2020

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Volume: 45 Issue: 98 02 May 2020

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THE FINANCIAL EXPRESS

Sat, 02 May 2020

Covid-19: DRDO comes with new technology to disintegrate coronavirus

A microwave sterilizer named as 'ATULYA' can be operated in portable or fixed installations and helps in disintegrating the virus by differential heating in the range of 56 to 60 Celsius temperatures

By Huma Siddiqui

From the moment the first positive case of COVID-19 was reported, Defence Research and Development Organisation (DRDO) has ensured that all its labs working under Life Sciences cluster is ready to help the civil authorities. These labs have been producing spin-off technologies which are helping the government to combat COVID-19. Defence Institute of Advanced Technology, Pune, a deemed university supported by Defence Research and Development Organisation has come up with a cost-effective solution to disintegrate coronavirus.

A microwave sterilizer named as 'ATULYA' can be operated in portable or fixed installations and helps in disintegrating the virus by differential heating in the range of 56 to 60 Celsius temperatures.

The DRDO over almost more than a month has been accelerating and enhancing products and countermeasures to combat the spread of COVID-19 in India.

According to the DRDO, this system has been tested for human and operator safety and depending on the size and shape has the capability to sterilize the object within 30 seconds to one minute. The system weighs around 3 kgs and it can be used for non-metallic objects only.

The DRDO over almost more than a month has been accelerating and enhancing products and countermeasures to combat the spread of COVID-19 in India.

According to a report titled `Critical Equipment and Technologies Developed by DRDO for Combating COVID19' has listed 20 products that have been developed and designed and some are spin-offs from the existing critical technologies. The effort of the organization is to ensure uninterrupted creation of solutions and using available resources.

It has listed many items including hand sanitizer, to PPE, face masks, face shield, aerosol containment box, sample testing, medical oxygen plant, ventilators etc.

Earlier this week, defence minister Rajnath Singh reviewed the efforts of DRDO, Ordnance Factory Board as well as other agencies involved in fighting against the COVID-19. He had also urged these agencies to compile a list of products that can be shared with the private sector in an effort to ensure bulk production.

As has been reported by the Financial Express Online

earlier, the DRDO has already transferred a lot of technologies to the private sector companies who are now producing the products.
https://www.financialexpress.com/defence/covid-19-drdo-comes-with-new-technology-to-disintegrate-coronavirus/1945501/

पत्रिका

Sat, 02 May 2020

कोरोना को मात देगा डीआरडीओ का अतुल्य, खास तकनीक से बना माइक्रोवेव स्टरलाइजर

धीरज शर्मा

- *Coronavirus का खात्मा करेगा DRDO का Atulya*
- *खास तकनीक से तैयार किया Microwave स्टरलाइज*
- *30 सेकंड से 1 मिनट में करेगा कोरोना वायरस का खात्मा*

नई दिल्ली। कोरोना वायरस (coronavirus) से निपटने के लिए इस वक्त देश के साथ-साथ पूरी दुनिया जूझ रही है। हर देश इस वक्त कोरोना जैसी महामारी को मात देने के लिए इलाज की तलाश में जुटा है। इस बीच कोरोना से जंग के लिए डिफेंस रिसर्च डवलपमेंट ऑर्गेनाइजेशन (DRDO) ने खास तकीनीक एक उपकरण तैयार किया है। अतूल्य (Atulya) नाम का ये उपकरण एक माइक्रोवेव-स्ट्रेलाइजर है।

दरअसल डीआरडीओ की ओर से तैयार ये माइक्रोवेव तापमान की तकनीक पर काम करता है। डीआरडीओ का दावा है कि कोरोना से लड़ने में ये मददगार साबित होगा है।

कोविड-19 ने पूरी दुनिया को अपनी चपेट में ले लिया है। देशभर में लगातार कोरोनावायरस के मरीजों की संख्या बढ़ रही है। अब तक 35 हजार से ज्यादा लोग इस वायरस की वजह से संक्रमित हो चुके हैं। इस बीच डीआरडीओ की ओर से राहत भरी खबर मिली है। अतूल्य की मदद से कोरोना को मात दी जा सकती है।

रक्षा मंत्रालय ने बयान जारी कर दावा किया है कि डीआरडीओ की पुणे स्थित डीम्ड यूनिवर्सिटी, डिफेंस इंस्टीट्यूट ऑफ एडवांस टेक्नोलॉजी ने इस माइक्रोवेव स्ट्रेलाइजर को तैयार किया है।

इस मशीन के जरिए 56 से 60 डिग्री सेल्सियस तापमान पर कोरोना वायरस को खत्म करने का दावा किया गया है।

किफायती भी और कारगर भी

डीआरडीओ की मानें तो ये प्रोजेक्ट काफी किफायती है। इतना ही नहीं इसे बहुत कम जगह में फिट किया जा सकता है। यानी से जगह भी कम घेरता है।

इंस्टिट्यूट ने इसको लेकर टेस्ट भी किए हैं जो सफल रहे हैं। इन टेस्ट में अतुल्य पूरी तरह सुरक्षित पाया गया है।

इसकी मदद से किसी भी सामान को सिर्फ 30 सेकंड में सट्रेलाइज किया जा सकता है। जिस सामान को स्ट्रेलाइज करना है उसके साइज के हिसाब से 30 सेकेंड से करीब एक मिनट तक इसके सामने रखना रखना होता है।

इसे घर या दफ्तर में कहीं भी रखा जा सकता है। इसके चालू करने के एक मिनट के अंदर कोरोना के किटाणु मर जाएंगे।

आपको बता दें कि इससे पहले भी डीआरडीओ के वैज्ञानिक और अलग-अलग लैब कोरोना वायरस से लड़ने की तकनीक और सामान तैयार कर चुके हैं।

https://www.patrika.com/miscellenous-india/beat-coronavirus-drdo-pune-institute-make-new-technology-microwave-6056911/

WION

Sat, 02 May 2020

COVID-19 battle: DRDO develops PU coated nylon & polyester to be manufactured in India

The empowered group chairman on coronavirus said that the total demand for ventilators is 75,000 in India out of which 19,398 ventilators are available and 60,884 ventilators have been ordered

"DRDO has developed three types of new PU coated nylon/ polyester and technology transfer to manufacturers of India," PD Vaghela, Chairman of the empowered on coronavirus, said.

"Demand for PPE kits has been projected at 2.01 crore in India. We have placed orders for 2.22 crore kits out of which 1.42 crore kits are being procured in the domestic market," Vaghela said, adding."1.87 lakh kits are being produced daily in the country."

Meanwhile, the ministry of home affairs allowed movement of migrant workers, tourists, students and other persons stranded at different places to be transported by special trains.

The Railway ministry said that on arrival at the destination, passengers will be received by the state government, who would make all arrangements for their screening and quarantine if necessary

The home ministry said that no separate passes are required for traffic of trucks and goods carriers, including empty trucks.

https://www.wionews.com/india-news/covid-19-battle-drdo-develops-pu-coated-nylon-polyester-to-be-manufactured-in-india-296098

COVID-19: DRDO/ IIT Contribution

THE TIMES OF INDIA

Sat, 02 May 2020

IIT Guwahati students design, develop low-cost intubation boxes

Guwahati: The Indian Institute of Technology (IIT) Guwahati students have designed and developed low-cost intubation boxes.

The device functions as an aerosol obstruction box which is placed atop the patient bed on the head-side, limiting the flow of virus-laden droplets from the patient to the doctor, especially during the process of intubation.

As in the case of COVID-19, patients develop respiratory failure thus requiring assistance in the form of endotracheal intubation. Given the nature of this process, healthcare providers are at risk of contracting the virus via droplets either exhaled or coughed out by the patient. The device is inspired by the design of Dr Hsien Yung Lai, an anesthesiologist from Taiwan.

It is developed and designed by a student venture for medical innovation named Mitochondrial. Mitochondrial is mentored by Dr. S. Kanagaraj and Dr. Sajan Kapil of the Department of Mechanical Engineering, IIT Guwahati. It is a low-cost alternative to intubation boxes and is easier to manufacture and deliver amid the lockdown. The projected cost per box is Rs 2000, which is significantly lower than existing alternatives.

The team has received assistance from the DRDO for prototyping and testing at the Solid State Physics Laboratory, New Delhi, and is consulting Dr. Johann Christopher of Care Hospitals, Hyderabad, and Dr. Abhijeet Bhatia of NEIGRIHMMS Shillong, to ensure the efficacy of the design.

Speaking on the latest development related to COVID-19, Dr. TG Sitharam, Director, IIT Guwahati said, "It is a matter of great pride that after the major initiatives taken by faculty members and alumni of IIT Guwahati to develop various products for the containment of COVID-19 and major research initiatives, IITG students are also coming up with novel products and immediate solutions for protecting doctors, nurses and healthcare workers in this national effort against COVD-19."

"At IIT Guwahati we have initiated the COVID-19 Grand Challenge for encouraging the students to come forward with ideas and solutions to fight this pandemic and we are expecting several products in the near future," Sitharam said.

Amid the dearth of PPE such as powered air-purifying respirators (PARPs) and well-sealed face masks, it becomes essential to complement the use of makeshift acrylic face shields, N95 masks and surgical respirators, with a proper obstruction for aerosol spewed via the mouth and nose of the patient. The intubation box allows having this protection in place by limiting the infection within the box's volume around the patient.

As opposed to other PPE, this box works effectively for multiple doctors and nurses serving the patient. While the transparent material allows visual access to the head of the patient inside, the arm-holes on the box allow for the care-provider to perform any necessary tasks including intubation and extubation, which are both processes known to be cough inducing. Further, the boxes are reusable, as they may be cleaned thoroughly with 70 per cent alcohol or bleach, to allow use for the next patient.

Speaking about the development, Umang Mathur, a BTech student of the Department of Bioscience & Bioengineering, IIT Guwahati, said, "We feel that it is our responsibility to contribute to this fight against a global pandemic and there could not be a better time and opportunity for IIT graduates to start building upon their world-class education background and exposure, to provide solutions centred around simplicity and make India self-reliant, instead of being dependent on imported technologies especially at this time of crisis".

The primary prototype of the design has been completed at DRDO, New Delhi, and the box is currently being reviewed in the field at major COVID-19 care centres, such as AIIMS, New Delhi. Based on the continuous feedback, the design will be further optimised for improved efficacy, before the first batch is manufactured in Gurgaon, Haryana.

The team has started a crowdfunding campaign in order to manufacture these boxes and provide them to government hospitals for free. The campaign raised a record Rs 50,000 within six hours of launching.

https://timesofindia.indiatimes.com/home/education/news/iit-guwahati-students-design-develop-low-cost-intubation-boxes/articleshow/75484379.cms

Sat, 02 May 2020

Scenarios: Will IAF have room for Tejas Mk2, ORCA, and AMCA at the same time?

By Satyajeet Kumar

By 2035, Indian Air Force (IAF) plans to retire nearly 300 front line fighter jets which include 100+ Upgraded Mig-21Bis, 90+ Jaguar Ground Strike aircraft and 110 mix fleet of Mirage-2000 and Mig-29, according to some media reports, IAF also has plans to retire the first batch of 50 Su-30MKIs from 2035 onwards which brings the total tally to 350 jets by 2035, even though we are not factoring in close to 120+ Mig-27s which have been retired from 2010 onwards and are yet to be replaced with the newer planes.

IAF's current procurement plans involve the purchase of an additional 8 Su-30MKI, 21 Mig-29, 36 Dassault Rafale, 40 Tejas Mk1, and 83 Mk1A along with procurement of 114 jets of International origin. which by 2030 will see the induction of nearly 300 jets plus there will be room for nearly 100 MWF-Mk2 which is already under development and it is expected to enter production by 2026 and could have produced at least 50 jets by 2030.

IAF Combat Aircraft in 2020				
MiG-21	Soviet Union	Multirole	112	
MiG-29	Soviet Union	Multirole	66	WWW.IDRW.ORG
Sukhoi Su-30	Russia	Multirole	272	Production complete
HAL Tejas	India	Multirole	16	24 on order
Mirage 2000	France	Multirole	41	
Dassault Rafale	France	Multirole	3	Total 36 on order
SEPECAT Jaguar	UK / France	Ground attack	91	
			601	

Aircraft	Origin	Type	In service	Notes
IAF Combat Aircraft in 2030 (Without ORCA factored in)				
MiG-29	Soviet Union	Multirole	87	
Sukhoi Su-30	Russia	Multirole	280	WWW.IDRW.ORG
HAL Tejas Mk1/A	India	Multirole	123	
Mirage 2000	France	Multirole	41	
Dassault Rafale	France	Multirole	36	
SEPECAT Jaguar	UK / France	Ground attack	40	
MMRCA	Unknown	Multirole	114	Prodcution at 24 jets per annum
MWF-Mk2	India	Multirole	50	21 jet per year
			771	

50 more MWF-Mk2 might come in period from 2030-35 for IAF which will mean that IAF will have around 350 newer generation jets from a period of 2020-2035 when it will be retiring nearly 300 jets in this period and the replacement rate will be one to one for the next 15 years assuming that all the procurements take place in time and deliveries are on schedule. IAF which has sanctioned strength of a fighter fleet of forty-two squadrons usually requires nearly 800 jets at its

disposal for a two-front war with China and Pakistan but even in the 2030-35 period, it will have only 300 jets replacing 300 older jets thus negating any major bump in aerial firepower fleet.

Aircraft	Origin	Type	In service	Notes
IAF Combat Aircraft in 2035 (Without ORCA factored in)				
Sukhoi Su-30	Russia	Multirole	230	Assuming 50 older jets are retired
HAL Tejas Mk1/A	India	Multirole	123	
Dassault Rafale	France	Multirole	36	WWW.IDRW.ORG
MMRCA	Unknown	Multirole	114	
MWF-Mk2	India	Multirole	100	
AMCA MK1	India	Multirole	40	
WWW.IDRW.ORG				
			643	
Aircraft	Origin	Type	In service	Notes
IAF Combat Aircraft in 2035 (With ORCA factored in)				
Sukhoi Su-30	Russia	Multirole	230	Assuming 50 older jets are retired
HAL Tejas Mk1/A	India	Multirole	123	
Dassault Rafale	France	Multirole	36	
MMRCA	Unknown	Multirole	114	WWW.IDRW.ORG
MWF-Mk2	India	Multirole	100	
AMCA MK1	India	Multirole	40	
ORCA	India	Multirole	50	
WWW.IDRW.ORG			693	

IAF fighter fleet strength in 2030 will rise briefly but by 2035 Jaguar and Mirage/Mig-29 fleet will be flagged for the replacement which will again flatten the growth curve for the IAF in the period unless it decides to prolong this jets in service. By 2035 350+280 Su-30MKI fleet will still make its fleet strength of 630 jets if we assume all Jaguar and Mirage/Mig-29 fleet is retired by then, still IAF will be short of nearly 200 jets even in 2035.

Aircraft	Origin	Type	In service	Notes
IAF Combat Aircraft in 2040 (With ORCA factored in)				
Sukhoi Su-30	Russia	Multirole	150	Assuming 130 older jets are retired
HAL Tejas Mk1/A	India	Multirole	83	Assuming older 40 MK1 are retired
Dassault Rafale	France	Multirole	36	
MMRCA	Unknown	Multirole	114	WWW.IDRW.ORG
MWF-Mk2	India	Multirole	150	
AMCA MK1	India	Multirole	40	
AMCA MK2	India	Multirole	50	
ORCA	India	Multirole	100	
			723	
Aircraft	Origin	Type	In service	Notes
IAF Combat Aircraft in 2040 (Without ORCA factored in)				
Sukhoi Su-30	Russia	Multirole	150	Assuming 130 older jets are retired
HAL Tejas Mk1/A	India	Multirole	123	
Dassault Rafale	France	Multirole	36	
MMRCA	Unknown	Multirole	114	WWW.IDRW.ORG
MWF-Mk2	India	Multirole	150	
AMCA MK1	India	Multirole	40	
AMCA MK2	India	Multirole	50	
WWW.IDRW.ORG				
			663	

IAF will induct AMCA with older F414 engines from 2030 onwards and it is expected that the first 40 jets will be delivered by 2035 when the production for Mk2 will commence but IAF will

still be short by over 100 jets even in 2035 assuming all jets are inducted in time and older ones also retired in time. IAF is likely to agree to field at least 50 more MWF-Mk2 from 2035 onwards.

Possible Scenario if ORCA and AMCA is cleared by IAF for induction for 2035 and also if ORCA never happens

Possible Scenario if ORCA and AMCA Mk1 and Mk2 is cleared by IAF for induction in 2040 and also if ORCA never happens.

Note: Attrition due to accidents if calculated at an assumed average of 6 jets per annum will mean every 5 years 30 jets will be less in the fleet, so around 60 jets will be less in 2030 and 60+30 in 2035 and 60+30+30 in 2040. Since it is difficult to know exact make of the jet which will be lost over the years calculation is for the whole fleet.

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https://idrw.org/scenarios-will-iaf-have-room-for-tejas-mk2-orca-and-amca-at-the-same-time/#more-226656

COVID-19: Defence Forces Contribution

INDIA TV

Sat, 02 May 2020

CDS: Navy helicopters to shower flower petals on hospitals treating COVID-19 patients

The Chief of Defence Staff General Bipin Rawat is addressing a press conference. He is accompanied by the three serving military chiefs -- Chief of the Indian Army General MM Naravane, Navy Chief Amiral Karambir Singh, and IAF Chief RKS Bhadauria

New Delhi: The Chief of Defence Staff General Bipin Rawat on Friday addressed a press conference. He was accompanied by the three serving military chiefs -- Chief of the Indian Army General MM Naravane, Navy Chief Amiral Karambir Singh, and IAF Chief RKS Bhadauria. This is for the first time when the Chief of Defence Staff, a post created by the government to integrate the three wings of the armed forces, addressed the media, in the presence of the three service Chiefs.

Highlights:

- No problems in dealing with the issue of Coronavirus. The first patient in the Army is cured and the jawan is back on duty. Army so far has had only 14 cases of which 5 have been cured and they have returned to work: Army Chief General Manoj M Naravane
- The Navy on its part will have its warships deployed in formations in coastal areas in the evening on May 3. Navy warships would also be lit up and their choppers would be

CDS Bipin Rawat, three service chiefs to address press conference at 6 pm today/FILE

used for showering petals on hospitals: Chief of Defence Staff General Bipin Rawat

- During the India Air Force's flypast, the aircraft will also be showering flower petals at some places: Chief of Defence Staff General Bipin Rawat
- The Army on its part will conduct mountain band displays along some of the COVID hospitals in almost every district of our country. The armed forces will also lay wreathe at the police memorial on May 3 in support of our police forces: Chief of Defence Staff General Bipin Rawat
- There are some special activities that the nation will get to witness. Air Force to conduct flypast from Srinagar to Trivandrum & another one starting from Dibrugarh in Assam to Kutch in Gujarat. It'll include both transport & fighter aircraft: Chief of Defence Staff Gen Bipin Rawat
- On behalf of armed forces, we want to thank all COVID-19 warriors. Doctors, nurses, sanitation workers, police, home guards, delivery boys and media which has been reaching out with the message of government on how to carry on with lives in difficult times: CDS General Bipin Rawat

Earlier on Thursday, Defence Minister Rajnath Singh held a meeting with the top military brass of the country to take stock of the overall preparedness of the armed forces in dealing with the coronavirus pandemic. CDS Bipin Rawat along with the three service chiefs was present in the meeting. Along with them, Defence Secretary Ajay Kumar, Defence Research and Development Organization (DRDO) Chief G Satheesh Reddy and other senior officials of the Ministry of Defence were also in attendance.

https://www.indiatvnews.com/news/india/cds-bipin-rawat-press-conference-service-chiefs-army-navy-air-force-live-news-coronavirus-613164

THE TIMES OF INDIA

Sat, 02 May 2020

Fighter jets to do fly-pasts, choppers to shower petals on Sunday to thank 'corona warriors'

New Delhi: The Indian armed forces will conduct fly-pasts, light up ships at sea, play military bands and shower flower petals on hospitals treating coronavirus patients on Sunday in a grand display of gratitude to lakhs of people like doctors, paramedics and policemen engaged in the country's fight against the pandemic.

The announcement was made by Chief of Defence Staff Gen Bipin Rawat at a press conference in presence of Navy Chief Admiral Karambir Singh, Army Chief Gen M M Naravane and Air Chief Marshal RKS Bhadauria.

"The nation stood together and showed resilience in dealing with the coronavirus pandemic. On behalf of armed forces, we want to thank all the corona warriors -- doctors, nurses, sanitation workers, police, home guards, delivery boys and media," Gen Rawat said.

"On May 3, there will be some special activities as a gesture of special gratitude by all three forces," he, addressing his first press conference after assuming charge of India's first Chief of Defence Staff in January.

He said the fixed wing and fighter aircraft of the Indian Air Force will conduct fly-pasts from Srinagar to Thiruvananthapuram and from Dibrugarh to Kutch on Sunday evening as a mark of respect to all front-line workers battling the pandemic.

Gen Rawat said Indian Navy helicopters will shower flower petals on leading hospitals treating coronavirus patients. Navy will also deploy its warships in formations in coastal areas and the vessels will be lit up as part of the "thanksgiving" exercise on Sunday evening.

The Army will conduct mountain band displays along some COVID-19 hospitals in almost every district besides laying wreaths at police memorials across the country.

"Our police personnel have been doing a great job in the country's fight against the pandemic. They have been deployed in the red zones. We want to express our gratitude to the police personnel too," said Gen Rawat.

His announcement of the special activities came shortly before the Union Home Ministry said the current spell of the lockdown will be extended by another two weeks from Monday. The lockdown came into force on March 25 and was scheduled to end on May 3.

The Chief of Defence Staff said the armed forces are solidly behind those fighting the coronavirus pandemic.

Gen Rawat also asserted that no operational task has been affected or will be affected due to the COVID-19 pandemic.

He said it is not proper to conclude that the novel coronavirus outbreak is a result of biological warfare.

https://timesofindia.indiatimes.com/india/cds-bipin-rawat-3-service-chiefs-press-conference-key-points/articleshow/75491509.cms

हरिभूमि

Sat, 02 May 2020

कोरोना से देश को बचा रहे वारियर्स को सलाम करेगी भारतीय सेना, तीनों सेनाएं बरसाएंगी फूल

चीफ ऑफ डिफेंस स्टाफ बिपिन रावत और तीनों सेनाओं के प्रमुख एक महत्वपूर्ण प्रेस कॉन्फ्रेंस में बताया कि 3 मई को तीनों सेनाएं कोरोना से मोर्चा लेने वाले डॉक्टरों, नर्सिंग स्टाफ, सफाई कर्मी आदि के समर्थन में विशेष गतिविधियां करेंगी। उन्होंने बताया कि भारतीय सेना कोरोना वायरस के खिलाफ लड़ाई में हर मोर्चे पर तैनात 'कोरोना योद्धाओं' के समर्थन में 3 मई को फ्लाइ पास्ट करेगी और कोविड-19 स्पेशल अस्पतालों पर फूल बरसाएगी

चीफ ऑफ डिफेंस स्टाफ बिपिन रावत और तीनों सेनाओं के प्रमुख एक महत्वपूर्ण प्रेस कॉन्फ्रेंस में बताया कि 3 मई को तीनों सेनाएं कोरोना से मोर्चा लेने वाले डॉक्टरों, नर्सिंग स्टाफ, सफाई कर्मी आदि के समर्थन में विशेष गतिविधियां करेंगी। उन्होंने बताया कि भारतीय सेना कोरोना वायरस के खिलाफ लड़ाई में हर मोर्चे पर तैनात 'कोरोना योद्धाओं' के समर्थन में 3 मई को फ्लाइ पास्ट करेगी और कोविड-19 स्पेशल अस्पतालों पर फूल बरसाएगी। इस दौरान नौ सेना के लड़ाकू जहाजों को रोशनी से जगमगाया जाएगा।

ऐसा निर्धारित किया गया कार्यक्रम

उन्होंने बताया कि 3 मई को वायु सेना देशभर में फ्लाइ पास्ट करेगी। एक फ्लाइ पास्ट श्रीनगर से शुरू होकर तिरुअनंतपुरम तक पहुंचेगा जबकि दूसरा डिब्रूगढ़ से कच्छ तक जाएगा। भारतीय वायु सेना के फिक्स्ड विंग और एयरक्राफ्ट फ्लाइ पास्ट में हिस्सा लेंगे। वहीं, नेवी के हेलिकॉप्टर कोविड-19 मरीजों का इलाज कर रहे अस्पतालों के ऊपर फूल बरसाएंगे। इंडियन आर्मी अपनी तरफ से देशभर के करीब-करीब सभी जिलों के कुछ कोविड अस्पतालों के साथ माउंटेन बैंड डिस्प्ले करेगी। पुलिस बलों के समर्थन में सशस्त्र बल 3 मई को पुलिस मेमोरियल पर माल्यार्पण करेंगे।

सेना अध्यक्ष बिपिन रावत(फाइल फोटो)

सेना कोरोना वॉरियर्स के साथ: रावत

जनरल रावत ने कहा कि कोरोना वायरस की महामारी से लड़ने वालों के साथ देश की सशस्त्र सेना मजबूती से खड़ी है। पूरी दुनिया कोरोना संकट से जूझ रहा है। हम सेना की तरफ से कोरोना के खिलाफ लड़ाई लड़ रहे योद्धाओं को सलाम करते हैं। देश की सेना सरकार के हर कॉल के साथ है।

कोरोना जैविक युद्ध का परिणाम, अभी नहीं कह सकते: रावत

जनरल रावत ने बताया कि कोविड-19 महामारी के कारण सेना को कोई भी ऑपरेशन प्रभावित नहीं हुआ है और न होगा। उन्होंने कहा कि अभी यह कहना ठीक नहीं होगा कि कोरोना वायरस जैविक युद्ध का परिणाम है। प्रेस कॉन्फ्रेंस में आर्मी चीफ जनरल मनोज मुकुंद नरावणे, नेवी चीफ एडमिरल करमबीर सिंह और चीफ ऑफ एयर स्टाफ एयर चीफ मार्शल आरकेएस भदौरिया शामिल थे।

https://www.haribhoomi.com/news/india/the-three-armies-of-the-country-will-honor-corona-warriors-326807?infinitescroll=1

THE FINANCIAL EXPRESS

Sat, 02 May 2020

Naval ships undergo minor changes before sailing off to evacuate from the Gulf region

Once the registration is completed then the Indian Missions/Posts will have to decide whom to evacuate first and their passports, medical certificates, exit certificates and other documentation will have to be readied

By Huma Siddiqui

The Ministry of External Affairs, Indian missions/posts as well state machinery are preparing for the mass evacuation later next month. According to a top diplomat who wished to remain anonymous, "So far 300,000 Indians have registered at the Indian missions seeking evacuation. And the numbers will go up. And these are those people who have either lost their jobs, contracts have expired, or they are just keen to return to India fearing the spread of COVID-19. This is a logistical challenge and will not be over in a couple of flights. Several assets of the Indian Navy and the Indian Air Force, as well as the national carrier, will be put in service."

What are the numbers coming back?

There is still no clarity, but it could be around a million who are keen to come back.

So far: UAE has 3 million Indians; Saudi Arabia has around 3.4 million and in countries like Oman, Qatar, Kuwait and Bahrain there are 2 million each.

These people are mostly from several states from South, including Kerala, Andhra Pradesh, Tamil Nadu.

The Navy is also planning to dispatch five Landing Ship Tank (LST) of the Shardul class and two of Magar class. (Photo source: www.indiannavy.nic.in)

Once the registration is completed then the Indian Missions/Posts will have to decide whom to evacuate first and their passports, medical certificates, exit certificates and other documentation will have to be readied. "These are important as several may want to return to the region once the situation improves and the COVID-19 pandemic is controlled," explained the top diplomat.

In the month of Ramzaan, most of the host countries in the region give "general amnesty'' to the undocumented workers and through the Indian missions these people have returned to India in the past. "In this time of COVID-19, the local administration in different countries in the region as

well as immigration authorities are helping the missions for enabling easy exit for these undocumented workers," the diplomat said.

During the evacuation the COVID-19 protocols as suggested by the WHO and other agencies will be followed to maintain social distancing.

Assets Indian Navy and the Indian Air Force

According to sources, the operation will start off by sending in Indian Air Force Transport aircraft and of course the Indian Navy ships will sail off to evacuate almost a million Indians from the region.

Indian Navy's largest amphibious platform INS Jalashwa based at the Eastern Naval Command headquarters in Visakhapatnam has the capacity to carry onboard fully equipped 1000 troops. However, if the social distancing has to be followed then it will not be able to carry more than 700-800 people.

A senior officer confirmed that several changes need to be made before the carrier sails off. "Right now the facilities on bard are for officers and sailors who are going to be replaced with the general public of men, women, children, old people, or some of those who might be on the family way. And because the COVID-19 social distancing protocol will have to be followed, the sleeping, dining areas, the bathroom facilities all need to be changed temporarily."

The Navy is also planning to dispatch five Landing Ship Tank (LST) of the Shardul class and two of Magar class.

According to a senior officer, these have the capacity to carry in normal circumstances around 500 people. "However, with COVID-19 SOPs in place, only 300 people can be accommodated."

Will all these LSTs be deployed in an evacuation?

"No'', said the senior officer. "Depending on the operational requirement and of course the availability around 3 -4 can be sent on this evacuation mission."

Said a senior naval officer, "These assets are not enough. The government will have to put in other shipping vessels, cruisers, as well as merchant ships in case the number to be evacuated, goes up. "

The Indian Air Force is likely to put in 12 C-130 Super Hercules which has the capacity to carry 70 people at one time and 11 C-17 Globemaster transport aircraft carrying around 160. The Russian IL-76 planes which can carry 180 people at one time will be dispatched too. According to sources, "These numbers will change keeping the social distancing in mind."

Expert View

Terming it as an unprecedented challenge for Indian Navy, former spokesperson of the Indian Navy Capt DK Sharma (Retd) says, "COVID19 the global pandemic has brought along with itself an unusual situation, where millions of people across the globe are losing/ or have lost their livelihood because of the forced lockdown which was a necessity to arrest the spread of the virus."

"StratNewsGlobal has reported earlier this week that a huge evacuation plan is being worked out by the government and the MEA in consultation with Armed Forces, Min of Civil Aviation and min of Shipping on the modalities to repatriate Indians from the Gulf region," says Sharma.

According to Sharma "India in the recent past has successfully evacuated of approx 5500 personnel from war-torn Yemen (Op Rahat – Apr 2015) wherein the Indian Navy, Indian Air Force and the national carrier, Air India along with two passenger liners (ships) from Shipping Corporation of India was pressed into service. This out of the area contingency operation (OOAC) was of a different nature wherein safety of our expatriates had to be ensured from the fire-fight between Saudi Armed Forces and Houthi rebels. In the present case, the situation is totally different wherein the enemy is invisible in the form of a novel coronavirus."

The challenge before the government will be manifold.

"To start with where are the platforms to cater for such a massive air/sealift from across the Arabian Sea. Secondly, are all these expatriates COVID free? Thirdly, where are they going to be disembarked as they don't have any means of livelihood, etc. The questions are endless and thus

the challenge, which has no copybook solutions," observes Sharma who was a witness to the Operation Rahat in 2015.

"Indians settled/ working on contracts across various countries are also facing the same and the next challenge staring in the face of the establishment is to repatriate them. This task is a herculean one and the gravity of working out the modalities itself must be unnerving," he adds.

https://www.financialexpress.com/defence/naval-ships-undergo-minor-changes-before-sailing-off-to-evacuate-from-the-gulf-region/1945600/

Defence Strategic: National/International

THE DIPLOMAT
Read The Diplomat, Know the Asia-Pacific

Sat, 02 May 2020

India-Russia defense ties amid Covid-19

Despite kind words, cooperation, and defense ties, there are longer term difficulties in the India-Russia relationship that are unlikely to be easy to resolve

By Rajeswari Pillai Rajagopalan

The pandemic appears not to have had much impact on India-Russia relations. The relationship was showing signs of strain even before to the pandemic, mainly because both countries are drifting toward different sides in the emerging competition between the United States and China. India's concerns about China's behavior have made it inch closer to the U.S. and the Indo-Pacific coalition. While increasing tensions between Russia and the West appear to be driving Moscow toward a deeper partnership with Beijing. Neither side seems particularly happy with the effect of these tendencies on their bilateral relations and both have tried to insulate their ties from these larger movements. The India-Russia relationship continues to be dependent on some level of residual diplomatic empathy toward each other. Beyond this, the arms transfer relationship is the primary driver and despite the pandemic this aspect continues apace.

Credit: Ministry of Defense of the Russian Federation

The S-400 long-range air defense system is the most visible recent indicator of the arms transfer relationship. There have been some concerns about possible delays, but Indian Ambassador to Russia Bala Venkatesh Varma stated that there will be no significant delays in the supply of the S-400s. India is buying five batteries of the S-400 system in a deal worth more than $5 billion despite the threat of U.S. sanctions. That India went ahead with the system regardless of the threat of sanctions is an indicator of both India's desire to maintain this aspect of its relationship with Russia but also India's vulnerability to Pakistan's missile forces. The S-400 is claimed to have some level of anti-ballistic capability.

In addition, Russia recently offered India three more *Kilo*-class submarines. These refurbished *Kilos* will join the nine other *Kilo*-class submarines in the Indian Navy. This should be welcome because India has just 15 submarines, according to the latest *Military Balance* published by the IISS, against a projected requirement of 24. India's declining submarine fleet has been a concern especially as the Chinese PLA Navy gets more active in the waters around India.

Last month, India decided to purchase an additional 400 T-90S battle tanks from Russia, according to reports. These will join the more than 1,000 T-90S that India already has, part of

India's 3,500-strong Main Battle Tank inventory. With the exception of the 100-plus Arjun tanks, everything else in the inventory are Russian T-72s or T-90Ss, which is an indicator of the close historical Indo-Russian military relations.

But the relationship has not been without its hiccups. India was originally part of the next generation Su-57 fighter program but pulled out of the deal because of dissatisfaction with the jet's performance and manufacturing quality. This highlights a problem that the defense relationship has, which is that Russia is falling behind in terms of weapons technology. More than a decade after the United States started operationally flying fifth generation combat aircraft, Russia has not been able to develop jets with comparable performance. This could mean that India will increasingly have to look elsewhere if it wants weapons with performance capabilities comparable to the top of the line platforms in the world. India's purchase of the French Rafale fighter is just one indicator of this trend.

As regards the direct effects of the COVID-19 pandemic on the bilateral relationship, Indian Foreign Minister Dr. S. Jaishankar has maintained contact with his counterparts in Russia as recently as last week. In a tweet, he said that he discussed a number of issues including the upcoming BRICS Foreign Ministers' Meeting as well as developments in Afghanistan and cooperation in dealing with the coronavirus pandemic. Although this was part of a series of discussions that the foreign minister had with various counterparts including U.S. Secretary of State Mike Pompeo, it does indicate that the relationship is maintaining force. The virus is spreading rapidly in Russia — even Russian Prime Minister Mikhail Mishustin confirmed that he tested positive for the virus. The Indian prime minister lost no time in wishing his counterpart an early recovery and good health.

Both sides have also helped each other deal with the effects of the pandemic. Russia expressed its gratitude for India's decision to supply key drugs to fight the pandemic, HCQ and paracetamol. Russia's main defense export agency, Rosoboronexport also donated $2 million to the Indian prime minister's special fund for fighting the pandemic, called the PM Cares Fund. The pandemic has affected the training of four Indian Air Force pilots who have been selected for India's first manned space flight and were undergoing astronaut training at the Yuri Gagarin Research and Test Cosmonaut Training Center. Nevertheless, training is likely to continue after the various lockdowns end.

But despite the kind words, emergency cooperation, and the defense relationship, there are longer term difficulties in the India-Russia relationship that are unlikely to be easy to resolve. The pandemic has accelerated the competition between China and the region and that is likely to eventually add stress to the India-Russia relationship.

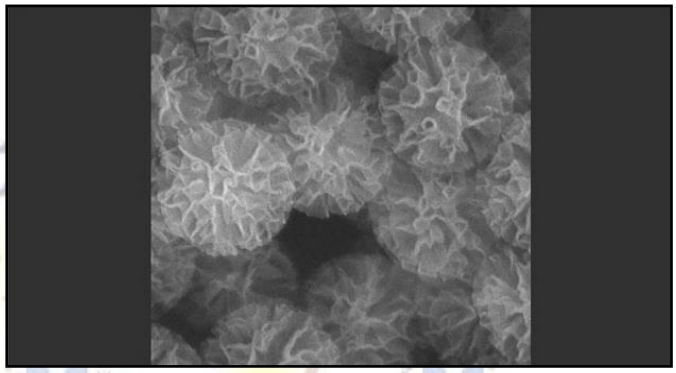
https://thediplomat.com/2020/05/india-russia-defense-ties-amid-covid-19/

NNR | Neuroscience News & Research

Sat, 02 May 2020

Nanodevices aim to halt Alzheimer's plaque formation

People who are affected by Alzheimer's disease have a specific type of plaque, made of self-assembled molecules called β-amyloid (Aβ) peptides, that build up in the brain over time. This buildup is thought to contribute to loss of neural connectivity and cell death. Researchers are studying ways to prevent the peptides from forming these dangerous plaques in order to halt development of Alzheimer's disease in the brain.



Scanning Electron Microscopy (SEM) images of the porous silica nanodevices. The exposed amount of surface area provides high opportunity to attach the peptide-attracting antibody fragments. Credit: Center for Nanoscale Materials, Argonne National Laborat

In a multidisciplinary study, scientists at the U.S. Department of Energy's (DOE) Argonne National Laboratory, along with collaborators from the Korean Institute of Science and Technology (KIST) and the Korea Advanced Institute of Science and Technology (KAIST), have developed an approach to prevent plaque formation by engineering a nano-sized device that captures the dangerous peptides before they can self-assemble.

"We've taken building blocks from nanotechnology and biology to engineer a high-capacity 'cage' that traps the peptides and clears them from the brain." said Elena Rozhkova, scientist, Center for Nanoscale Materials

The β-amyloid peptides arise from the breakdown of an amyloid precursor protein, a normal component of brain cells," said Rosemarie Wilton, a molecular biologist in Argonne's Biosciences division. "In a healthy brain, these discarded peptides are eliminated."

In brains prone to the development of Alzheimer's, however, the brain does not eliminate the peptides, leaving them to conglomerate into the destructive plaques.

"The idea is that, eventually, a slurry of our nanodevices could collect the peptides as they fall away from the cells – before they get a chance to aggregate," added Elena Rozhkova, a scientist at Argonne's Center for Nanoscale Materials (CNM), a DOE Office of Science User Facility.

Decorating the Surface

The researchers covered the surface of the new nanodevice with fragments of an antibody – a type of protein – that recognizes and binds to the Aβ peptides. The surface of the nanodevice is spherical and porous, and its craters maximize the available surface area for the antibodies to cover. More surface area means more capacity for capturing the sticky peptides.

To find the optimal coating, the scientists first searched previous literature to identify antibodies that have high affinity to Aβ peptides. It was important to choose an antibody that attracts the peptides but doesn't bind to other molecules in the brain. Then the team, led by Wilton, produced the antibodies in bacteria and tested their performance.

A full antibody molecule can be up to a few dozen nanometers long, which is big in the realm of nanotechnology. However, only a fraction of this antibody is involved in attracting the peptides. To

maximize the effectiveness and capacity of the nanodevices, Wilton's group produced tiny fragments of the antibodies to decorate the nanodevice's surface.

Engineering and Testing the Nanodevice

The scientists at CNM constructed the base of the porous, spherical nanodevices out of silica, a material that has long been used in biomedical applications due to its flexibility in synthesis and its nontoxicity in the body. Coated with the antibody fragments, the nanodevices capture and trap the Aβ peptides with high selectivity and strength.

"Many attempts to prevent Alzheimer's have focused on inhibiting enzymes from cutting β-amyloid peptides off of the cell's surface," said Rozhkova, who led the project at CNM. "Our elimination approach is more direct. We've taken building blocks from nanotechnology and biology to engineer a high-capacity 'cage' that traps the peptides and clears them from the brain."

At CNM, the scientists tested the effectiveness of the devices by comparing how the peptides behaved in the absence and presence of the nanodevices. Using in vitro transmission electron microscopy (TEM), they observed a notable decline in peptide aggregation in the presence of the nanodevices. They further analyzed the interactions using confocal laser scanning microscopy and microscale thermophoresis measurement, two additional techniques for characterizing interactions at the nanoscale.

The scientists also performed small-angle X-ray scattering to study the processes that make the nanodevices porous during synthesis. The researchers performed the X-ray characterization, led by Byeongdu Lee, a group leader in Argonne's X-ray Science division, at beamline 12-ID-B of the lab's Advanced Photon Source (APS), a DOE Office of Science User Facility.

These studies supported the case that the nanodevices sequester the peptides from the pathway to aggregation by more than 90 percent compared to the control silica particles without the antibody fragments. However, the devices still needed to demonstrate their effectiveness and safety within cells and brains.

Joonseok Lee – who originally proposed this experiment at Argonne as a Director's Postdoctoral Appointee and pioneered the design for the nanodevice – continued the study of the therapeutic potential of this device at KIST and KAIST.

The *in vivo* experiments performed by Lee and his collaborators showed that the nanodevices are nontoxic to cells. They also tested the effectiveness of the devices in the brains of mice with Alzheimer's, demonstrating around 30 percent suppression of plaque formation in brains containing the nanodevices compared to control brains. The research on mice was conducted at KIST and KAIST in South Korea with appropriate government approvals.

Using a similar approach, scientists may also be able to pair the silica nanoparticles with different antibodies that target molecules related to other neurodegenerative diseases, such as Huntington's disease and Parkinson's disease, which also involve abnormal protein aggregation. The porous nanoparticles may be further upgraded for use in imaging applications including fluorescent imaging and magnetic resonance imaging.

Reference

Jung *et al*. (2020). Silica Nanodepletors: Targeting and Clearing Alzheimer's β-Amyloid Plaques. *Advanced Functional Materials*. DOI: https://doi.org/10.1002/adfm.201910475

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https://www.technologynetworks.com/neuroscience/news/nanodevices-aim-to-halt-alzheimers-plaque-formation-334225

EurekAlert!

Sat, 02 May 2020

Army researchers see path to quantum computing at room temperature

U.S. Army Research Laboratory

Army researchers predict quantum computer circuits that will no longer need extremely cold temperatures to function could become a reality after about a decade.

For years, solid-state quantum technology that operates at room temperature seemed remote. While the application of transparent crystals with optical nonlinearities had emerged as the most likely route to this milestone, the plausibility of such a system always remained in question.

Now, Army scientists have officially confirmed the validity of this approach. Dr. Kurt Jacobs, of the U.S. Army Combat Capabilities Development Command's Army Research Laboratory, working alongside Dr. Mikkel Heuck and Prof. Dirk Englund, of the Massachusetts Institute of Technology, became the first to demonstrate the feasibility of a quantum logic gate comprised of photonic circuits and optical crystals.

"If future devices that use quantum technologies will require cooling to very cold temperatures, then this will make them expensive, bulky, and power hungry," Heuck said. "Our research is aimed at developing future photonic circuits that will be able to manipulate the entanglement required for quantum devices at room temperature."

Quantum technology offers a range of future advances in computing, communications and remote sensing.

In order to accomplish any kind of task, traditional classical computers work with information that is fully determined. The information is stored in many bits, each of which can be on or off. A classical computer, when given an input specified by a number of bits, can process this input to produce an answer, which is also given as a number of bits. A classical computer processes one input at a time.

In contrast, quantum computers store information in qubits that can be in a strange state where they are both on and off at the same time. This allows a quantum computer to explore the answers to many inputs at the same time. While it cannot output all the answers at once, it can output relationships between these answers, which allows it to solve some problems much faster than a classical computer.

Unfortunately, one of the major drawbacks of quantum systems is the fragility of the strange states of the qubits. Most prospective hardware for quantum technology must be kept at extremely cold temperatures--close to zero kelvins--to prevent the special states being destroyed by interacting with the computer's environment.

"Any interaction that a qubit has with anything else in its environment will start to distort its quantum state," Jacobs said. "For example, if the environment is a gas of particles, then keeping it very cold keeps the gas molecules moving slowly, so they don't crash into the quantum circuits as much."

Researchers have directed various efforts to resolve this issue, but a definite solution is yet to be found. At the moment, photonic circuits that incorporate nonlinear optical crystals have presently emerged as the sole feasible route to quantum computing with solid-state systems at room temperatures.

"Photonic circuits are a bit like electrical circuits, except they manipulate light instead of electrical signals," Englund said. "For example, we can make channels in a transparent material that photons will travel down, a bit like electrical signals traveling along wires."

Unlike quantum systems that use ions or atoms to store information, quantum systems that use photons can bypass the cold temperature limitation. However, the photons must still interact with other photons to perform logic operations. This is where the nonlinear optical crystals come into play.

Researchers can engineer cavities in the crystals that temporarily trap photons inside. Through this method, the quantum system can establish two different possible states that a qubit can hold: a cavity with a photon (on) and a cavity without a photon (off). These qubits can then form quantum logic gates, which create the framework for the strange states.

In other words, researchers can use the indeterminate state of whether or not a photon is in a crystal cavity to represent a qubit. The logic gates act on two qubits together, and can create "quantum entanglement" between them. This entanglement is automatically generated in a quantum computer, and is required for quantum approaches to applications in sensing.

However, scientists based the idea to make quantum logic gates using nonlinear optical crystals entirely on speculation -- up until this point. While it showed immense promise, doubts remained as to whether this method could even lead to practical logic gates.

The application of nonlinear optical crystals had remained in question until researchers at the Army's lab and MIT presented a way to realize a quantum logic gate with this approach using established photonic circuit components.

"The problem was that if one has a photon travelling in a channel, the photon has a 'wave-packet' with a certain shape," Jacobs said. "For a quantum gate, you need the photon wave-packets to remain the same after the operation of the gate. Since nonlinearities distort wave-packets, the question was whether you could load the wave-packet into cavities, have them interact via a nonlinearity, and then emit the photons again so that they have the same wave-packets as they started with."

Once they designed the quantum logic gate, the researchers performed numerous computer simulations of the operation of the gate to demonstrate that it could, in theory, function appropriately. Actual construction of a quantum logic gate with this method will first require significant improvements in the quality of certain photonic components, researchers said.

"Based on the progress made over the last decade, we expect that it will take about ten years for the necessary improvements to be realized," Heuck said. "However, the process of loading and emitting a wave-packet without distortion is something that we should able to realize with current experimental technology, and so that is an experiment that we will be working on next."

CCDC Army Research Laboratory is an element of the U.S. Army Combat Capabilities Development Command. As the Army's corporate research laboratory, ARL discovers, innovates and transitions science and technology to ensure dominant strategic land power. Through collaboration across the command's core technical competencies, CCDC leads in the discovery, development and delivery of the technology-based capabilities required to make Soldiers more lethal to win our nation's wars and come home safely. CCDC is a major subordinate command of the U.S. Army Futures Command.

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livemint

Sat, 02 May 2020

Ayush practitioners allowed to conduct research on covid-19

The Ayush ministry has advised traditional medicine practitioners to follow ICMR guidelines for the research

By Seethalakshmi S

- **Interventions during the quarantine period will be coupled with lab-based research**
- **Traditional medicine practitioners have to follow ICMR norms, and register with Clinical Trials Registry if they are conducting clinical trials**

Bengaluru: The Central Drugs Standard Control Organisation, the national regulatory body for pharmaceuticals and medical devices, has permitted Ayurveda, homeopathy, and siddha practitioners to conduct research at covid-19 quarantine centres to better understand the disease.

In a notification issued last week, the Ayush ministry said: "Indian traditional medicines have wide potential for usage in such conditions owing to their longstanding use in the community, ancient references, and clinical efficacy. Therefore, it is felt necessary to make serious efforts for the development of drugs based on any Ayush systems recognized under the Drugs and Cosmetics Act, 1940. The ministry has consulted the Drugs Controller General of India."

Integrated medicine expert and member of Ayush Task Force, Dr. Issac Mathai, said Indians have resilient immune systems.

"Our exposure to viruses is more common than in the West. Turmeric, ginger, amla, lemon, and honey are anti-bacterial that we consume on a daily basis from a young age. We are studying the link between covid recovery, consumption of these foods and immunity building."

The interventions during the quarantine period will be coupled with lab-based research, Mathai added.

"We have held consultations with CDSCO and DCGI to ensure there were no hurdles, and they have permitted us to go ahead. Work has started in Mumbai, Delhi and Pune."

The ministry has told traditional medicine practitioners to follow ICMR guidelines and to register with the clinical trials registry if they were to conduct clinical trials.

"Yoga, nutrition and mindfulness help build a good immune system. Low immunity can increase susceptibility to and aggressiveness of covid-19," said Dr. M. Raghavendra Rao, director, Central Council for Research in Yoga and Naturopathy (CCRYN), ministry of Ayush, Delhi.

Allopathic doctors said there was no single solution to a pandemic.

"The attack on the immune system must be stopped. To ensure more lives are saved, we must supplement current medicines with ancient systems of healing. We must be open-minded," said noted neurosurgeon Dr. N. Venkataramana.

https://www.livemint.com/news/india/health-ministry-allows-ayush-practitioners-to-conduct-research-on-covid-19-11588332574225.html