May
2021

समाचार पत्रों से चयित अंश
Newspapers Clippings

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

खंड : 46 अंक : 91 11 मई 2021

Vol.: 46 Issue : 91 11 May 2021

रक्षा विज्ञान पुस्तकालय
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The EurAsian Times

Tue, 11 May 2021

China deploys lethal MLRS rocket system near LAC amid renewed tensions with India

By Ayush Jain

Amid renewed India-China border tensions, the Chinese PLA has deployed a new MLRS rocket system — most likely in the Tibet region — which is capable of destroying a large area within a few seconds.

There are speculations that the Indian Army may have similar weapons in its arsenal.

China's state-owned Global Times reported on May 10 that an unidentified unit attached to PLA's Xinjiang Military Command has deployed a new MLRS (Multiple Launch Rocket System) in a "high-altitude plateau".

The PLA has replaced its outdated artillery with 10 new PHL-03 long-range rocket systems. This new MLRS is stated to be a novel variant whose rockets feature a guidance system, providing highly accurate targeting in complex terrains.

Chinese experts have indicated that these systems are deployed against India, saying that PLA is poised to protect its integrity after India "purposefully tried to change status quo which eventually led to a months-long border standoff including a fatal confrontation".

According to analysts, this "high-altitude plateau" with "an elevation of more than 5200 meters" could refer to Tibet, which is close to the Line of Actual Control (LAC), the de facto border dividing India and China.

The latest deployment of rockets can be seen as another act of intimidation by the Chinese PLA.

These "highly mobile, fast-reacting, highly accurate, very deadly and jamming-resistant" rocket systems, as stated by the Chinese media, are suitable for varying mission profiles such as seizing control of key regions and supporting assault maneuvers in all weather conditions.

The artillery systems are particularly valuable in high altitude terrains, something the Indian Army has mastered over the years since their experiences in the 1999 Kargil war.

The Chinese reports also stated that the new Rocket Artillery unit has replaced the older fully manual towed artillery pieces. No additional information was given about this unit except that it is deployed at a high-altitude plateau.

After the delivery of these systems, the operators started training and familiarisation with the PHL-03s.

Does India Possess PHL-03?

The PHL-03 is yet another example of Chinese craftsmanship, derived from the Russian BM-30 Smerch rocket launchers. This is a multiple launch rocket system comprising 12 launch tubes for 300 mm artillery rockets, along with a computerized fire control system (FCS) incorporating GPS/GLONASS/Beidou.

Analysts at military-today.com have stated that even though the PHL-03 is a Chinese version of the Smerch, it appears that the Chinese overtook Russians in terms of rockets, as PHL-03s have a longer range (of about 70-130 kilometers) than those of the Smerch (90 km).

Manufacturers claim that Chinese 300 mm rockets are not compatible with the Russian Smerch rockets as these use different propellant motors and components.

China has developed several versions of its own 'Smerch', namely the AR-1, AR-1A, AR-2, and AR-3. The AR-3 is capable of launching bigger 370mm rockets.

The Indian Army too possesses the BM-30 Smerch rocket systems, operating several launcher variants for the system, including around 62 9K58 Smerch batteries, each of which has six launch vehicles.

Since 2012, India's state-owned Ordnance Factory Board has produced several rocket variants for the system that have a strike range of 70 or 90 km.

India's Defence Research and Development Organisation (DRDO) has also developed an indigenous MLRS capable of launching precision-guided munitions. This system is called 'Pinaka Mk-II', based on the original Pinaka unguided MLRS.

The new Mk-II has a range of about 60-80 kilometers, and the experience gained on the Pinaka has made the DRDO also work on developing new guided munitions for the Smerch.

Interestingly, in 2018, the Times of India reported that the Indian Army along with Russian scientists tested a new Smerch "guided missile" cum multi-barrel rocket launcher system, having a feature to 'change direction' after firing.

The report also said that DRDO was also working on rockets having "more range than Russian-supplied Smerch rockets". This could mean that the Indian Army has also tested (and most probably inducted) new guided versions of the Smerch, similar to the Chinese PHL-03.

https://eurasiantimes.com/china-deploys-lethal-mlrs-rocket-system-near-lac-amid-renewed-tensions-with-india/

COVID 19: DRDO's Contribution

FINANCIAL EXPRESS
Read to Lead

Tue, 11 May 2021

Govt relaxes procurement norms for health, pharma ministries, DRDO

As per the instructions, when these ministries and departments are undertaking 'single source procurement' of goods or procuring 'non-consultation services' like air and other transportation services, through nomination, then they would not be required to float tender on the GeM portal

With the world's worst outbreak of COVID-19 severely straining the health system in the country, the government has made sweeping changes in the way departments procure medical supplies, including allowing procurement of the same item at different rates.

Relaxing tendering norms, the Department of Expenditure has allowed global tenders to be floated for less than Rs 200 crore as well.

Relaxing tendering norms, the Department of Expenditure has allowed global tenders to be floated for less than Rs 200 crore as well.

The Department of Expenditure, under the Ministry of Finance, on April 24 issued special instructions relating to relief operations for COVID-19 pandemic and said that the prevailing health emergency on account of the unprecedented surge in COVID-19 cases across the country requires immediate procurement of certain items in quantities which may not be available with a single supplier and/ or within the time frame in which they are needed.

"The instruction in this Department's OM (Office Memorandum)… dated May 15, 2020… specifying that no Global Tender Enquiries shall be invited for tenders up to Rs 200 crore shall stand relaxed and hence it shall be permissible to invite GTE where necessary," said the instructions, which have been put up on the ministry's website on Monday.

As part of its Aatmanirbhar Bharat package, the government in May last year notified amendments to General Financial Rules (GFR) to ensure that goods and services valued less than Rs 200 crore will be procured from domestic firms, a move which was aimed at benefitting small and medium enterprises.

Rule 149 of GFR provides that procurement of goods and services through the Government's e-marketplace (GeM) will be mandatory for items available on GeM portal.

"In the present situation, vendors under GeM, even if orders are placed, may not always be able to effect deliveries of supplies on time and desired locations, due to the rapidly changing situation on account of the critical pandemic situation which requires extreme flexibility in making available the critical life saving goods to the medical care facilities," as per the instructions, which would be in force till May 31.

In view of the urgency involved, where time is the essence and delay may result in loss of life, these instructions, which are applicable to the Department of Pharmaceuticals, Ministry of Health and Family Welfare (including Department of Health Research) and Defence Research and Development Organisation (DRDO), have been issued for any emergent purchases and transportation of medical and other essential supplies related to COVD-19 operations.

As per the instructions, when these ministries and departments are undertaking 'single source procurement' of goods or procuring 'non-consultation services' like air and other transportation services, through nomination, then they would not be required to float tender on the GeM portal.

The relaxed norms provide that such procurement can also be done from more than one source, if the entire quantity required is not available or is not immediately available from one source. "Such procurement may, if unavoidable, be at different rates," as per the instructions.

"If the entire quantity required is not immediately available from any one method of procurement, the procurement may also be resorted to simultaneously by multiple methods, namely procurement under Rule 166/204, procurement through GeM, and procurement through other procurement methods (including through Indian Missions) and such procurement may, if unavoidable, be at different rates," it added.

While Rule 166 of General Financial Rules (GFR) relates to single-source procurement of goods, Rule 204 pertains to procurement of 'non-consultation services' like air and other transportation services through nomination after consultation with the Financial Advisor of the specific department or Ministry.

India is facing the world's worst outbreak of COVID-19 cases with more than 3 lakh new daily COVID-19 cases being reported for two weeks now. More than 2.46 lakh people in India have died from the virus infection.

Public health system is buckling under the weight of surging infections and deaths with several parts of the country reporting shortage of hospital beds, medical oxygen, medicines and vaccines.

https://www.financialexpress.com/lifestyle/health/govt-relaxes-procurement-norms-for-health-pharma-ministries-drdo/2249440/

नवभारत टाइम्स

Tue, 11 May 2021

सरकार ने स्वास्थ्य, औषध मंत्रालयों, डीआरडीओ के लिए खरीद नियमों में ढील दी

नयी दिल्ली: भारत में कोविड-19 के बढ़ते कहर से स्वास्थ्य व्यवस्था के बुरी तरह प्रभावित होने के साथ सरकार ने विभागों के लिए चिकित्सीय आपूर्तियों की खरीद से जुड़े नियमों में ढील दी है। इनमें एक ही सामान अलग-अलग दरों पर खरीदने की मंजूरी शामिल है।

व्यय विभाग ने निविदा देने से जुड़े नियमों में ढील देते हुए 200 करोड़ रुपए से कम के सौदों के लिए भी वैश्विक निविदाएं जारी करने की मंजूरी दी।

वित्त मंत्रालय के तहत आने वाले व्यय विभाग ने 24 अप्रैल को कोविड-19 महामारी के लिए राहत अभियानों से जुड़े विशेष निर्देश जारी किए थे और कहा था कि देश में कोविड-19 मामलों में आयी अभूतपूर्व तेजी से स्वास्थ्य क्षेत्र में पैदा हुई आपात स्थिति को देखते हुए कुछ सामानों की ज्यादा तादाद में तत्काल खरीद जरूरी है जो हो सकता है कि किसी एक आपूर्तिकर्ता के पास उपलब्ध न हो और/या एक ही समय पर उपलब्ध न हो जब उनकी जरूरत हो।

सोमवार को मंत्रालय की वेबसाइट पर डाले गए निर्देशों में कहा गया, "विभाग के ओएम (कार्यालय ज्ञापन) में 15 मई, 2020 को डाले गए निर्देशों में कहा गया है कि 200 करोड़ रुपए की निविदाओं के लिए वैश्विक निविदा पड़ताल (जीटीई) आमंत्रित न किए जाने के नियम में ढील दी जाएगी और इसलिए जहां जरूरी होगा जीटीई आमंत्रित करने की मंजूरी होगी।"

https://navbharattimes.indiatimes.com/business/business-news/government-relaxes-procurement-rules-for-health-drugs-ministries-drdo/articleshow/82527698.cms

Business Today

Tue, 11 May 2021

All you need to know about DRDO's new anti-COVID-19 drug 2-DG

The anti-Covid oral drug has been developed by the Defence Research and Development Organisation's (DRDO's) leading laboratory- Institute of Nuclear Medicine and Allied Sciences (INMAS) in collaboration with Dr Reddy's Laboratories

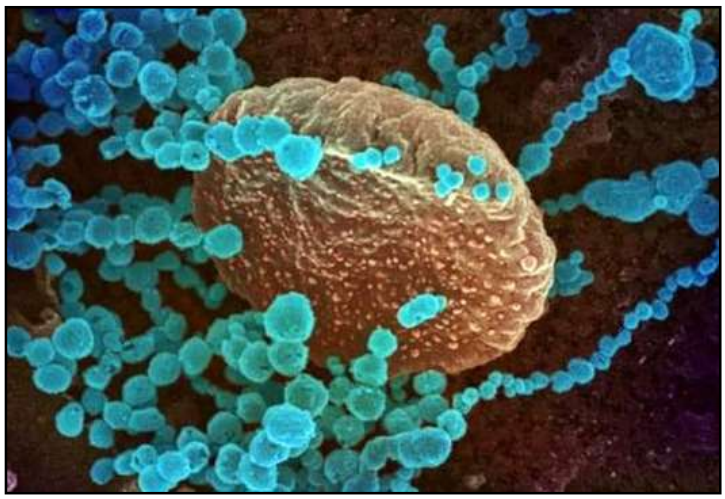
Edited by Mohammad Haaris Beg

DRDO's new anti-Covid oral drug, 2-deoxy-D-glucose (2-DG), was recently granted emergency use approval by the Drug Controller General of India (DCGI) as an adjunct therapy in moderate cases of COVID-19. The 2-DG drug is expected to help hospitalised COVID-19 patients and reduce their supplemental oxygen dependence.

The anti-Covid oral drug has been developed by the Defence Research and Development Organisation's (DRDO's) leading laboratory- Institute of Nuclear Medicine and Allied Sciences (INMAS) in collaboration with Dr Reddy's Laboratories.

How was 2-DG developed? How were clinical trials conducted?

DRDO Project Director and Scientist of 2-DG, Dr Sudhir Chandana explained how the drug was developed. He stated that when the pandemic hit India in April 2020, they discovered that 2-DG halts the spread of COVID-19 inside the body cells. "After the findings, we asked the DCGI for permission to conduct clinical trials. In May 2020, we got permission for the clinical trials. By the end of October 2020 we had completed the second phase of trials, and the results were very good. Using standard care, 2 DG will be more beneficial for the Covid-19 patients," Chandana told News18.



The 2-DG drug is expected to help hospitalised COVID-19 patients and reduce their supplemental oxygen dependence

A total of 110 patients were part of the Phase-II clinical trials of DRDO's 2-DG drug. The results showed that in terms of improvement of vital signs of COVID-19 symptomatic patients there was a difference of 2.5 days compared to Standard of Care (SoC). Approval for Phase - III clinical trials were granted in November 2020. These were conducted in 27 COVID-19 hospitals spread across several states. "Clinical trial results have shown that this molecule helps in faster recovery of hospitalised patients and reduces supplemental oxygen dependence," an official DRDO statement had explained earlier.

How 2-DG controls COVID-19 and reduces dependence on oxygen?

Explaining how 2-DG controls COVID-19 and reduces dependence on oxygen, Chandana told the new channel, "The 2 DG drug, like glucose, spreads through the body, reaches the virus-infected cells and prevents virus growth by stopping viral synthesis and destroys the protein's energy production. The drug also works on virus infection spread into lungs which help us to decrease patients dependability on oxygen".

How will 2-DG be manufactured?

The DRDO stated that the 2-deoxy-D-glucose (2-DG) drug can easily be produced in India and made available in plenty to the citizens as it is a generic molecule and analogue of glucose.

How is 2-DG be consumed?

The anti-COVID drug 2-DG has been developed in powder form and is ingested orally by dissolving it in water.

https://www.businesstoday.in/latest/trends/all-you-need-to-know-about-drdos-new-anti-covid-19-drug-2-dg/story/438692.html

नवभारत टाइम्स

Tue, 11 May 2021

2-DG Medicine: फेफड़े को बुलंद कर देती है डीआरडीओ की नई दवा, जानें कितने में मिलेगी और कोरोना मरीजों के लिए कितना कारगर

By Naveen Kumar Pandey

हाइलाइट्स:

- ***कोरोना से लड़ाई में देश को एक और बड़ी उपलब्धि हासिल हुई है***
- ***वायरस के हमले से कमजोर हुए फेफड़े को मजबूत करने के लिए नई दवा का इजाद हुआ है***
- ***इस दवा से ऑक्सिजन लेवल घटने के कारण जान पर बने खतरे को कम किया जा सकता है***

नई दिल्ली: भारत के औषधि महानियंत्रक (DCGI) ने देश में निर्मित कोविड रोधी दवा के आपात इस्तेमाल की मंजूरी दे दी है। मुंह के जरिए ली जाने वाली इस दवा को कोरोना वायरस के मध्यम से गंभीर लक्षण मरीजों के इलाज में इस्तेमाल करने की अनुमति सहायक पद्धति के रूप में दी गई है। इस दवा को ऐसे समय मंजूरी मिली है जब भारत कोरोना वायरस की महामारी की दूसरी लहर से घिरा है और देश के स्वास्थ्य अवसंरचना पर भारी दबाव है। आइए जानते हैं इस दवाई से कोविड मरीजों को रिकवरी में कैसे सहायता मिलेगी, दवा की कीमत क्या होगी और ऐसे ही सभी महत्वपूर्ण सवालों के जवाब...

1. **यह नई दवा किसने बनाई है?**

   इस दवा को रक्षा अनुसंधान एवं विकास संगठन (DRDO) की प्रतिष्ठित प्रयोगशाला नामिकीय औषिध तथा संबद्ध विज्ञान संस्थान (आईएनएमएएस) ने हैदराबाद के डॉ. रेड्डी लेबोरेटरी के साथ मिलकर विकसित किया है। इस दवा का नाम 2-डीजी है। इसका पूरा नाम 2-डीऑक्सी-डी-ग्लूकोज है। सामान्य अणु और ग्लूकोज के अनुरूप होने की वजह से इसे भारी मात्रा में देश में ही तैयार और उपलब्ध कराया जा सकता है।

2. **क्या यह भी इंजेक्शन है या फिर टैबलेट या कुछ और?**

   2-डीजी दवा पाउडर के रूप में पैकेट में आती है, इसे पानी में घोल कर पीना होता है। गैस और बदहजमी के लीजिए इनो पाउडर जैसे पानी में घोलकर पीते हैं, उसी तरह 2-डीजी को भी पिया जा सकेगा।

3. **2-डीजी पाउडर की कीमत कितनी होगी?**

   यूं तो इस बारे में आधिकारिक जानकारी सामने नहीं आई है। हालांकि, कहा जा रहा है कि एक पैकेट की कीमत 500 से 600 रुपये के बीच हो सकती है। इसका उत्पादन करने वाली दवा कंपनी डॉ. रेड्डीज ही सही दाम का खुलासा करेगी।

4. **दवा मरीजों को किस तरह मदद करती है?**

   यह दवा उन मरीजों की मदद करेगी जिन्हें सांस लेने में तकलीफ की समस्या होती है। क्लीनिकल टेस्ट में सामने आया कि 2-डीजी दवा अस्पताल में भर्ती मरीजों के जल्द ठीक होने में मदद करने के साथ-साथ अतिरिक्त ऑक्सीजन की निर्भरता को कम करती है। रक्षा मंत्रालय ने कहा, "कोविड-19 की चल रही दूसरी लहर की वजह से बड़ी संख्या में मरीजों को ऑक्सीजन और अस्पताल में भर्ती कराने की जरूरत पड़ रही है। इस दवा से कीमती जिंदगियों के बचने की उम्मीद है क्योंकि यह दवा संक्रमित कोशिकाओं पर काम करती है। यह कोविड-19 मरीजों के अस्पताल में भर्ती रहने की अवधि भी कम करती है।

5. **कोरोना के खिलाफ कैसे काम करती है दवा?**

   कोविड-19 का सामना कर रहे मरीजों को यह दवा बहुत लाभ पहुंचाएगी। 1 मई को डीसीजीआई ने इस दवा को कोविड-19 के मध्यम एवं गंभीर लक्षण वाले मरीजों के इलाज के लिए सहायक पद्धति के रूप में आपात इस्तेमाल की मंजूरी दी। सहायक पद्धति वह इलाज है जिसका इस्तेमाल प्राथमिक इलाज में मदद करने के लिए किया जाता है। 2-डीजी दवा वायरस से संक्रमित कोशिका में जमा हो जाती है और वायरस की वृद्धि को रोकती है। वायरस से संक्रमित कोशिका पर चुनिंदा तरीके से काम करना इस दवा को खास बनाता है।" दवा के असर के बारे में मंत्रालय ने बताया कि जिन लक्षण वाले मरीजों का 2डीजी से इलाज किया गया, वे मानक इलाज प्रक्रिया (एसओसी) से पहले ठीक हुए। 2डीजी से इलाज कराने वाले अधिकतर मरीज आरटी-पसीआर जांच में निगेटिव आए।

6. **डीआरडीओ ने इस दवा पर काम कब शुरू किया था?**

   डीआरडीओ ने अप्रैल 2020 में महामारी की पहली लहर के दौरान आईएनएमएएस-डीआरडीओ के वैज्ञानिकों ने हैदराबाद स्थित सेंटर फॉर सेल्यूलर ऐंड मॉलिक्यूल बायोलॉजी के साथ मिलकर प्रयोशाला में प्रयोग किया और पाया कि ये अणु सार्स कोव-2 वायरस के खिलाफ कारगर हैं और वायरस के संक्रमण को बढ़ने से रोकते हैं।

7. **क्लीनिकल ट्रायल में इस दवा के क्या रिजल्ट मिला?**

   मंत्रालय के मुताबिक इन नतीजों के बाद डीसीजीआई के केंद्रीय औषधि मानक नियंत्रण संगठन (CDSCO) ने मई 2020 में 2-डीजी के कोविड-19 मरीजों पर दूसरे चरण का क्लीनिकल ट्रायल करने की मंजूरी दी। प्रभाव एवं सुरक्षा की जांच करने के बाद मई से अक्टूबर 2020 तक दूसरे चरण का परीक्षण किया गया और पाया गया कि सुरक्षित होने के साथ-साथ कोविड-19 मरीजों के ठीक होने भी मदद करता है। दूसरे चरण के पहले हिस्से में छह अस्पतालों में और द्वितीय चरण के दूसरे हिस्से में देश के 11 अस्पतालों में 110 मरीजों पर परीक्षण किया गया।सफल नतीजों के बाद डीसीजीआई ने नवंबर 2020 में तीसरे चरण के परीक्षण को मंजूरी दी। तीसरे चरण का क्लीनिकल ट्रायल दिसंबर 2020 से मार्च 2021 के बीच देशभर के 27 अस्पतालों के 220 मरीजों पर किया गया। ये अस्पताल दिल्ली, उत्तर प्रदेश, पश्चिम बंगाल, राजस्थान, महाराष्ट्र, आंध्र प्रदेश, तेलंगाना, कर्नाटक और तमिलनाडु के हैं। तीसरे चरण के ट्रायल के आंकड़े डीसीजीआई को दिए गए। नतीजों के मुताबिक 2-डीजी दवा से लक्षण वाले मरीजों में उल्लेखनीय सुधार हुआ और तीसरे दिन से ही एसओसी के मुकाबले इस दवा से ऑक्सीजन निर्भरता (31 प्रतिशत के मुकाबले 42 प्रतिशत) खत्म हो गई। इसी तरह का सुधार 65 साल से अधिक उम्र के मरीजों में भी देखने को मिला।

https://navbharattimes.indiatimes.com/india/drdos-new-drug-makes-lungs-strong-know-all-the-important-facts-about-2dg-powder/articleshow/82517618.cms

Tue, 11 May 2021

मंगलवार को लखनऊ आएंगे राजनाथ सिंह, DRDO कोविड अस्पताल का करेंगे निरीक्षण

स्थानीय सांसद और केंद्रीय रक्षा मंत्री राजनाथ सिंह शहर में रक्षा मंत्रालय के दो कोविड अस्पताल का निरीक्षण करने यहां लखनऊ आ रहे हैं।

By Shreedhar Agnihotri

लखनऊ: स्थानीय सांसद और केंद्रीय रक्षा मंत्री राजनाथ सिंह(Rajnath Singh) शहर में रक्षा मंत्रालय के दो कोविड अस्पताल का निरीक्षण करने यहां लखनऊ आ रहे हैं। रक्षा मंत्री लखनऊ में हज हाउस में बन रहे 255 बेड के कोविड अस्पताल जाएंगे। जबकि डीआरडीओ के अवध शिल्प ग्राम में बनाये गए 505 बेड के अटल विहारी वाजपेयी कोविड अस्पताल का भी दौरा करेंगे। इस दौरान केंद्रीय रक्षा मंत्री उन डीआरडीओ अधिकारियों व विज्ञानियों से भी मिलेंगे। जिन्होंने बेहद कम समय में इस अस्पताल को तैयार किया है। राजनाथ सिंह कोरोना संक्रमित मरीजों की जान बचाने में लगे सैन्य डाक्टरों, एमएनएस अधिकारियों और पैरा मेडिकल स्टाफ से भी वह मुलाकात करेंगे।

राजनाथ सिंह (फाइल फोटो सोशल मीडिया)

गौरतलब है कि मुख्यमंत्री योगी आदित्यनाथ ने बुधवार को अस्पताल का उद्घाटन किया था। उत्तर प्रदेश की राजधानी लखनऊ में 505 बेड के डीआरडीओ का अवध शिल्प ग्राम में अटल विहारी वाजपेयी कोविड अस्पताल तैयार हो गया है। लखनऊ में कोरोना से संक्रमित लोगों के लिए डीआरडीओ ने इस अस्थाई हॉस्पिटल को बनाया है। यहां अब तक 505 मे से 250 बेड पर मरीजों की भर्ती हो रही थी। माना जा रहा है कि शेष 250 ऑक्सीजन वाले बेड पर कोरोना संक्रमित रोगियों की भर्ती भी मंगलवार से शुरू हो जाएगी।

बतातें चलें कि दिल्ली, अहमदाबाद और लखनऊ के बाद, अब बनारस हिंदू विश्वविद्यालय, वाराणसी में पंडित राजन मिश्रा कोविड अस्पताल को 10 मई को रक्षा अनुंधान विकास संगठन (DRDO), सशस्त्र बलों और नागरिक प्रशासन के प्रयासों से बनाया गया है। 750 बेड का यह अस्पताल डीआरडीओ द्वारा स्थापित किया गया है।

कोरोना एक्टिव केस

आपको बताते चलें कि यूपी में कल यानी रविवार के दिन कोरोना के 23 हजार 157 नए मामले सामने आए। जबकि यहां पर 15 लाख से ज्यादा एक्टिव केस है। और कोरोना से मरने वालों की संख्या 15 हजार से पार हो चुकी हैं। वहीं दूसरी और 12 लाख से अधिक लोग कोरोना से ठीक हो चुके हैं।

https://newstrack.com/uttar-pradesh/rajnath-singh-will-be-on-a-tour-of-lucknow-on-tuesday-264414?infinitescroll=1

THE TIMES OF INDIA

Tue, 11 May 2021

750-bed Covid hospital set up by DRDO opens in Varanasi

Lucknow: A 750-bed hospital set up by the DRDO for Covid-19 patients on Banaras Hindu University's campus in Varanasi opened on Monday, an official statement said here. Currently, a 250-bed ICU facility is functional and the capacity of the Pandit Rajan Mishra Covid Hospital will gradually be expanded to 750 beds with anticipated patient inflow.

All beds at this temporary facility set up by the Defence Research and Development Organisation (DRDO) will be provided with oxygen as the hospital is well-equipped with 40 KL of oxygen stored in three tanks, the statement said.

Medicines and food will be provided free of charge to all patients.

There will be no direct walk-in admissions to the hospital and all admissions will be managed through referrals by the Integrates Command and Control Centre, Varanasi under the State administration.

The armed forces are providing specialists, doctors, nursing and other medical staff who are moved from across the country on a war footing to run the hospital in coordination with Banaras Hindu University and the civil administration, the statement said.

The medical staff has been trained in Covid protocols and all equipment has been checked for serviceability and quality control, it said.

All beds at this temporary facility set up by the Defence Research and Development Organisation (DRDO) will be provided with oxygen as the hospital is well-equipped with 40 KL of oxygen stored in three tanks, the statement said. (ANI PHOTO)

The state government has facilitated all major functions such as supply of essential amenities to run the hospital, including oxygen, dedicated power supply, bio-medical and other waste management system and patient management system.

"Amid the ongoing second wave of Covid-19, the Ministry of Defence has come forward to support the fight against the pandemic by setting up and manning the operations in various Covid Hospitals across the country," the statement said.

After Delhi, Ahmedabad and Lucknow, the Varanasi hospital was made functional, it further said.

https://timesofindia.indiatimes.com/city/lucknow/750-bed-covid-hospital-set-up-by-drdo-opens-in-varanasi/articleshow/82522353.cms

THE ECONOMIC TIMES

Tue, 11 May 2021

Shares of Dr. Reddy's Labs jump 5% after DGCI approves DRDO's 2-DG drug

Synopsis

Shares of Dr. Reddy's Laboratories soared 5 per cent to Rs 5422 on Monday. The scrip was closed at Rs 5173.55 in the previous session. However, it gave up some gains to Rs 5349.25, 3.4 per cent higher at 10.40 am.

New Delhi: Shares of Pharmaceutical major Dr. Reddy's Laboratories jumped 5 per cent after India's regulator has approved a new, oral Covid-19 drug that promises to reduce hospitalisation time and oxygen dependency for moderate to severe cases.

The first 10,000 doses are expected to be available by next week

Shares of Dr. Reddy's Laboratories soared 5 per cent to Rs 5422 on Monday. The scrip was closed at Rs 5173.55 in the previous session. However, it gave up some gains to Rs 5349.25, 3.4 per cent higher at 10.40 am. BSE Sensex was recorded at 357.8 points or 0.73 per cent higher at 49,564.27.

The Institute of Nuclear Medicine and Allied Sciences, a DRDO lab, worked in partnership with Dr Reddy's Laboratories to develop the drug, with the clinical trials showing it to be effective in controlling the pandemic, officials said. The first 10,000 doses are expected to be available by next week.

The 2-deoxy-D-glucose (2-DG) drug developed by the Defence Research and Development Organisation has proved to be effective in three phases of trials on Covid-19 patients and can be easily mass produced, officials said, adding that it will help relieve the burden on the country's health infrastructure.

Last month, DCGI granted nod to Russia's Sputnik V vaccine after DRL presented 'strong immunogenicity' data. DRL has conducted local trials for the imported Sputnik V jabs on 1,500 people. Sputnik V is the third vaccine to receive approval for emergency use in India after Covishield and Covaxin.

Chakri Lokapriya, CIO & Managing Director, TCG AMC said to ET Now, "Sputnik announcement would help Dr Reddy's with a 5-7 per cent earnings upgrade. Domestically, their vaccine prices will be far lower than the export markets."

https://economictimes.indiatimes.com/markets/stocks/news/shares-of-dr-reddys-labs-jump-5-after-dgci-approves-drdos-2-dg-drug/articleshow/82515445.cms

Defence News

Defence Strategic: National/International

INDIA TODAY

Tue, 11 May 2021

Never seen such synergy among 3 services, not letting guard down on borders: CDS Bipin Rawat exclusive

Speaking exclusively with India Today TV, General Bipin Rawat said while there are constraints in handling the coronavirus pandemic, "such synergy between the three armed forces has never been seen before". He also said the armed forces are not letting their guard down on the border areas

By Rahul Kanwal

As India battles a devastating wave of coronavirus infection, Chief of Defence Staff General Bipin Rawat said the armed forces are utilising all the resources to handle the Covid crisis in the country. Speaking exclusively with India Today TV, General Bipin Rawat said while there are constraints in handling the coronavirus crisis, "such synergy between the three armed forces has never been seen before".

General Bipin Rawat said he has never seen such synergy among 3 services before to fight Covid crisis.

India is struggling with the second wave of coronavirus infection as hospitals in several states are reeling under a shortage of oxygen and beds. As Covid cases spiked in India, overwhelming the hospitals across several states and causing oxygen shortages, which resulted in many deaths, the Indian Air Force was roped in for the international operations.

The three services as well as other wings of the defence ministry have been extending support to various state governments and union territories in dealing with a massive spike in coronavirus cases.

Speaking about how the armed forces are being mobilised to ensure the transportation of oxygen to areas lacking oxygen manufacturing capabilities, General Bipin Rawat said, "Unfortunately, the armed forces do not have the capacity to generate oxygen. We do not have oxygen plants; even for our own hospitals, we bank on agencies to provide us with oxygen."

"To transport oxygen in rural and other areas of the country, we are buying oxygen concentrators. We have generators in case there's no electricity supply. We make sure people get oxygen concentrators and gradually we are making sure the oxygen concentrators move forward as much as possible. We are expecting about 5,000 concentrators being made available to us...these will be deployed in areas where we find a lack of oxygen."

"Unfortunately, the filled cylinders cannot be lifted by air. That is a restriction," General Bipin Rawat said. General Bipin Rawat said the armed forces are working together. He said states that

have the highest number of Covid-19 cases, have been identified. "We are utilising all resources to help India overcome the overwhelming situation," Gen Bipin Rawat said.

"The line of coordination is well-defined and we all work together to maximum utilisation of our resources. States have been identified and attention has been given to those states," General Bipin Rawat said.

He also said the armed forces have created new hospital infrastructures, new resources, and have installed vital items to serve the needy as the country fights the devastating second wave of the coronavirus pandemic.

Never seen this kind of synergy among 3 services

General Bipin Rawat also said such synergy between the three armed services to serve the nation has never been seen before.

"The kind of positivity that is being generated...we are walking the extra mile to ensure that we move forward and work together. The Air Force, without even getting directions, is supporting the Army in moving equipment and forces. We were able to send additional troops to Ladakh. It happened because of coordination. The directions came from the top leadership of the three services," General Bipin Rawat said.

On virus cases among personnel

When asked how the virus has impacted service personnel considering the extensive deployment of personnel along the borders as the Chinese threat continues to loom, General Bipin Rawat said, "Troops that are required to be deployed to the front line, we make sure they undergo tests [Covid], they undergo quarantine before they are deployed forward."

"It is leading to a delay in the deployment but we can't let our guard down to make sure Covid-19 doesn't spread among the personnel deployed on the front line," General Bipin Rawat said.

Not letting our guard down: Gen Bipin Rawat

Asked if there is a concern that China might create mischief along the border as India battles the Covid, General Bipin Rawat said, "We carry out risk assessment and risk analysis from time to time. In the times of Covid, we have carried out 'what can happen?'. We have made sure we have a minimal presence on the borders to prevent being surprised. We are maintaining reserve forces in-depth areas to ensure that should something go wrong, we are able to position troops at the place of our choosing."

"While we are taking some degree of risk because we also have to support the people and some people [personnel] have been pulled back in our effort to serve the nation, after carrying out the risk assessment and risk analysis, we have identified areas where we think we need to keep our guard higher.

Earlier, Gen Bipin Rawat had called upon the armed forces to rise to the occasion and support the civil administrations across the country in dealing with the pandemic as well as creating mitigation facilities in a time-bound manner.

"Our men and women in uniform have the will and dedication to break barriers and walk the extra mile, always and every time," Gen Rawat said.

In April, Prime Minister Narendra Modi met CDS Gen Bipin Rawat, Army chief Gen MM Naravane, IAF chief Air Chief Marshal RKS Bhadauria and Navy chief Admiral Karambir Singh to review the operations being carried out by the armed forces. The Indian Air Force and the Indian Navy are part of mission oxygen.

https://www.indiatoday.in/coronavirus-outbreak/story/never-seen-such-synergy-among-armed-services-not-letting-guard-down-on-china-borders-cds-bipin-rawat-exclusive-1800774-2021-05-10

Tue, 11 May 2021

China setting up villages in Bhutan to gain military advantage over India: Report

Beijing is "building" three new villages, two of which are already occupied and one under construction, in an open violation of the terms of China's founding treaty with Bhutan

As part of a major construction drive by Chinese President Xi Jinping since 2017, Beijing has been creating multilevel construction in the territory internationally and historically understood as Bhutanese since 2015.

China announced that a new village, called Gyalaphug in Tibetan or Jieluobu in Chinese, had been established in the south of the Tibet Autonomous Region (TAR), an investigative Foreign Policy report has said.

China doesn't need the land it is settling in Bhutan—its aim is to force the Bhutanese government to cede territory that China wants elsewhere in Bhutan to give Beijing a military advantage in its struggle with New Delhi, the report said.

Reportedly, Gyalaphug is now one of three new villages, two already occupied, one under construction. Moreover, such a settlement openly violates the terms of China's founding treaty with Bhutan.

"By mirroring in the Himalayas the provocative tactics it has used in the South China Sea, Beijing is risking its relations with its neighbours, whose needs and interests it has always claimed to respect, and jeopardizing its reputation worldwide," Robert Barnett, the author of the Foreign Policy report said.

Moneycontrol could not independently verify the report.

In 2017, Beijing's attempt to build a road in the Doklam plateau, a trijunction between India, China and Bhutan, was met with a 73-day face-off between Chinese and Indian troops.

The publication said that it contacted the spokesperson for the Indian Ministry of External Affairs, the Bhutanese mission to the United Nations and the prime minister's office, and both the Chinese embassy in Washington and the Ministry of Foreign Affairs in Beijing for a response to this story. It received no response from the Chinese government, which rarely comments on stories before publication. The Indian government said it had no comment. The Bhutanese government did not respond to multiple inquiries.

https://www.moneycontrol.com/news/trends/china-setting-up-villages-in-bhutan-to-gain-military-advantage-over-india-report-6873241.html

Tue, 11 May 2021

Making the shift from blue to red for better LEDs

A new micro-light-emitting diode (micro-LED) developed at KAUST can efficiently emit pure red light and may help in the quest to develop full-color displays based on just a single semiconductor.

Prof. Kazuhiro Ohkawa (left) and Zhe Zhuang (right) created the full-color micro-displays by combining red, green and blue micro-LEDs. Credit: 2021 KAUST; Anastasia Serin

Micro-LEDs are a promising technology for the next generation of displays. They have the advantage of being energy efficient and very small. But each LED can only emit light over a narrow range of colors. A clever solution is to create devices that combine many different LEDs, each emitting a different color. Full-color micro-displays can be created by combining red, green and blue (RGB) micro-LEDs. Now, a KAUST team of Zhe Zhuang, Daisuke Iida and Kazuhiro Ohkawa have worked to develop a more efficient red LED.

The emission color of an LED is determined by the material properties of the semiconductor. For example, nitride semiconductors can be used to make blue and green micro-LEDs, whereas phosphide semiconductors are used for red light. But combining different semiconductors in this way makes construction of RGB micro-LEDs more difficult and expensive. Besides, the efficiency of phosphide micro-LEDs reduces significantly with shrinking chip size.

Red-light emitting indium gallium nitride can be created by increasing the materials' indium content. But this tends to lower the efficiency of the resulting LED because there is a mismatch between the separation of atoms in the GaN and InGaN, which causes atomic-level imperfections. Moreover, damage to the sidewalls of an InGaN micro-LED induced during the fabrication process makes the new device less efficient. "But we have a chemical treatment to remove the damage and retain the high crystal quality of the InGaN and GaN sidewall interface," explains Zhuang.

Zhang's team created and characterized a series of square devices with a side-length of 98 or 47 micrometers. Their 47-micrometer-long devices emitting light at a peak wavelength of 626 nanometers were shown to have an external quantum efficiency—the number of photons emitted from the LED per electron injected into the device—of up to around 0.87 percent. Also, the color purity of the red micro-LED is optimum because it is very close to the primary red color defined by the industrial standard known as Rec. 2020.

"The next step is to increase the efficiency of the red micro-LED with even smaller chip sizes, maybe below 20 micrometers," says Zhuang. "Then we hope to integrate RGB nitride-based LEDs for full-color displays."

More information: Zhe Zhuang et al, Investigation of InGaN-based red/green micro-light-emitting diodes, *Optics Letters* (2021). DOI: 10.1364/OL.422579

Journal information: *Optics Letters*

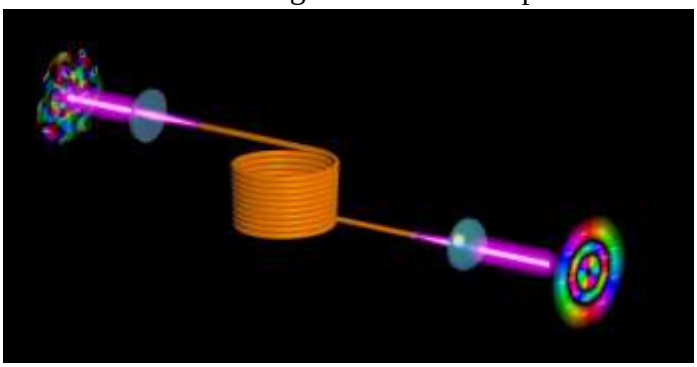
https://phys.org/news/2021-05-shift-blue-red.html

PHYS.ORG

Tue, 11 May 2021

'Flipping' optical wavefront eliminates distortions in multimode fibers

The use of multimode optical fibers to boost the information capacity of the Internet is severely hampered by distortions that occur during the transmission of images because of a phenomenon called modal crosstalk.



When a well-defined image propagates from the right-hand side to the left-hand side through a 1-km-long multimode fiber, its spatial profile and polarization will be strongly distorted. By flipping the wavefront of the distorted image for both polarizations simultaneously, a technique referred to as vectorial time reversal, an undistorted beam is formed after it passes from left to right through the optical fiber. Credit: Illustration by Yiyu Zhou

However, University of Rochester researchers at the Institute of Optics have devised a novel technique, described in a paper in *Nature Communications*, to "flip" the optical wavefront of an image for both polarizations simultaneously, so that it can be transmitted through a multimode fiber without distortion. Researchers at the University of South Florida and at the University of Southern California collaborated on the project.

Lead author Yiyu Zhou, a Ph.D. candidate in the Rochester lab of Robert Boyd, professor of optics, draws an analogy to a multilane highway in describing the challenge the researchers confronted.

"Obviously, a multiple lane highway is faster than a single lane," Zhou says. "But if a courier is forced to change from lane A to lane B, the package will be delivered to the wrong destination. When this happens in a multimode fiber—when one spatial mode is coupled to another during the propagation through the fiber—it's what we call modal crosstalk. And we want to suppress that."

The solution the researchers devised involves digitally pre-shaping the wavefront and polarization of a forward-propagating signal beam to be the phase conjugate of an auxiliary, backward-propagating probe beam—in an experimental realization of vectorial time reversal.

"When an optical beam with perfect wavefronts passes through the multimode fiber, it comes out badly distorted," explains Boyd, who is also the Canada Excellence Research Chair in Quantum Nonlinear Optics at the University of Ottawa.

"If we use a mirror to send the wavefront back, it will become even more distorted. But if we instead reflect it off a mirror, and also flip the wavefront from front to back, the distortion becomes undone as the waves go back through that distorting medium. In particular, we need perform this procedure for both polarizations simultaneously when the distorting medium is a long multimode fiber." The researchers demonstrate that this technology can enhance the channel capacity in a 1-km-long multimode fiber.

"Our technique can be used to realize mode-division multiplexing over long, standard multimode fibers to significantly enhance the channel capacity of optical communication links," Zhou says. "It can potentially be used to increase the Internet speed by one or two orders of magnitude." The technique could also be potentially used to improve endoscopy imaging of the brain and other biological tissues, Zhou says.

More information: Yiyu Zhou et al, High-fidelity spatial mode transmission through a 1-km-long multimode fiber via vectorial time reversal, *Nature Communications* (2021). DOI: 10.1038/s41467-021-22071-w

Journal information: *Nature Communications*

https://phys.org/news/2021-05-flipping-optical-wavefront-distortions-multimode.html

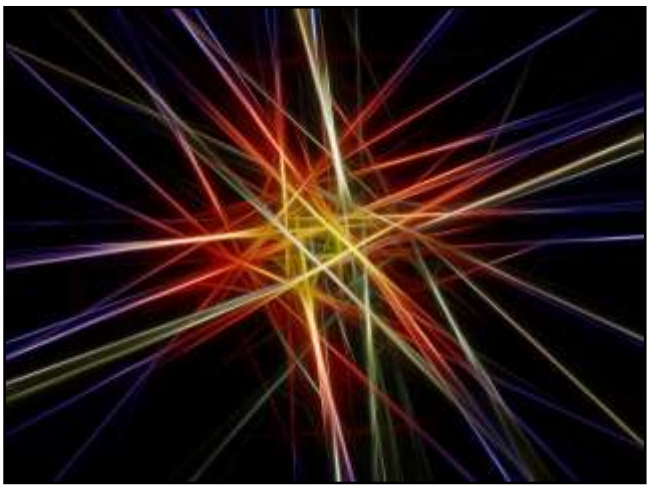
PHYS.ORG

Tue, 11 May 2021

Active cavity solitons: Ultra-stable, high-power optical pulses for measuring light waves

Unlike the oscillations of sound waves, the oscillations of light are so fast that extremely complex equipment is needed to observe them directly. However, it is possible to measure the frequencies of these oscillations indirectly with frequency combs. These combs are made up of a set of regularly spaced 'teeth' where each tooth corresponds to a frequency. Used as a graduated ruler, they offer the possibility of measuring an optical frequency with great precision. This makes it possible, among other things, to measure variations in the distance between the Earth and the Moon with an accuracy equivalent to the size of a hair.

It can be shown that the time signal corresponding to a frequency comb consists of a regular succession of light pulses, called a pulse train. These pulses are ultra-short and have a duration of one millionth of a billionth of a second or less.



Credit: CC0 Public Domain

There are currently two main methods of generating a pulse train either via a pulsed laser or via a passive optical cavity.

"Some lasers can directly generate a pulse train. Some lasers can directly generate a very energetic pulse train but the delay between two successive pulses is subject to variations even in the absence of external disturbances," explains Nicolas Englebert—OPERA-Photonics Laboratory—Ecole polytechnique de Bruxelles.

The other solution is based on passive optical resonators, made, for example, using optical fibers. It allows the generation of a pulse that propagates indefinitely, a cavity soliton, when a continuous laser beam is injected at its input. The period of the resulting train, in the absence of any external disturbance, is fixed here, unlike with pulsed lasers. Unfortunately, its energy is limited.

Each platform therefore has its advantages and disadvantages. However, for certain applications, e.g., LiDAR, it is necessary to have a pulse train that is both energetic and ultra-stable.

Recent research carried out by the ULB OPERA-Photonics Laboratory, published in the journal *Nature Photonics*, shows the existence of new ultra-stable, high-power cavity solitons: active cavity solitons.

"These solitons emerge within a signal-injected resonator in which there is a finely designed amplification section. The purpose of this section is to compensate for some of the losses that the wave (the soliton) experiences at each roundtrip. If the amplification is too low compared to the losses, the soliton cannot exist. On the other hand, if the amplification is greater than the losses, a laser emission will occur. Thanks to this partial compensation of the losses, it is possible to extract a large part of the soliton's energy (more than 30%!) without compromising its existence," Nicolas Englebert points out.

Moreover, as the amplification section is chosen such that lasing does not occur, the pulse train inherits the stability properties of passive resonators. The active cavity soliton thus combines the advantages of pulse trains generated by pulsed lasers and passive resonators.

This new type of universal and hybrid soliton could trigger many experiments on different platforms, especially in the field of integrated optics where passive resonators dominate the

landscape but applications lag behind because very little power can be extracted from the chips. This new concept is not limited to the generation of solitons. Thanks to this new hybrid cavity, components that induce a lot of losses (crystal, particular fiber, etc.) can now be placed in a resonator, opening the way to the study of phenomena that were previously inaccessible experimentally. The invention is the subject of a patent application filed in the name of ULB.

More information: Temporal solitons in a coherently driven active resonator, *Nature Photonics* (2021). DOI: 10.1038/s41566-021-00807-w

Journal information: *Nature Photonics*

https://phys.org/news/2021-05-cavity-solitons-ultra-stable-high-power-optical.html

COVID-19 Research News

Tue, 11 May 2021

Research explains why some patients may test covid-19 positive after recovery

By Mayank Mohanti

Highlights

- ***Researchers from the Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology (MIT) found that the SARS-CoV-2 RNA can be reverse-transcribed and integrated into the genome of the infected cell***
- ***These sections of the genome can then be "read" into RNAs, which could potentially be picked up by a PCR test***
- ***They were able to calculate the fraction of genes that were transcribed in these patients' cells which contained viral sequences that could be derived from integrated viral copies***
- ***It is possible that only a very few human cells experience any kind of viral integration at all. For SARS-CoV-2, the frequency of integration in humans is still unknown***

Healthcare workers analyzing test results have been baffled by something strange, where patients who had already recovered from COVID-19, would sometimes inexplicably test positive on an RT-PCR test weeks or even months later.

These patients didn't catch COVID-19 disease for the second time, which has happened in other cases; no live viruses were isolated from their samples; and it was unlikely for positive tests to be the result of residual RNAs since they generally have a short life.

Researchers from the Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology (MIT) found that the SARS-CoV-2 RNA can be reverse-transcribed and integrated into the genome of the infected cell. These sections of the genome can then be "read" into RNAs, which could potentially be picked up by a PCR test.

"SARS-CoV-2 is not a retrovirus, which means it doesn't need reverse transcription for its replication," says Whitehead Institute postdoc and first author Liguo Zhang said in a statement. "However, non-retroviral RNA virus sequences have been detected in the genomes of many vertebrate species, including humans."

With this in mind, the team infected human cells with the novel coronavirus in the lab and used three different approaches to detect genomic SARS-CoV-2 sequences integrated into the genome of infected cells.

They did find fragments of viral genetic material, but the researchers emphasized that none of the inserted fragments was enough to recreate a live virus.

And while looking for clues to the mechanism by which they got there, the team found “a very clear footprint” for LINE1 integration--a common section of DNA that can move from one region of the genome to another.

The study, published in the journal Proceedings of the National Academy of Sciences, also analyzed published datasets of RNA transcripts from different types of samples, including those of COVID-19 patients. They were able to calculate the fraction of genes that were transcribed in these patients’ cells which contained viral sequences that could be derived from integrated viral copies.

The percentage varied from sample to sample, but for some, a relatively large fraction of viral transcripts seem to have been transcribed from viral genetic material integrated into the genome.

It is possible that only a very few human cells experience any kind of viral integration at all. For SARS-CoV-2, the frequency of integration in humans is still unknown.

“The fraction of cells which have the integrating with could be very small,” says another researcher Rudolf Jaenisch, the professor of biology at MIT. “But even if it's rare, there are more than 140 million people who have been infected already, right?”

https://www.indiatimes.com/technology/science-and-future/covid-19-positive-long-after-recovery-study-540155.html#highlight_48933