "We definitely want to investigate the queueing behavior of electrons in 3D metals in more detail," says Meng.

More information: S. Galeski et al, Origin of the quasi-quantized Hall effect in ZrTe₅, *Nature Communications* (2021). [DOI: 10.1038/s41467-021-23435-y](https://doi.org/10.1038/s41467-021-23435-y)

Journal information: [Nature Communications](https://www.nature.com/articles/s41467-021-23435-y)
<https://phys.org/news/2021-05-electrons-3d-quantum-material.html>

COVID-19 Research News



Press Information Bureau
Government of India

Ministry of Science & Technology

Fri, 28 May 2021 11:39AM

Innovative patient-friendly saline gargle RT-PCR testing method, thanks to NEERI Nagpur

Saline Gargle, No Swab, Simple, Fast, Economical

“Get Result within 3 Hours, Suitable for Rural and Tribal Areas”

Ever since the outbreak of the COVID-19 pandemic, India has been making multiple strides in augmenting its testing infrastructure and capacity. Scientists of Nagpur-based National Environmental Engineering Research Institute (NEERI) under Council of Scientific and Industrial Research (CSIR) have achieved another milestone in this journey, with the development of a 'Saline Gargle RT-PCR Method' for testing COVID-19 samples.

A Method with Numerous Benefits: Simple, Fast, Comfortable, Economical

The Saline Gargle method offers a bunch of attractive benefits, all rolled into one. It is simple, fast, cost-effective, patient-friendly and comfortable; it also offers instant results and is well-suited for rural and tribal areas, given minimal infrastructure requirements. Speaking to PIB, Dr. Krishna Khairnar, Senior Scientist, Environmental Virology Cell, NEERI says: “Swab collection method requires time. Moreover, since it is an invasive technique, it is a bit uncomfortable for patients. Some time is lost also in the transport of the sample to the collection centre. On the other hand, the Saline Gargle RT-PCR method is instant, comfortable and patient-friendly. Sampling is done instantly and results will be generated within 3 hours.”



Patient herself can collect the Sample

The method is non-invasive and so simple that the patient herself can collect the sample, explains Dr. Khairnar. “Collection methods like nasopharyngeal and oropharyngeal swab collection require technical expertise; they are also time-consuming. In contrast, the Saline Gargle RT-PCR method uses a simple collection tube filled with saline solution. The patient gargles the solution and rinses it inside the tube. This sample in the collection tube is taken to the laboratory where it is kept at room temperature, in a special buffer solution prepared by NEERI. An RNA template is produced when this solution is heated, which is further processed for Reverse Transcription Polymerase Chain Reaction (RT-PCR). This particular method of collecting and processing the sample enables us to save on the otherwise costly infrastructural requirement of RNA extraction. People can also test themselves, since this method allows self-sampling.” The method is environment-friendly as well, since waste generation is minimized.

A Boon for Testing in Rural and Tribal Areas

The scientist expects that this innovative testing technique will be especially beneficial for rural and tribal areas where infrastructure requirements can be a constraint. The non-technique has received the approval of the Indian Council of Medical Research (ICMR). NEERI has further been asked to train other testing labs, to help scale up its adoption across the country.

Nagpur Municipal Corporation has given permission to go ahead with the method, following which testing has begun at NEERI, as per approved testing protocol.

The infographic features the NEERI logo at the top left. A green banner at the top right states: "ICMR approved the use of Saline Gargle RT-PCR test developed by CSIR NEERI for COVID-19 detection". Below this, a white box with a black border is titled "Salient features and Advantages". It contains a list of nine bullet points, each with a green checkmark icon. The background of the infographic shows a blue and white laboratory setting with several red, spiky virus particles. At the bottom, there are social media icons for Facebook, Twitter, and Instagram, along with the website URL www.neeri.res.in.

CSIR – National Environmental Engineering Research Institute (NEERI)

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Salient features and Advantages

- ✓ Nasopharyngeal swab, oropharyngeal swab and viral transport medium NOT required.
- ✓ Skilled health care workers for sample collection NOT required.
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- ✓ Fast sampling is possible.
- ✓ Long queues of patients/persons at sample collection centre can be minimised.
- ✓ No RNA extraction kit required. Simple room temperature incubation in buffer, followed by heating for few minutes is good enough to give reasonably good RNA template for Direct RT-PCR.
- ✓ Saves time and money.

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“Need to Implement Pan India”

Scientists, researchers and lab-technicians of the Environmental Virology Cell at NEERI have taken painstaking efforts to develop this patient-friendly technique amid surging COVID-19 infections in the Vidarbha region. Dr. Khairnar and his team hopes that the method is implemented at the national level, resulting in faster and more citizen-friendly testing, thereby strengthening our battle against the pandemic.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722373>



पत्र सूचना कार्यालय
भारत सरकार

विज्ञान एवं प्रौद्योगिकी मंत्रालय

Fri, 28 May 2021 11:39AM

रोगियों के लिए नमक के पानी से गरारे के माध्यम से आरटी- पीसीआर जांच की अनूठी विधि के लिए राष्ट्रीय पर्यावरण अभियांत्रिकी (इंजीनियरिंग) अनुसन्धान संस्थान (एनईईआरआई) का आभार

नमक के पानी से गरारे, कोई स्वैब नहीं, सरल, तेज और सस्ता

तीन घंटे के भीतर परिणाम मिल जाएगा, ग्रामीण एवं जनजातीय क्षेत्रों के लिए उपयुक्त है

वैश्विक महामारी कोविड-19 का प्रकोप शुरू होने के बाद से ही भारत अपने यहाँ इसकी जांच (परीक्षण) के बुनियादी ढांचे और क्षमता को बढ़ाने के लिए कई कदम उठा रहा है। वैज्ञानिक और औद्योगिक अनुसंधान परिषद (सीएसआईआर) के तहत नागपुर स्थित राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान (एनईईआरआई) के वैज्ञानिकों ने इस कड़ी में एक और कीर्तिमान बना लिया है जिसके अंतर्गत जिसमें कोविड-19 के नमूनों के परीक्षण के लिए 'नमक के पानी से गरारे (सेलाइन गार्गल) आरटी-पीसीआर विधि' ढूंढ ली गयी है।



एक विधि से कई लाभ: सरल, तेज़, आरामदायक और किफायती

नमक के पानी से गगारे (सेलाइन गार्गल) की इस विधि से कई प्रकार के लाभ एक साथ मिलते हैं। यह विधि सरल, तेज, लागत प्रभावी, रोगी के अनुकूल और आरामदायक है और इससे परिणाम भी जल्दी मिलते हैं। न्यूनतम बुनियादी ढांचा आवश्यकताओं को देखते हुए यह विधि ग्रामीण और जनजातीय क्षेत्रों के लिए उपयुक्त है। पत्र सूचना कार्यालय से बातचीत में राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसन्धान संस्थान (एनईईआरआई) में पर्यावरण विषाणु विज्ञान प्रकोष्ठ के वरिष्ठ वैज्ञानिक डॉ. कृष्णा खैरनार ने कहा कि : "स्वैब संग्रह विधि के लिए समय की आवश्यकता होती है। इसके अलावा, चूंकि इस तकनीक में सम्भावित संक्रमितों जांच के दौरान कुछ असुविधा का सामना भी करना पड़ सकता है जिससे वे कभी-कभी असहज भी हो सकते। साथ ही इस प्रकार से एकत्र किए गए नमूनों को एकत्रीकरण केंद्र और जांच केंद्र तक ले जाने में भी कुछ समय लगता है। वहीं दूसरी ओर, नमक के पानी से गरारे (सेलाइन गार्गल) की आरटी-पीसीआर विधि तत्काल, आरामदायक और रोगी के अनुकूल है। नमूना तुरंत ले लिया जाता है और तीन घंटे में ही परिणाम मिल जाएगा।"

रोगी स्वयं ही अपना नमूना एकत्र कर सकता है।

डॉ. खैरनार के अनुसार यह विधि गैर-आक्रामक और इतनी सरल है कि रोगी स्वयं नमूना एकत्र कर सकता है। उन्होंने कहा कि, "नाक से और मुंह से नासोफेरीजल और ऑरोफरीन्जियल स्वैब एकत्र करने जैसी संग्रह विधियों के लिए तकनीकी विशेषज्ञता की आवश्यकता होती है और इनमें समय भी लगता है।

इसके विपरीत, नमक के पानी से गरारे (सेलाइन गार्गल) की आरटी-पीसीआर विधि में नमक के पानी (सेलाइन वाटर) से भरी एक साधारण संग्रह ट्यूब का उपयोग किया जाता है। रोगी इस घोल से गरारे करता है और उसे ट्यूब के अंदर डाल देता है। संग्रह ट्यूब में यह नमूना प्रयोगशाला में ले जाया जाता है जहां इसे कमरे के तापमान पर एनईईआरआई द्वारा तैयार एक विशेष बफर घोल (सौल्युशन) में रखा जाता है। इस घोल को गर्म करने पर एक आरएनए टेम्प्लेट तैयार किया जाता है, जिसे आगे रिवर्स ट्रांसक्रिप्शन पोलीमरेज़ चैन रिएक्शन (आरटी-पीसीआर) के लिए संसाधित किया जाता है। नमूना एकत्र करने और उसे संसाधित करने की यह विशेष विधि हमें आरएनए निष्कर्षण की दूसरी अन्य महंगी ढांचागत आवश्यकता के स्थान पर इसका प्रयोग करने के लिए सक्षम बनाती है। लोग इससे स्वयं का परीक्षण भी कर सकते हैं, क्योंकि इस विधि अपना नमूना (सैम्पल) खुद ही लिया जा सकता है।" यह विधि पर्यावरण के अनुकूल भी है, क्योंकि इसमें अपशिष्ट उत्पादन कम से कम होता है।

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ग्रामीण और जनजातीय क्षेत्रों में परीक्षण के लिए वरदान

वैज्ञानिकों को उम्मीद है कि परीक्षण की यह अनूठी तकनीक ऐसे ग्रामीण और आदिवासी क्षेत्रों के लिए विशेष रूप से लाभप्रद सिद्ध होगी जहां अभी तक बुनियादी ढांचे की आवश्यकताएं एक बाधा के रूप में सामने आ सकती हैं। इस गैर-तकनीक को भारतीय चिकित्सा अनुसंधान परिषद (आईसीएमआर) की मंजूरी मिल गई है। साथ ही एनईईआरआई से कहा गया है कि वह देश भर में इसके प्रयोग में मदद करने के लिए अन्य परीक्षण प्रयोगशालाओं को प्रशिक्षित आवश्यक प्रशिक्षण की व्यवस्था करें।

नागपुर नगर निगम ने इस प्रक्रिया को आगे बढ़ाने की अनुमति दे दी है, जिसके बाद एनईईआरआई में स्वीकृत परीक्षण प्रोटोकॉल के अनुसार परीक्षण शुरू हो गया है।

"पूरे भारत में लागू करने की आवश्यकता"

एनईईआरआई में पर्यावरणीय विषाणुविज्ञान प्रकोष्ठ (एनवायरनमेंटल वायरोलॉजी सेल) के वैज्ञानिकों, शोधकर्ताओं और लैब-तकनीशियनों ने विदर्भ क्षेत्र में बढ़ते कोविड-19 संक्रमणों के बीच इस रोगी-अनुकूल तकनीक को विकसित करने के लिए अनथक प्रयास किए हैं। डॉ. खैरनार और उनकी टीम को उम्मीद है कि इस पद्धति को राष्ट्रीय स्तर पर लागू किया जाएगा, जिसके परिणामस्वरूप तेजी से और अधिक नागरिक-अनुकूल परीक्षण होंगे, और महामारी के खिलाफ हमारी लड़ाई को और मजबूती मिलेगी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1722469>

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Poor infection control, irrational antibiotics use killing Covid-19 patients who otherwise could have survived: ICMR

Over half of those Covid-19 patients, who developed a secondary bacterial or fungal infection, have died, found a new study by ICMR

By Sneha Mordani

New Delhi: A study done by the Indian Council of Medical Research (ICMR) has found that hospital infections and secondary infections are causing deaths among Covid-19 patients. The study shows 56% of Covid-19 patients with secondary infection have died due to bacterial infections or fungal infections.

Study across 10 hospitals

It was found that half of the Covid-19 patients who had developed secondary infections had died. These were patients admitted in the ICU. The study was between the period of June-August last year and has shown that many Covid-19 patients developed a secondary bacterial or fungal infection during treatment or after and led to death in over half of the cases.

Moreover, several cases of black fungus and white fungus have been reported among Covid-19 patients. Cases of hospital-acquired infections and black fungus or mucormycosis infections were also recorded in the study.

Out of the 17,534 patients surveyed in the ICMR study, 3.6% developed a secondary bacterial or fungal infection and the mortality among these patients was at 56.7%. This means half of the Covid-19 patients who developed secondary infections have succumbed.

Mortality rate higher

The mortality rate was manifold in case of secondary infections as against the overall mortality of Covid-19 patients admitted at hospitals. This reflects the susceptibility of those acquiring infections.

“Blood and respiratory sites were the most common sites of secondary infection in Covid-19 patients. Gram-negative pathogens were predominant in respiratory infections, with a significant proportion of Gram-positive pathogens isolated from bloodstream infections,” observed the study.



Over half of the Covid-19 patients who developed a secondary infection have died, found a study by ICMR. (PTI)

Concerns on drug resistance

The ICMR study has also indicated that there is growing drug resistance which had a major role to play in the patients developing secondary infections.

“As most of the secondary infections in our study were nosocomial in origin, and that too with highly drug-resistant pathogens, it highlighted poor infection control practices and irrational antibiotic prescription practices,” said the ICMR study.

Speaking to India Today TV, Dr Kamini Walia, senior scientist at the ICMR who led this study said, "Drug-resistant infections increase hospital stays, increase the cost of treatment. Moreover, when these patients have high drug-resistant infections, the outcomes are poor."

The study has further warned against the irrational use of antibiotics not only to save lives, but also to prevent drug-resistant infections from spreading.

"Standard practices in ICUs need to be followed. In case of Covid-19 patients, doctors are wearing PPEs, double gloves etc. These become physical challenges for implementing infection control practices," Dr Walia told India Today TV.

"In poor sanitation practices, one tries to provide anti-microbial cover. Anti-microbial cover is not always required and this is leading to drug resistance," Dr Walia said.

Health Ministry steps in

A week ago, the Union health ministry stepped in and asked states to prepare and implement infection prevention control programmes in hospitals in accordance with the National Guidelines for Infection and Control in Healthcare Facilities.

This came in light of the increasing number of black fungus or mucormycosis cases. Union health secretary Rajesh Bhushan, in his letter to chief secretaries and administrators of all states, asked them to establish or activate the hospital infection control committee chaired by head of the institution or an administrator.

Bhushan also asked the states to designate an infection prevention and control nodal officer, preferably a microbiologist or a senior infection control nurse.

<https://www.indiatoday.in/coronavirus-outbreak/story/most-covid-patients-with-secondary-infection-died-icmr-study-1807952-2021-05-28>

