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समाचार पत्रों से चयित अंश Newspapers Clippings

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TBRL develops face shields, safety enclosures for PGI docs

By Vijay Mohan

Chandigarh: From evaluating the technical parameters of missiles and explosives, the Terminal Ballistics Research Laboratory (TBRL) here has switched its expertise and in-house innovation to develop personal protective gear for the medical fraternity in the nationwide fight against Covid-19. As many as 10,000 full face protective shields and 15 acrylic enclosures for examining infected persons are being produced by the TBRL for the PGI here.

“The face shields are single-use as well as multiple-use type while the intubation protective enclosure can be used multiple times,” Dr Manjit Singh, Director, TBRL, said. “We are making about a 100 face shields and three-four enclosures each day,” he added.

An important Defence Research and Development Organisation (DRDO) establishment based in Chandigarh, the TBRL is involved in development, production, processing and characterisation of different high explosive compositions, fragmentation studies of warheads, captive flight testing of bombs, missiles and airborne systems and ballistics evaluation of protective system like body armour, vehicle armour and helmets.

The face shields are light weight and can be worn full day with comfort. Commonly available A-4 size transparency sheets used in overhead projectors are being used as visors while the holding frame is manufactured through Fused Deposition Modeling (FDM), commonly known as 3-D printing. Polylactic Acid filament, a biodegradable thermoplastic derived from renewable resources such as corn starch or sugarcane, was used for 3-D printing.

The enclosures were requested by the PGI’s Department of Anaesthesia and Intensive Care to act as first level of protection for doctors and medical staff during the intubation of Covid-19 patients. This is a process in which a tube is inserted into the patient’s mouth to keep the airway open so that the patient can be placed on a ventilator.

Made of perspex sheets, the transparent enclosure is a cuboid that covers the patient’s face and upper chest, with two holes on one side through which a doctor can insert his arms to work. Medical professionals are at elevated levels of risk of infection as virus particles can become aerosolised during intubation.

Mass production of the products is planned using the injection moulding technique to expedite the process. Industrial partners are also being developed to meet the possible demands from neighbouring states. Being a research laboratory, in-house production in the TBRL is limited.

Dr Manjit said the TBRL was also making hand sanitisers for the Chandigarh Police using base compositions developed by the DRDO. The requirement is for 6,000 bottles of 500 ml and 1,200 bottles had already been supplied. The TBRL was to get the sanitisers bottled from a commercial plant in Baddi in Himachal Pradesh, but the area has been sealed off due to the death of an infected person. Alternative measures are being explored.



In addition, the TBRL is also acting as a facilitator for the procurement of bio-suits developed by another DRDO lab for use by health care service providers. A walk-through disinfection tunnel, which is placed at the entrance to a building or complex, is also being evaluated at the TBRL. Developed by Research Center Imarat, Hyderabad, the tunnel is equipped with sensors to assess body parameters, air showers and disinfectant sprays. It has the potential of being deployed at any public place or office complex.

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15 Acrylic Enclosures

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- There are two holes on one side through which a doctor can insert his arms to work. Medical professionals are at elevated levels of risk of infection as virus particles can become aerosolised during intubation.

<https://www.tribuneindia.com/news/chandigarh/tbri-develops-face-shields-safety-enclosures-for-pgi-docs-66247>



BHARAT SHAKTI
Self-Reliance in Defence

Mon, 06 April 2020

DRDO reinvents in war against Chinese virus

By Ravi Shankar

In the war against the Chinese virus, India's Defence Research and Development Organisation (DRDO) is reinventing it self and quickly developing some critical medical solutions to ensure not just the health of services personnel, but also of our citizen. From Personal Protection Equipment (PPE) to multi-patient ventilators, DRDO has taken on the task of rolling out mass supply of critical medical requirements amid the clamour of inadequate supplies from medics.

The DRDO took a call in the first week of March 2020 to enhance efforts to create counter-measures to stop the spread of the viral disease in India. It started focusing on creating mass supply solutions for critical medical requirements using years of experience and available technology to deal with the COVID-19 pandemic. As of result, the DRDO has quickly developed some frontline low-cost, high volume equipment desperately needed in the 'War against Corona'.



Technology from Submarines to Develop Body Suit (PPE)

In a major milestone, the DRDO has developed a Personal Protective Equipment (PPE), popularly known as a bodysuit, for frontline health workers and doctors. The suit is designed to prevent infection being transmitted to these personnel. The breakthrough was made at DRDo's Gwalior laboratory for defence against CBRN (Chemical, Biological, Radiological and Nuclear) agents.

Earlier, DRDO had developed this bodysuit for medical and paramedical staff to manage and evacuate the casualties in the event of radiological emergencies, which right now is converted as a full-body suit to stop contamination. The suit is washable and has passed the ASTM International

standards. The suit is widely tested by DRDO and other agencies and has been found adequate for the task. The scientists have used an adhesive which has its application in submarines to produce the bodysuit. The adhesive is a critical component in the suit as it seals off external air. Now, the industry is gearing up for the production of the suit in large numbers. At present, the production capacity of 7000 suits per day exists and efforts are on to ramp up the capacity to 15000 suits per day. Each suit costs Rs 7,000/-.



Multi-Patient Ventilators

Ventilators are in high demand to combat the pandemic and are in short supply. India currently has only 30,000-40,000 ventilators. To mitigate the overwhelming demand for critical care equipment, the DRDO is working overtime to develop 'Multi-patient ventilator' which can support 4-5 patients by a single ventilator. The ventilators are expected to be rolled out in a week.

The Society for Biomedical Technology (SBMT) programme of DRDO has been modified to cater to the current situation. It has been created by using existing technologies like breath regulators, pressure/flow sensors, etc. Around 5,000 ventilators will be produced in the first month and 10,000 subsequently. The DRDO has identified local alternatives to the supply of critical components. According to a statement issued by the government, Secretary, Pharmaceuticals has identified nine companies for design transfer. Each ventilator unit will cost around Rs four lakh. The market cost of a single ventilator is around Rs. 3-4 lakh which support only one patient.

Portable Fumigation Unit: Personnel Sanitisation Enclosure (PSE)

The DRDO's lab – Vehicle Research Development Establishment (VRDE), Ahmednagar has developed a portable full-body disinfection chamber called as Personal Sanitisation Enclosure (PSE) to be used in hospitals, offices, malls and other critical establishments.

According to DRDO, PSE is a walk through enclosure, equipped with sanitiser and soap dispenser. It is designed to disinfect one person at a time. The decontamination starts using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting. The mist spray is calibrated to operate for 25 seconds and stops automatically thereafter, indicating completion of the operation. Approximately 650 personnel can pass through the chamber for disinfection until a refill is required. The system has a see-through glass panel as sidewalls for monitoring and is fitted with lights for illumination during night time operations.



Full Face Mask (FFM)

Similarly, the Research Centre Imarat (RCI), Hyderabad and Terminal Ballistics Research Laboratory (TBRL), Chandigarh, have developed a face protection mask for health care professionals handling COVID-19 patients. Its lightweight construction makes it convenient for comfortable wear for a long duration.

Portable Backpack Area Sanitisation Equipment

In the continuing quest for developing indigenous solutions to combat the Corona Virus Pandemic, Defence Research and Development Organisation (DRDO) has developed technologies



for sanitising areas of different sizes. The Centre for Fire Explosive & Environment Safety (CFEES), Delhi developed portable sanitisation equipment for spraying decontamination solution consisting of one per cent Hypochlorite (HYPO) solution for sanitisation of the suspected area.

These are spinoffs from technologies developed for fire suppression applications. The application areas can include hospital reception, doctors' chambers, office spaces dealing with the general public, corridors, pathways, metro and railway stations, bus stations, etc. The equipment is being provided to Delhi Police for immediate use. These can be made available to other agencies with the help of industry partners.

Hand Sanitizer

The DRDO has also developed in-house sanitizers for government establishments to ensure smooth working of offices without the fear of catching an infection. As per a statement issued by DRDO, it had produced the item sizable quantities and distributed to major offices and establishment within the capital by the 3rd week of March. Approximately, 4,000 litres of hand sanitizer has been provided to Indian Armed forces, Armed Forces Medical Corps, Defence Security Corps, 1,500 litres to Ministry of Defence, 300 litres to the Parliament, and 500 litres to various security establishments and high offices to address sanitization issues.

N99 Masks

The DRDO has also designed a five-layer N99 mask using nanotechnology mesh for a cost of Rs. 70/-. These masks are a piece of critical equipment in the defence against coronavirus. Presently, the production capacity is 10,000 N99 masks per day. Material for these is being sourced from Ahmedabad Textile Industry Research Association, which already has large government orders for N95 masks.

Explaining about the pro-active role, Chairman DRDO, Dr Satheesh Reddy said that the DRDO has reinvented itself by developing and sharing technologies free of cost with the industry for mass production of these critical medical equipment required in the country to combat coronavirus outbreak.

<https://bharatshakti.in/drdo-reinvents-in-war-against-chinese-virus/>

THE TIMES OF INDIA

Mon, 06 April 2020

DRDO, DFRL contribute their 'mite' to fight against pandemic

By R Uday Kumar

Mysuru: Among the many government agencies working tirelessly in the background to help the nation combat Covid-19 is the Defence Research Development Laboratory (DRDO), which in addition to manufacturing N-99 five-layered masks, has ordered a Mysuru-based private firm to manufacture 30,000 ventilators to help bridge the supply gap.

Ajay Kumar Singh, director of DRDO's life sciences wing, confirmed that the agency had been working on the manufacture of body suits for healthcare personnel, sanitation workers, et al. "The suit we have designed is washable, and measures up to international standards. The suit was tested, and we found that it is suitable for use by healthcare personnel," said Singh, confirming that DRDO had entrusted Skanray Technologies in Mysuru with the task of producing 30,000 ventilators.

The ventilators will be designed and manufactured in accordance with DRDO's technical blueprint, Singh told TOI. "We will assist Skanray in the procurement of some critical components," said the senior DRDO official, adding that the agency had been making hand sanitisers for its staff and employees of other government offices.

The N-99 masks are being manufactured at our centres in Kolkata and Mumbai, while work on personal protective equipment (PPE) kits is under way at Gwalior, Singh said. "Defence Food

Research Laboratory (DFRL) in Mysuru is performing an essential duty at this time by preparing food for healthcare personnel. Since a common or community kitchen cannot function at this time, the food prepared at DFRL is ensuring that doctors, nurses and support staff at hospitals are well-nourished. In fact, they have been working on ready-to-eat packaged food over the past few days and once ready, the consignment will be dispatched to other places,” he added.

Despite working with reduced human resources, DFRL is acquitting itself distinguishably in a time of national crisis. “Among the dishes being prepared are chapathi, pulao, tomato rice and beverages such as lemon juice. The demand for our products is very high but owing to the conditions of lockdown we are unable to work at full capacity. But DFRL staff is still ensuring the preparation of up to two tonnes of food, which can feed 2,000 people,” sources said.

<https://timesofindia.indiatimes.com/city/mysuru/drdo-dfrl-contribute-their-mite-to-fight-against-pandemic/articleshow/74997810.cms>



Mon, 06 April 2020

DRDO designs full-body disinfection chamber to fight virus

New Delhi: Focusing on in-house solutions to fight coronavirus pandemic, the Defence Research and Development Organisation (DRDO) has designed a full-body disinfection chamber called Personnel Sanitisation Enclosure. This walk-through enclosure is designed for personnel decontamination, one person at a time. The DRDO is already manufacturing and supplying sanitisers and masks to the Delhi Police while the Navy has manufactured handheld temperature gun at a cost of Rs 1,000 which is much less than the ones available in the market. The DRDO has also developed portable sanitisation spray which can be used to spraying disinfectant.

Giving details about the latest endeavour, defence ministry officials said here on Saturday the portable system is equipped with sanitiser and soap dispenser. The decontamination is started using a foot pedal at the entry. On entering the chamber, electrically operated pump creates a disinfectant mist of hyposodium chloride for disinfecting. The mist spray is calibrated for an operation of 25 seconds and stops automatically indicating completion of operation. As per procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber.

Moreover, the system consists of roof mounted and bottom tanks with a total of 700 litres' capacity.

Approximately 650 personnel can pass through the chamber for disinfection until the refill is required. The system has see-through glass panels on side walls for monitoring purpose and is fitted with lights for illumination during night time operations. A separate operator cabin is provided to monitor overall operations.

The system has been manufactured with the help of M/s Dass Hitachi Ltd, Ghaziabad, within a time span of four days. This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations.

Earlier, the DRDO also developed face protection mask for health care professionals handling COVID-19 patients. Its light weight construction makes it convenient for comfortable wear for long duration.

This design uses commonly available A4 size Over-Head Projection (OHP) film for face protection. The holding frame is manufactured using Fused Deposition Modeling (3D printing). Polylactic Acid filament is used for 3D printing of the frame. This thermoplastic is derived from renewable resources such as corn starch or sugarcane and is biodegradable.

The face mask will be mass produced using injection moulding technique for volume production. Nearly 100 face shields are being produced daily and provided to PGIMER, Chandigarh. Similarly, 100 are produced and handed over to ESIC, Hyderabad.

A demand of 10,000 masks been received from PGIMER and ESIC Hospitals, they said.

In the continuing quest for developing indigenous solutions to combat the pandemic, the DRDO is ready with technologies for sanitising areas of different sizes. The Centre for Fire Explosive & Environment Safety (CFEES), Delhi has developed two configurations of sanitising equipment. These are spinoffs from technologies developed for fire suppression applications.

The CFEES, Delhi with the help of its industry partner has developed portable sanitisation equipment for spraying decontamination solution consisting of one per cent Hypochlorite (HYPO) solution for sanitisation of suspected area.

The portable system can be mounted as a backpack and can be carried by the operations personnel.

This system incorporates low pressure twin fluid (air & disinfectant liquid) technology to generate very fine mist. The system is capable of disinfecting upto 300 square metre area.

The application areas can include hospital reception, doctor chambers, office spaces dealing with general public, corridors, pathways, metro and railway stations, bus stations, etc.

The Centre with the help of its industry partner has also developed a higher capacity which is carried on a trolley. The system incorporates low pressure single fluid (disinfectant liquid) technology generating very fine mist. It is capable of disinfecting upto 3,000 square metre area. It has a tank capacity of 50 litres and has a lancing (throw) distance of 12-15 metres.

This is useful for disinfecting hospitals, malls, airports, metro stations, isolation areas, quarantine centres and high risk residential areas.

Two of these systems are being provided to Delhi Police for immediate use. These can be made available to other agencies with the help of industry partners.

<https://www.dailypioneer.com/2020/india/drdo-designs-full-body-disinfection-chamber-to-fight-virus.html>



Mon, 06 April 2020

Coronavirus: DRDO creates full body disinfection chamber and full face mask

It comes with a roof mounted and bottom tanks and has a capacity of 700 litres and around 650 personnel can walk through before the next refill

By Huma Siddiqui

Using their scientific endeavours to develop products faster, the DRDO labs are now working with industry partners for bulk production.

With the help of M/s D H Ltd, Ghaziabad, in a short time of around four days, one of the labs of DRDO, Vehicle Research Development Establishment (VRDE), Ahmednagar, has designed full body disinfection chamber called as PSE.

This can be used at the military facilities as well as malls, hospitals, office buildings and other critical facilities.

What does this do?

According to DRDO it is a walk through enclosure which would allow one person at a time to walk through for being decontaminated and it has a portable system which is equipped with sanitiser and soap dispenser. Meant for the defence personnel, this will start using a foot pedal at the entry, and electrically operated pumps will create a disinfectant mist of hypo sodium chloride.

The mist spray is set to operate for 25 seconds and stops automatically on completion of the process. Through the spraying of the disinfectant, the personnel will be expected to keep his eyes closed.

It comes with a roof mounted and bottom tanks and has a capacity of 700 litres and around 650 personnel can walk through before the next refill.

The chamber has see through glass for monitoring and has lights fitted for night time checks. And according to DRDO there is a separate cabin for the operator to monitor the operations.

Full Face Mask (FFM)

Face protection mask for health care professionals handling COVID-19 patients has been designed and developed by Research Centre Imarat (RCI), Hyderabad and Terminal Ballistics Research Laboratory (TBRL), Chandigarh.

More about the FFM

It is light weight and is easy to wear for long hours.

The A4 size Over-Head Projection (OHP) film for face protection has been used which is commonly available.

The frame which holds the film has been made using Fused Deposition Modeling (3D printing).

Polylactic Acid filament is used for 3D printing of the frame. "This Polylactic Acid filament is thermoplastic and has been derived from renewable resources such as corn starch or sugarcane and is biodegradable.

According to the DRDO plans are being firmed to mass produce these using injection moulding technique, As an update, daily TBRL is producing around one thousand face shields and supplying to Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh.

Also, around 100 have been produced at RCI and have been handed over to Employees' State Insurance Corporation (ESIC), Hyderabad.

Based on the successful trials, there is now a demand for 10,000 shields from PGIMER and ESIC Hospitals.

<https://www.financialexpress.com/defence/coronavirus-drdo-creates-full-body-disinfection-chamber-and-full-face-mask/1919498/>

YOURSTORY

Mon, 06 April 2020

Coronavirus: DRDO designs disinfection chamber, special face mask for healthcare professionals

The special chamber called 'PSE' is a walk through enclosure designed for personnel decontamination. It is a portable system equipped with sanitiser and soap dispenser, officials said

Joining efforts to fight COVID-19, the Defence Research and Development Organisation (DRDO) has designed a full-body disinfection chamber and a special face protection mask for healthcare professionals, officials said.

The special chamber called 'PSE' has been designed by Vehicle Research Development Establishment (VRDE), Ahmednagar, a DRDO Laboratory.

The walk through enclosure is designed for personnel decontamination, one person at a time. It is a portable system equipped with sanitiser and soap dispenser, officials said.

The decontamination is started using a foot pedal at the entry. On entering the chamber, electrically-operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting, the DRDO said in a statement.

The mist spray is calibrated for an operation of 25 seconds and stops automatically indicating completion of operation. As per procedure, personnel undergoing disinfection will need to keep their eyes closed while inside the chamber, it said.

The system consists of roof mounted and bottom tanks with a total of 700 litres capacity. Approximately 650 personnel can pass through the chamber for disinfection until the refill is required, the DRDO said.

The system has see-through glass panels on side walls for monitoring purpose and is fitted with lights for illumination during night-time operations, it added.

This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations, officials said.

Also, Research Centre Imarat (RCI), Hyderabad, and Terminal Ballistics Research Laboratory (TBRL), Chandigarh, have developed face protection mask for healthcare professionals handling COVID-19 patients, the DRDO added.

Its lightweight construction makes it convenient for comfortable wear for long duration. This design uses commonly available A4 size Over-Head Projection (OHP) film for face protection, it said.

One thousand face shields are being produced daily in TBRL and provided to Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, it said.

Similarly, 100 are produced at RCI and these have been handed over to Employees' State Insurance Corporation (ESIC), Hyderabad. A demand of 10,000 shields has been received from PGIMER and ESIC hospitals based on successful user trials, the DRDO added.

https://yourstory.com/2020/04/drdo-disinfection-chamber-special-face-mask-coronavirus?utm_pageloadtype=scroll

DRDO designs disinfection chamber, spl face mask

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<https://www.dailyexcelsior.com/drdo-designs-disinfection-chamber-spl-face-mask/>



Mon, 06 April 2020

DRDO begins producing biohazard suit

Baleswar: In order to meet the exigencies, the Defence Research and Development Organisation (DRDO) has developed a biohazard suit to keep the medical, paramedical and other personnel engaged in combating the deadly coronavirus safe.

Scientists at various DRDO laboratories have applied their technical knowhow and expertise in textile, coating and nanotechnology to develop the Personal Protective Equipment (PPE) having specific type of fabric with coating.

The suit has been prepared with the help of the industry and subjected to rigorous testing for textile parameters as well as protection against synthetic blood. The protection against synthetic blood exceeds the criteria defined for body suits by the Ministry of Health and Family Welfare, said a DRDO release.

DRDO is making all efforts to ensure that these suits are produced in large numbers and serve as robust line of defence for the medics, paramedics and other personnel in the front line combating COVID-19.

The current production capacity is 7,000 suits per day. Soon, the number would be increased to 15,000.

<https://www.dailypioneer.com/2020/state-editions/drdo-begins-producing-biohazard-suit.html>

कोरोना पर लगाम लगाने के लिए DRDO ने बनाए

कई हथियार, संक्रमण से बचाने में आएंगे काम

कोरोना वायरस (coronavirus outbreak in india) महामारी covid 19 से लड़ाई के लिए देश की सभी सरकारी एजेंसियां हर संभव प्रयास कर रही हैं। रक्षा अनुसंधान और विकास संगठन (DRDO) ने कोरोना वायरस से लड़ रहे डॉक्टरों और अन्य मेडिकल स्टाफ के लिए खास फेस शील्ड्स और फुल बाडी डिसइंफेक्शन चेंबर डिजाइन किया है। डीआरडीओ एक बायो सूट भी तैयार कर रहा है जो डॉक्टरों और मेडिकल स्टाफ के लिए काफी काम का साबित होगा।

लोगों को संक्रमण से बचाने में काम आएगी ये मशीन

डीआरडीओ की अहमदनगर स्थित एक प्रयोगशाला प्रयोगशाला वाहन अनुसंधान विकास प्रतिष्ठान (वीआरडीई) ने पीएसई नाम का एक फुल बाडी डिसइंफेक्शन चेंबर डिजाइन तैयार की है। इस वॉक थ्रू इंकलोजर की डिजाइन एक समय पर एक व्यक्ति के लिए पर्सनल डिकान्टामिनेशन के लिए तैयार किया गया है। यह सैनिटाइजर और सोप डिस्पेंसर लगा हुआ एक पोर्टेबल सिस्टम है। इसे आपात स्थिति में कहीं भी लगाया जा सकता है। इसे एंट्री के समय एक फुट पैडल का उपयोग शुरू किया जा सकता है। चेंबर में दाखिल होने होने के बाद, इसमें लगे पंप डिसइंफेक्शन के लिए हाइपो सोडियम क्लोराइड का एक डिसइंफेक्टेंट मिस्ट तैयार करता है। इस मिस्ट स्प्रे को 25 सेकेंड तक चलाया जाता है। 25 सेकेंड के बाद अपने आप बंद कैमिकल निकलना बंद हो जाता है। प्रक्रिया के मुताबिक, चेंबर के भीतर रहने के दौरान डिसइंफेक्शन से गुजर रहे व्यक्ति को अपनी आंखें बंद रखनी होती हैं।

एक बार में 650 लोगों को संक्रमण से बचाया जा सकेगा

इस फुल बाडी डिसइंफेक्शन चेंबर से 650 व्यक्ति एक बार में इस डिसइंफेक्शन मशीन से गुजर कर डिसइंफेक्ट हो सकते हैं। 650 व्यक्तियों के गुजरने के बाद इस मशीन में लगे 700 लीटर क्षमता के रूफ माउंटेड और बाटम टैंकों में भरे कैमिकल को फिर से भरा जा सकता है। इस मशीन की निगरानी के लिए खास ग्लास पैनल लगाए हैं। इस मशीन का इस्तेमाल रात में भी हो सकता है। इसके लिए इसमें विशेष लाइटें लगाई गई हैं। इस मशीन को अस्पतालों, मालों, कार्यालय भवनों और महत्वपूर्ण प्रतिष्ठानों के प्रवेश और निकास गेट पर लगाया जा सकता है। इस मशीन के जरिए बिल्डिंग में आने वाले कर्मचारियों और अन्य लोगों को संक्रमण से बचाया जा सकता है।

डॉक्टरों के बेहद काम आएगी ये शील्ड

रिसर्च सेंटर इमारात (आरसीआई), हैदराबाद एवं टर्मिनल बैलिस्टिक्स रिसर्च लैबोरेटरी (टीबीआरएल), चंडीगढ़ ने कोविड-19 के संपर्क में आने वाले स्वास्थ्य पेशेवरों के लिए फेस प्रोटेक्शन मास्क का विकास किया है। इसका हल्का वजन इसे लम्बे समय तक इस्तेमाल करने पर भी आरामदायक और सुविधाजनक बनाता है। इसकी डिजाइन चेहरे की सुरक्षा के लिए खास तौर पर की गई है। इसमें ए4 साइज ओवर-हेड प्रोजेक्शन (ओएचपी) फिल्म का उपयोग किया गया है।

अस्पतालों ने मांगे 10 हजार फेस शील्ड

फेस शील्ड का होल्डिंग फ्रेम फ्यूज्ड डिपोजिशन मोडेलिंग (3डी प्रिंटिंग) तकनीक के जरिए बनाया गया है। फ्रेम की 3डी प्रिंटिंग के लिए पोलिलैक्टिक एसिड फिलामेंट का उपयोग किया जाता है। इस थर्मोप्लास्टिक को धान्य मांड या गन्ने जैसे बायोडिग्रेडेबल मटीरियल से बनाया गया है। इस फेस मास्क का बड़ी मात्रा में उत्पादन करने के लिए इंजेक्शन मोल्डिंग तकनीक का उपयोग किया जाएगा। अस्पतालों की ओर से अब तक इस तरह की 10 हजार से अधिक फेस शील्ड की मांग की गई है।

रेलवे ने बनाए रक्षक कोच

भारतीय रेलवे (Indian Railways) कोरोना वायरस (Coronavirus in India) महामारी covid 19 से लड़ाई में हर संभव योगदान करने का प्रयास कर रहा है। भारतीय रेलवे के पूर्वोत्तर जोन (North East Railways) ने कोरोना वायरस को हराने के लिए खास तरह के रक्षक कोच तैयार किए हैं। दरअसल पूर्वोत्तर रेलवे के गोरखपुर स्थित यांत्रिक कारखानों में इन रक्षक कोचों को तैयार किया जा रहा है। भारतीय रेलवे की ओर से दी गई जानकारी के मुताबिक रेलवे के सभी जोनों में 2 अप्रैल तक लगभग 25000 लीटर हैंड सैनेटाइजर और लगभग 2।6 लाख मास्क तैयार किए हैं। उत्तर रेलवे के अलग - अलग कारखानों में तीन अप्रैल तक 1673 लीटर हैंड सैनेटाइजर, 9036 फेस मास्क, 241 कवरऑल एप्रेन बनाए गए हैं। उत्तर रेलवे की ओर से 174 रेल डिब्बों को आइसोलेशन वार्डों में बदला गया है।

<https://www.zeebiz.com/hindi/india/photo-gallery-drdo-develops-sanitisation-enclosures-and-face-shields-to-save-healthcare-professionals-from-covid-19-24049/this-shield-will-be-useful-for-doctors-24052>



Mon, 06 April 2020

कोरोना से जंग की तैयारी/गुजरात में तैयार हुआ सस्ता स्वदेशी वेंटिलेटर, डीआरडीओ ने बनाया पर्सनल सैनिटाइजेशन चैंबर और फेस मास्क

- विदेश से आने वाले वेंटिलेटर की कीमत 6 लाख रु. होती है जबकि स्वदेशी वेंटिलेटर 1 लाख रु. में होगा तैयार
- पुणे की कंपनी ने कोरोना मरीज का सैंपल लेने के लिए बनाया स्वाब, अभी इसे इटली, अमेरिका और जर्मनी से मंगाया जाता है

नई दिल्ली: कोरोनावायरस के खिलाफ छिड़ी इस जंग में देश का हर शख्स अपना योगदान दे रहा है। सामाजिक संस्थानों से जुड़े लोग गरीबों की मदद कर रहे हैं। शैक्षणिक, शोध संस्थानों और निजी संस्थानों से जुड़े वैज्ञानिक इलाज को लेकर तमाम तकनीक तैयार कर रहे हैं। शनिवार को देश के वैज्ञानिकों ने तीन नए इन्वेंटिव प्रोडक्ट तैयार करने में कामयाबी हासिल की। एक तरफ जहां गुजरात के वैज्ञानिकों ने बेहद सस्ता वेंटिलेटर बनाया तो दूसरी ओर पुणे के वैज्ञानिकों ने कोरोना का सैंपल लेने वाला स्वाब डेवलप किया। डीआरडीओ के वैज्ञानिकों ने सर्जिकल सूट और फेस मास्क के बाद अब सेल्फ सैनिटाइजेशन चैंबर तैयार किया है। खास बात यह है कि तीनों प्रोडक्ट कोरोना के खिलाफ इस लड़ाई में देश की काफी मदद कर सकते हैं।



अब विदेश से स्वाब लाने की जरूरत नहीं पड़ेगी

पुणे की सेंटर फॉर मटेरियल्स फॉर इलेक्ट्रॉनिक्स टेक्नोलॉजी (सीमेट) के वैज्ञानिकों ने कम लागत वाला स्वदेशी पॉलिमर स्वाब तैयार करने में कामयाबी हासिल की है। केंद्र के डॉ. मिलिंद कुलकर्णी के मुताबिक, स्वाब का उपयोग कोरोनावायरस परीक्षण के लिए एकत्रित किए जाने वाले सैंपल को रखने में काम आता है। अभी इसे इटली, अमेरिका

और जर्मनी से मंगाया जाता है। डॉ. मिलिंद ने बताया कि चूंकि, पूरी दुनिया इस समय कोरोना संकट से जूझ रही है। खासतौर पर इटली, अमेरिका और जर्मनी में इस वक्त कोरोना के सबसे ज्यादा मामले हैं। वहीं, भारत में भी संक्रमण के मामले काफी बढ़ चुके हैं। इसलिए आने वाले दिनों में स्वाब की कमी हो सकती है। मुसीबत की इस घड़ी में यह स्वदेशी स्वाब देश के काफी काम आ सकता है। डॉ. मिलिंद के अनुसार, अभी स्वदेशी स्वाब का प्रोटोटाइप तैयार हुआ है। अब इसके क्लिनिकल ट्रायल की तैयारी की जा रही है। इसकी जिम्मेदारी यूरोलॉजिस्ट डॉ. केएन श्रीधर को दी गई है। डॉ. मिलिंद के अनुसार, आने वाले दिनों में लाखों स्वाब की जरूरत पड़ेगी। उनकी मशीन एक मिनट में 1 हजार से 2 हजार स्वाब तैयार करने में सक्षम है।



10 दिनों में गुजरात सरकार को मिल जाएगा 1 हजार वेंटिलेटर

गुजरात के राजकोट की ज्योति सीएनसी कंपनी ने स्वदेशी वेंटिलेटर तैयार करने में कामयाबी हासिल की है। इसे धामन-1 नाम दिया गया है। इसके सभी हिस्से स्वदेशी हैं। कंपनी का दावा है कि इसकी कीमत महज 1 लाख रुपये है जबकि विदेश से आने वाला 1 वेंटिलेटर कम से कम 6.50 लाख रुपये का मिलता है। मुख्यमंत्री विजय रुपाणी ने शनिवार को गांधीनगर में धामन -1 को लॉन्च किया। रुपाणी ने बताया कि अगले 10 दिनों में कंपनी गुजरात सरकार को 1000 एयर-1 वेंटिलेटर देगी। कंपनी के पराक्रम सिंह जडेजा ने बताया, "इसे डॉ. राजेंद्र सिंह परमार की टीम ने महज 10 दिनों में तैयार किया है। डॉ. परमार ने 5 साल तक अमेरिका में काम किया है। इस वेंटिलेटर को बनाने में 150 विशेषज्ञ इंजीनियरों की टीम जुटी थी। इसका परीक्षण अहमदाबाद के असरवा सिविल अस्पताल में भर्ती कोरोना मरीज पर किया गया। वेंटिलेटर पांच घंटे से अधिक समय तक रोगी पर अच्छा काम कर रहा है।



डीआरडीओ ने बनाया सैनिटाइजेशन चेंबर और फेस प्रोटेक्शन मास्क

कोरोनावायरस से निपटने के लिए तैयार डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गनाइजेशन (डीआरडीओ) ने एक फुल बॉडी डिसइन्फेक्शन चेंबर बनाया है। इसे सैनिटाइजेशन चेंबर भी कहा जा रहा है। साथ ही फेस प्रोटेक्शन मास्क भी बनाया है, जिसे हॉस्पिटल में सप्लाई भी किया जा रहा है। दिल्ली के अहमदनगर में डीआरडीओ की लेबोरेटरी 'व्हीकल रिसर्च एंड डेवलपमेंट इस्टैब्लिशमेंट' ने इस सैनिटाइजेशन चेंबर को डिजाइन किया है। डीआरडीओ ने कहा कि यह एक पोर्टेबल सिस्टम है। इस चेंबर में व्यक्ति को एक बार में पूरी तरह से सैनिटाइज किया जाएगा। इसमें एक पैडल के माध्यम से खुद को सैनिटाइज किया जाता है। चेंबर में पंप के माध्यम से हाइपो सोडियम क्लोराइड की तेज फुहार डाली जाती है। यह स्प्रे 25 सेकंड तक चलता है। इस चेंबर में व्यक्ति को अपनी आंखें बंद रखनी होती हैं। इस चेंबर में 700 लीटर का टैंक है। एक बार में करीब 650 लोगों को सैनिटाइज किया जा सकता है।



<https://www.bhaskar.com/national/news/drdo-built-a-personal-sanitization-chamber-and-face-mask-127107003.html>

Coronavirus: DRDO nod to coverall suits made by Railway workshop

Northern Railway, which made the breakthrough after another railway unit failed to get its samples passed, has raw material to make 3,000 coverall suits

By Vishek G Dastidar

New Delhi: The Defence Research and Development Organisation Sunday cleared coverall suit samples made by a railway workshop, paving the way for mass production of this protective gear, critical in India's fight against the coronavirus outbreak.

Northern Railway, which made the breakthrough after another railway unit failed to get its samples passed, has raw material to make 3,000 coverall suits. It has decided to source raw material from a Yamunanagar-based vendor approved by the Textiles ministry to manufacture an additional 3,000 units.

It is the Jagadhari coaching workshop of Northern Railway which made the suits using "reverse engineering".

The government estimates the country's medical fraternity and other workers will require some 1.5 crore coveralls by June. These suits are incinerated after each use and are the most critical component in the Personal Protective Equipment kit with significant shortage in India.

"Now we can contribute in mitigating the shortfall of coveralls in the country to the extent possible. We have already placed orders for raw materials for more," said Arun Arora, Principal Chief Mechanical Engineer of Northern Railway, which will share the design specifications with other zones so that production can happen on a larger scale if needed.

A Railway statement said that the national transporter will now aim to produce three sets of coverall suits per sewing machine per hour for 15 days.

Eighty-one coaches were earlier converted into isolation wards by this zonal unit, which has by now converted 340 coaches, readying 10 isolation trains and continuing to convert more.

Northern Railway is contemplating applying for a patent for the design of the isolation coach. "We will file for a patent... It is a unique Indian idea to show the world how in-use railway coaches can be turned into viable healthcare infrastructure in a time of crisis," Arora said.

The Rail Coach Factory, Kapurthala, has already made a prototype of a ventilator with its own design and in-house talent. The prototype will be sent to the ICMR for testing next week even as other two factories—the ICF, Chennai and Rail Wheel Plant, Bengaluru—also look to make ventilators with reverse engineering and outside collaboration.

<https://indianexpress.com/article/india/coronavirus-india-lockdown-drdo-nod-to-coverall-suits-made-by-rly-workshop-6348949/>



Northern Railways' PPE samples clear DRDO test; 100 units a day to be produced soon

The Northern Railways' Jagadhari Workshop which developed these sample will share the technical details including specifications of the approved samples and quantities of materials required with other zonal workshops and production units of the Railways

New Delhi: Two samples of Personal Protective Equipment (PPE) made at a Northern Railways workshop have been cleared by the DRDO for their ability to block blood or body fluid, paving the way for its production at railway units. The Northern Railways said on Sunday the test at the Defence Research and Development Organisation's Gwalior lab was conducted to check the resistance of the bio-protective covering material (fabric/garment) to penetration of blood or body fluid.

"Now these coveralls will be manufactured by Indian Railways and will be worn by doctors in railway hospitals while treating COVID-19 patients," the Northern Railways said.

Its General Manager Rajiv Chaudhary said, "This is a huge achievement for Northern Railways as well as for the Indian Railways. We will continue to supplement the efforts of the government in the fight against coronavirus."

There is an acute shortage of PPEs for medical professionals in the country who are treating coronavirus patients.

Technical specifications of these PPEs are now ready, and material suppliers are in place, the Northern Railways said.

"We are now making 20 per day, but in a week's time we will be able to make 100 per day," a Northern Railways spokesperson said.

The Railway Board has issued necessary instructions to Zonal Railways for production of the PPEs.

The Northern Railways' Jagadhari Workshop which developed these sample will share the technical details including specifications of the approved samples and quantities of materials required with other zonal workshops and production units of the Railways, it said.

The Indian Railway Stores Department has been designated to procure the material for the production of the PPEs.

This internal effort of the Railways is over and above a centralised request projected to the government and also indicated to HLL through Indent, the railways said.

According to the Health Ministry, the number of confirmed novel coronavirus cases in the country climbed to 3,374 on Sunday while the death toll rose to 77.

Of them, the number of active COVID-19 cases stood at 3,030 and as many as 266 people have been either cured of the disease and discharged, and one had migrated, it said.

<https://economictimes.indiatimes.com/industry/transportation/railways/northern-railways-ppe-samples-clear-drdo-test-100-units-a-day-to-be-produced-soon/articleshow/74996553.cms>

Mon, 06 April 2020

Personal Protective Equipments made by Northern Railways get DRDO nod

Two samples of Personal Protective Equipment (PPE) made at a Northern Railways workshop have been cleared by the DRDO for its ability to block blood or body fluid, paving the way for its production at railway units.

“The test was conducted to check the resistance of the bio-protective covering material (fabric/garment) to penetration of blood or body fluid. Now these coveralls will be manufactured by Indian Railways and will be worn by doctors in railway hospitals while treating COVID-19 patients,” the Northern Railways said on Sunday.

There is an acute shortage of PPEs for medical professionals in the country who are treating coronavirus patients.

We are now making 20 per day, but in a week’s time we will be able to make 100 per day,” Northern Railways spokesperson Deepak Kumar told PTI.

<https://www.deccanherald.com/national/north-and-central/personal-protective-equipments-made-by-northern-railways-get-drdo-nod-821755.html>



Mon, 06 April 2020

Railways' PPE kit passes DRDO test

New Delhi: The railways has passed the test conducted by DRDO for the Personal Protection Equipment manufactured by Jagadhari workshop to fight Covid-19.

A statement issues by Deepak Kumar, CPRO Northern Railways, said: "Northern Railway Jagadhari Workshop becomes the first workshop whose two PPEs/ Coverall sample passed the DRDO test. This will be helpful in fighting the war against Covid-19.

"The railways can now contribute to mitigating the shortfall in PPEs to the extent possible by manufacturing it in-house." said the statement.

There are reports of shortage of PPE and many videos have gone viral where doctors are facing lack of PPE.

The opposition Congress on Sunday hit out at the government on shortage of medical equipment, saying the country needs at least 62 lakh PPE kits.

The Delhi government has given the nod for procurement of Personal Protective Equipment (PPE) kits by city hospitals from local manufacturers and suppliers at market rate not exceeding Rs 1,087.47, amid an increasing demand.

Speaking to IANS, a Delhi Health Department official said on Sunday that the decision was taken as the city hospitals were facing severe shortage of the kits.

<http://www.daijiworld.com/news/newsDisplay.aspx?newsID=693054>

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<https://www.indiatoday.in/india/story/personal-protective-equipment-made-by-northern-railways-get-drdo-nod-1663640-2020-04-05>



AMCA: Final Design Freeze soon, DSI intakes, RCS reduction measures to make it first 5.5 Gen fighter

India's first and probably only 5.5 Generation Advanced Medium Combat Aircraft (AMCA) program currently underway, is now heading towards final design phase with many key notable changes in the design which is now nearing completion and now features new 3D Diverterless Supersonic Inlet (DSI) compared to a conventional intake sported in earlier scale and graphic rendering of the AMCA.

While exact radar cross-section (RCS) of AMCA will be classified, further RCS reduction measures have been carried out which full fills all the concept of stealth but its the next generation homegrown avionics and electronics including its gen-next weapons and ability to be used as a manned, unmanned, stealth and non-stealth modes which make it more lethal then current 5th generation fighter jets.

DRDO Chief and seniors have often refused to compare AMCA with other 5th generation fighter jets developed by other countries in the past, but idrw.org has been informed that AMCA Mk2 will be better than Chinese J-20 and J-31 Stealth fighter jets and comparable to the American F-35. Technological benchmark being set by both developers and operators is to develop a jet that is as capable as an F-35A in stealth and much more in avionics and other technology.

Once the design has been frozen, a full-scale model of the AMCA will be developed by VEM Technologies which will be used to measure RCS measurements at the outdoor Radar Cross Section (RCS) Test facility of DRDO at Chitradurga by the end of this year and the final design will be showcased for the first time by the end or in early 2021.

Diverterless Supersonic Inlet (DSI) is also being planned for upcoming MWF-MK2 and TEDBF/ORCA programs, while it skips Tejas Mk1 and Tejas Mk1A due to negligible benefits. DRDO also has developed new Radar observant paint for the AMCA program which will also be used on the MWF-MK2 and TEDBF/ORCA programs.

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<https://idrw.org/amca-final-design-freeze-soon-dsi-intakes-rcs-reduction-measures-to-make-it-first-5-5-gen-fighter/>



Mon, 06 April 2020

When lock-down is lifted, we have to be highly disciplined: DRDO Chief VK Saraswat

India's society needs to be highly disciplined and follow guidelines strictly when the lock-down imposed to halt the spread of Coronavirus is lifted, NITI Aayog member and former DRDO Chief V K Saraswat said here on Sunday. He said when the curbs are removed in a regulated fashion, participation of the community is very important in terms of following the rules of the game such as social distancing and avoiding large gatherings, to prevent a fresh surge in COVID-19 cases. "Highly disciplined society is expected at that time", Saraswat, a former Scientific Advisor to the Defence Minister, told PTI. Right now, the focus should be on keeping the medical infrastructure in right shape and ensuring continuous supply of needed appliances and equipment for patients, doctors and paramedics, he said. "So there is a need for us keep the continuity of raw materials, supply chain for manufacturing and distributing these systems to all, Saraswat said.



We may need some extensive manufacturing capability to make up for gaps what we have. Raw materials for manufacturing should be made available. Given the number of COVID-19 cases, there is now no distinction between private and government hospitals as their attention is required on a war-footing, he said. India, Saraswat said, should fill up all the gaps it has in the healthcare system by making more investments, adding, right now the country has to come out with as many make-shift facilities as possible to make sure that the surging number of cases are taken care of.

<https://www.deccanherald.com/national/when-lock-down-is-lifted-we-have-to-be-highly-disciplined-drdo-chief-v-k-saraswat-821736.html>

Army extends pre-mature retirement dates of officers till June 30 amid coronavirus fight

In the wake of the nation's ongoing fight against COVID-19 pandemic, the Indian Army extended till June 30 the dates for Premature Retirement of all personnel

By Gloria Methri

Mumbai: In a bid to empower the nation's ongoing fight against COVID-19 pandemic, the Indian Army on Sunday extended till June 30 the dates for Premature Retirement of all the Army, Navy and Air Force personnel. Individual letters in this regard will be issued after the lockdown period, the Indian Army informed on Twitter.

From deploying security forces amid nationwide lockdown to distributing rations and free meals to poor and needy, the Indian Army has stepped up again in tackling a crisis situation in the country. There have been several instances of the Indian Army lending a helping hand to rescue the citizens facing trouble during the lockdown period.

Indian Army takes Measures to Combat COVID-19

On March 26, the Indian Army issued instructions in the wake of the novel coronavirus crisis. For instance, it began to identify infrastructure for setting up quarantine/isolation centres in each military station. Furthermore, it expressed its willingness to support the civil administration with its network of hospitals and lab facilities at COVID-19 hotspots.

It also announced the preparation of a plan to augment health experts in severely affected areas if required. Additionally, the Indian Army's Northern Command has started several helplines across the Union Territories of J&K and Ladakh to advise people on their concerns related to COVID-19.

A day later, the Army launched 'Operation Namaste' to fight against the novel coronavirus. COAS General Manoj Naravane stated that it was the Indian Army's duty to help the government in its fight against COVID-19. Exuding confidence in the success of this operation, he mentioned that Army personnel could seek help from command wise helplines.

<https://www.republicworld.com/india-news/general-news/army-extends-premature-retirement-till-june-30-to-fight-covid-19.html>

THE ECONOMIC TIMES

Mon, 06 April 2020

Indian Army opens command hospital to assist J-K administration in fight against coronavirus

The hospital is fully equipped to deal with patients infected with the disease and many wards have been converted into corona-specific intensive care units, commandant of the hospital Maj General S C Gupta told reporters here. "We have always emerged victorious in the wars against our enemies. This time our fight is against COVID-19 and the command hospital is fully prepared to register its victory over the disease as well," he said

Udhampur: Lending its support to the Jammu and Kashmir administration in the fight against coronavirus, the Army on Sunday said it has opened its command hospital here to test samples of suspected cases.

The hospital is fully equipped to deal with patients infected with the disease and many wards have been converted into corona-specific intensive care units, commandant of the hospital Maj General S C Gupta told reporters here.

“We have always emerged victorious in the wars against our enemies. This time our fight is against COVID-19 and the command hospital is fully prepared to register its victory over the disease as well,” he said.

Maj Gen Gupta said the Army responded swiftly to the request of the civil administration in accordance with its tradition to assist the government to meet any eventuality.

“The civil administration approached us on April 1 and without wasting any time, we started testing from the next day and so far 68 samples were tested at the command hospital,” he said.

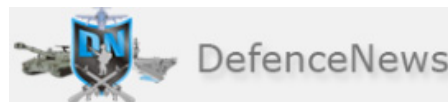
He said the molecular biology laboratory of the command hospital was recently validated and approved by the Indian Council of Medical Research (ICMR) for testing.

Maj Gen Gupta said many wards have been transformed into corona-specific ICUs at the hospital to tackle the cases of coronavirus.

“We have transformed many wards into isolation units with adequate number of ventilators, multipara monitors and oxygen concentrators. These wards with 100 bed capacity have been turned into corona-specific ICUs,” he said.

The Army officer said a team of specialists has been assigned the job to handle the suspected cases while adequate number of hazard suits, N-95 masks and protective equipment have been procured for healthcare workers.

<https://economictimes.indiatimes.com/news/defence/indian-army-opens-command-hospital-to-assist-j-k-administration-in-fight-against-coronavirus/articleshow/74994413.cms>



Mon, 06 April 2020

Is F-21 Fighter Jet for India a rebranded version of American F-16 Aircrafts?

Last year, the US offered India its F-21 fighter jets which New Delhi did not buy presumably because it resembled the F-16 jets and were seen as a mere rebranded version of the iconic fighter aircrafts.

However, according to Defence Editor David Axe of National Interest, the F-21 merely resembles the old F-16 but rather is a new aircraft with new cockpit display, a larger airframe spine to accommodate additional electronics and a new infrared sensor and refuelling probe that is compatible with India's Russian made aerial tankers.

However, the rebranding of F-16 to F-21 fighter jets has raised some poignant questions, one of them being at what point do upgrades turn an old fighter jet into a new one?

As EurAsian Times had reported earlier, India wants to replace its old 1960s Russian made MiG-21s and MiG-27s. The MiG-21s are particularly prone to accidents with India reporting around 490 crashes killing 200 pilots out of the 874 MiG-21s it first brought into service in 1963.

The Indian Air Force, as reported by the EurAsian Times, has been looking to acquire new fighter jet to fly alongside French Rafales, Russian MiG-29s and SU-30s and India's indigenously built Tejas aircraft which Lockheed Martin described as the world's largest fighter aircraft ecosystem.

The F-21 shares many of its significant aspects with F-16V which Lockheed has sold previously to Bahrain, Greece, Slovakia, South Korea and Taiwan.

Yet, the F-21 or F-16V is different from F-16A that first flew in 1978. As compared to the F-16A, F-21 or F-16V has better radar and sensors and carry long-range missiles. But then why did the USA not call the F-16V something different?

The reason behind not changing the fighter's name seems to be connected with cost efficacy to make the new programme sound less risky. In fact, the three new F-35 variants namely F-35 A, F-35B and F-35C shared very few design elements outside of their cockpits.

All the three variants have just 20-25% commonality according to Lt Gen Christopher Bodgan. The American tendency to give old names to new aircrafts created a false impression that the fighter aircrafts were just the same old jets with new names.

Another example includes the advanced F-15 variant of Boeing which the company has offered to US Air Force as F-15X and a new F/A-18E/F model that has nothing in common with its earlier predecessor F/A-18A/B.

If the Indian Air Force opts to buy the F-21 jets it would undoubtedly be able to claim to be the first operator of a brand new aircraft even if to the layman the fighter jet appears to be just another old aircraft.

Vivek Lall, Vice-President of Strategy and Business Development of Lockheed Martin had earlier said that if India decides to buy the F-21 jets then the company will not sell them to anyone else and will set up a state-of-the-art F-21 manufacturing facility with Tata Group and create an ecosystem for the overall growth of India's defence manufacturing.

Lall said that looking from a distance, it may appear that the F-16 and F-21 are similar but actually are different. He said that F-21 had 12,000 hours of service life airframe as against F-16's 8,000 hours and has completely different airframe, weapons capability, engine matrix and availability of engine options, according to News 18.

Earlier this year, Lockheed Martin inked an agreement with India's Public Sector Undertaking Bharat Electronics Limited to explore opportunities in the F-21 fighter jet programme.

<https://www.defencenews.in/article/Is-F-21-Fighter-Jet-For-India-A-Rebranded-Version-Of-American-F-16-Aircrafts-820073>

hindustantimes

Mon, 06 April 2020

No evidence of coronavirus being airborne, says ICMR's top scientist

Coronavirus spreads primarily through droplets generated when an infected person coughs or sneezes, or through droplets of saliva or discharge from the nose

New Delhi: With the number of coronavirus cases in India now doubling in just over four days as the pandemic continues to spread the Indian Council of Medical Research (ICMR) said Sunday that there was no evidence of the virus being airborne.

"There is no evidence of coronavirus being airborne," Dr Raman Gangakhedkar, Head Scientist, (ICMR) said at the government's daily briefing.

Coronavirus spreads primarily through droplets generated when an infected person coughs or sneezes, or through droplets of saliva or discharge from the nose.

Last month, the World Health Organization had said that there is not sufficient evidence to suggest that SARS-CoV-2 is airborne, except in a handful of medical contexts, such as when intubating an infected patient.



On Sunday, the number of coronavirus cases in India climbed to 3,374 and seventy nine people have lost their lives so far while 267 people have recovered, Lav Aggarwal, joint secretary, health ministry said at the briefing.

Aggarwal also said the Tablighi Jamaat event in Delhi last month contributed largely to the rapid rise in infections recently.

“Covid-19 cases doubled in 4.1 days presently.... had Tablighi Jamaat incident not happened it would have taken 7.4 days,” he said.

<https://www.hindustantimes.com/india-news/no-evidence-of-coronavirus-being-airborne-says-icmr-s-top-scientist/story-InLTiNx4JtgxeTZP9G64IN.html>

South China Morning Post

Mon, 06 April 2020

Coronavirus can remain on face masks for up to a week, study finds

By Simone McCarthy

- *Pathogen that causes Covid-19 is gone within three hours from surfaces like printing and tissue paper, but can last for days on banknotes, stainless steel and plastic, researchers from University of Hong Kong say*
- *But virus is no match for household disinfectants, bleach or frequent hand washing with soap and water*

The coronavirus that causes Covid-19 can adhere to stainless steel and plastic surfaces for up to four days, and to the outer layer of a face mask for a week, according to a study by researchers from the University of Hong Kong (HKU).

The team also found that common household disinfectants, including bleach, were effective in “killing” the virus.

The report, published in medical journal *The Lancet* on Thursday, adds to a growing body of research about the stability of SARS-CoV-2 – as the coronavirus is formally known – and what can be done to prevent its transmission.

“SARS-CoV-2 can be highly stable in a favourable environment, but it is also susceptible to standard disinfection methods,” said the researchers, who included, from HKU’s School of Public Health, Leo Poon Lit-man, head of the public health laboratory sciences division, and Malik Peiris, a clinical and public health virologist.

The researchers tested how long the virus could remain infectious at room temperature on a variety of surfaces.

On printing and tissue paper it lasted less than three hours, while on treated wood and cloth – a standard cotton laboratory jacket – it had disappeared by the second day.

On glass and banknotes the virus was still evident on the second day, but had gone by the fourth, while on stainless steel and plastic it was present for between four and seven days.

“Strikingly,” the researchers said, there was still a detectable level of infection on the outer layer of a surgical face mask after seven days.

“This is exactly why it is very important if you are wearing a surgical mask you don’t touch the outside of the mask,” Peiris said.

“Because you can contaminate your hands and if you touch your eyes you could be transferring the virus to your eyes.”

On all surfaces, the concentration of the virus reduced quite rapidly over time, the study said.

The researchers said also that the results did “not necessarily reflect the potential to pick up the virus from casual contact”, as the presence of the virus in the study was detected by laboratory tools, not fingers and hands as would be the case in everyday life.

A study by American researchers on the environmental stability of the coronavirus published last month in the scientific journal *Nature* also concluded that it can remain infectious on some surfaces for days.

They found the virus was present on plastic and steel for up to 72 hours, but did not last more than four hours on copper or 24 hours on cardboard.

The team included scientists from the National Institute of Allergy and Infectious Diseases and the US Centres for Disease Control and Prevention.

The findings from HKU add to the conversation about public health and hygiene, and what kinds of precautions people should take when bringing items like groceries into their homes.

Hand washing remains at the top of the list for Poon, who said it was theoretically possible for tins of food to carry enough live virus to cause an infection, but that the exact risk had yet to be established.

“If you want to protect yourself just maintain good hygiene, wash your hands often and try not to touch your face, your mouth or nose without cleaning first,” he said.

People who were particularly concerned might prefer to leave non-perishable items in their shopping bags in the kitchen for a day before handling them, he said.

“That would reduce the viral titre [concentration] a lot. But the most important message is wash your hands.”

<https://www.scmp.com/news/china/science/article/3078511/coronavirus-can-remain-face-masks-week-study-finds>



Mon, 06 April 2020

Researchers warn possible coronavirus treatment hydroxychloroquine may be toxic when combined with diabetes drug

By Victoria Forster

Researchers have warned that hydroxychloroquine (HCQ) and chloroquine (CQ), two similar drugs repeatedly touted by President Trump to be promising treatments for COVID-19, may be deadly when combined with a common diabetes drug.

The new study was published yesterday online on scientific pre-print server BioRxiv and shows that 30-40% of mice treated with a combination of HCQ or CQ and diabetes drug metformin, died. Treatment with the same dose of either drug alone had no effect on the survival of the mice.

HCQ and CQ are typically used to treat malaria and autoimmune diseases such as rheumatoid arthritis and lupus, but have also shown some early promise in the treatment of certain types of cancer, with several clinical trials ongoing.

“Our interest in this combination arose because both drugs individually have been shown to have anti-tumor effects in pancreatic cancer,” read a statement from two of the authors of the paper: Chi Dang, director of the Ludwig Institute for Cancer Research and Anirban Maitra, scientific director of the Center for Pancreatic Cancer Research at MD Anderson Cancer Center. “To our utter surprise, both HCQ and CQ when combined with metformin resulted in a surprising death rate in 30-40% of mice. In contrast there were no deaths in the single treatment groups,” said the authors.

The work in the recently published study was done before the coronavirus outbreak, with the researchers testing HCQ/CQ and metformin for pancreatic cancer and coming up with this perhaps, serendipitous finding. Due to this, some of the mice had pancreatic tumors, however the drug combination proved fatal for the mice with and without pancreatic cancer, at a similar rate.

“Even in mice that did not have any tumors, we found this deleterious effect of the combination, underscoring that it is not dependent on the presence of a tumor,” said the authors.

Although no work has yet been done in humans to evaluate this interaction, there is also a plausible scientific reason by which these two drugs may negatively interact. Both of them affect a process called autophagy, which is where cells recycle proteins to enable them to make more.

“Autophagy literally stands for “self-eating” and is a form of “quality control” that most cells in our body engage in to recycle aging proteins so as to synthesize new ones. HCQ and CQ are both agents that inhibit autophagy and in fact this is the property that is important for its use in tumors like pancreatic cancer,” said the authors.

Metformin, on the other hand can actually induce autophagy, so it is possible that two drugs interfering with this recycling pathway at the same time could be toxic.

The researchers looked to see whether this process was disrupted in the mice dying after treatment with the combination and found increased numbers of autophagosomes (essentially recycling bins, containing cell proteins to be re-purposed), in the heart, liver and kidneys of the mice. They also designed the dosage of both drugs so that the amount they gave the mice should be proportional to how much humans typically receive.

“In this study we used a method called “allometric scaling” which uses the surface area of an average human being and an average mouse and uses this to identify comparable doses. Importantly this does not depend on the body weight which can lead to errors in estimation – most oncology therapeutics are actually calculated based on surface area,” said the authors, one of whom explained this further on Twitter.

So what do the researchers hope to achieve by publishing their work now?

“Our goal in communicating this work is not to scaremonger. We hope that the lethality we observed in mice will not translate to humans but instead there will be more “pharmacovigilance” or awareness regarding potential drug interactions between HCQ/CQ and metformin,” said the authors.

HCQ and CQ have been touted as a possible treatment for COVID-19, despite very scant and even conflicting evidence that it works for people with COVID-19, with some trials showing some promising effects of the drug and others showing no substantial benefit. Dozens of other trials are now up and running to properly evaluate HCQ/CQ in COVID-19, but the results of these studies will take time. Despite this, President Trump continues to mention it universally positively in his press briefings, yesterday even recommending that people take the drug.

“We have seen the escalating interest in HCQ for COVID-19, not only for therapy but now increasingly for prophylaxis following exposure to an infected family member or a patient. Because this drug is likely to be used in spades – either as part of a clinical trial or what we call “off label” – we wanted to get this information out at the earliest so that physicians treating COVID-19 patients are at least aware of this potential drug interaction,” said the authors.

Misuse of the drug has already resulted in at least one fatality, after man in Arizona died after ingesting fish tank cleaner containing CQ. Reports of poisoning were also been reported in Nigeria, a day after President Trump first mentioned it in one of his briefings.

“There is very good safety data on both drugs individually, as well as safety data on combination being used in patients who have autoimmune diseases like lupus and rheumatoid arthritis. However, patients with COVID-19 are a whole different ballgame and typically much sicker than the average population. We have to remember that COVID-19 has been associated with adverse effects on the heart and the blood vessels – how all of these play out in addition to the two drugs interacting with each other will need to be studied,” said the authors.

Last week, the CDC reported that people with underlying health conditions are at more risk of severe COVID—19. People with diabetes are included in their initial dataset and appear to be more likely to be hospitalized/need to go to ICU than people with no underlying conditions, but with such small numbers it is difficult to tell currently why exactly this is. The report also had no information about how many of these people were currently on medications of any sort, whether it be metformin or HCQ/CQ, so currently there is no human data to back up the interaction seen in mice. However, the authors of the new study stress that this work must be done as soon as possible.

“Right now, the drugs are being used in a completely patchwork way. We need a national database on every COVID-19 patient that is receiving HCQ or CQ – either as part of a clinical trial or off label. We ask either the FDA, or companies like Flatiron to create such a registry for HCQ/CQ usage in COVID-19,” said the authors, stressing that the databases should record all adverse events that patients experience, including those reported by patients themselves and any other medications that patients are on. “This will allow us to sift through potential adverse drug interactions like metformin and others,” they added.

There are also two major points to be taken into account when interpreting the new study. Firstly, the research was done in mice, not humans. Testing drugs on mice is an important step in the approval of all new treatments to go into human clinical trials and promising drugs which cause severe toxicities in mice, generally don’t make it into human trials. However, some drugs do behave differently in mice to in humans, so although this result is indicative that HCQ/CQ and metformin may be especially toxic when combined in people, evidence from humans is needed to make a definitive conclusion.

Secondly, the study has not yet been peer-reviewed by other scientists to check its credibility and accepted for publication in a scientific journal. Most of the time during peer review, other scientists suggest ways in which the results or methodology could be improved to further support a study’s claims, sometimes they challenge the conclusions of the study and request that the authors be more conservative about their claims. Less commonly, they uncover significant flaws in the study meaning that they think the research needs to be completely overhauled parts repeated, or conclusions drastically changed. Although it is impossible to tell what will happen with this study during peer review, the scientists involved are all very experienced with thousands of accepted scientific publications between them, so that their work would be inherently flawed with little-to-no merit at all is rather unlikely.

“The results are neat and demonstrated the toxicity of this drug combination,” said Gaetan Burgio, MD, PhD, an infectious diseases expert from the Australian National University who has done several pre-clinical drug trials in mice. Burgio, who was not involved in the pre-print study, thinks the results in mice are likely to translate into humans. “Metformin is a common anti-diabetic drug and millions of people are taking it. HCQ/CQ can give cardiac toxicity and are not innocuous. Regardless of the treatment combination, HCQ/CQ treatment might lead to more risks than benefits. I would urge anyone to consult with a doctor before initiating such treatment,” said Burgio.

Neither the lack of peer review, or that the work was done in mice necessarily affect the implications of the work, but they do mean that a small amount of additional caution is warranted when interpreting the results, as is the case with all scientific pre-prints and work done in mice without corresponding human studies.

Considering the considerable burden of COVID-19 currently, it is understandable why many people want to view HCQ/CQ as a magic bullet, an old, reasonably safe and cheap drug, capable of quickly helping people who are seriously ill with COVID-19. But, the bottom line is that there are several reasons why many scientists and physicians are urging caution with HCQ/CQ. It isn’t because they think the drug is useless, it’s just because there simply isn’t enough evidence to suggest it is useful just yet.

This could change in weeks or months from now, as the results of new trials come out. But, if the relationship between HCQ/CQ and metformin found in mice is similar in humans, it serves as somewhat of a cautionary tale that even in these extreme and unusual times, there is merit to

stepping back and thinking about how drugs may affect different people in different ways and what may help one person, may harm another.

(This story was edited at 8.10pm ET on 4th April 2020 to add in external comment on the study from Dr Gaetan Burgio.)

<https://www.forbes.com/sites/victoriaforster/2020/04/05/researchers-warn-that-covid-19-treatment-touted-by-trump-may-be-toxic-when-combined-with-diabetes-drug/#24df62c955f8>

The New York Times

Sun, 05 April 2020

Can an old vaccine stop the new coronavirus?

A tuberculosis vaccine invented a century ago is cheap and safe, and seems to bolster the body's immune system

By Roni Caryn Rabin

A vaccine that was developed a hundred years ago to fight the tuberculosis scourge in Europe is now being tested against the coronavirus by scientists eager to find a quick way to protect health care workers, among others.

The Bacillus Calmette-Guerin vaccine is still widely used in the developing world, where scientists have found that it does more than prevent TB. The vaccine prevents infant deaths from a variety of causes, and sharply reduces the incidence of respiratory infections.

The vaccine seems to “train” the immune system to recognize and respond to a variety of infections, including viruses, bacteria and parasites, experts say. There is little evidence yet that the vaccine will blunt infection with the coronavirus, but a series of clinical trials may answer the question in just months.

On Monday, scientists in Melbourne, Australia, started administering the B.C.G. vaccine or a placebo to thousands of physicians, nurses, respiratory therapists and other health care workers — the first of several randomized controlled trials intended to test the vaccine’s effectiveness against the coronavirus.

“Nobody is saying this is a panacea,” said Nigel Curtis, an infectious diseases researcher at the University of Melbourne and Murdoch Children’s Research Institute, who planned the trial. “What we want to do is reduce the time an infected health care worker is unwell, so they recover and can come back to work faster.”

A clinical trial of 1,000 health care workers began 10 days ago in the Netherlands, said Dr. Mihai G. Netea, an infectious disease specialist at Radboud University Medical Center in Nijmegen. Eight hundred health care workers have already signed up. (As in Australia, half of the participants will receive a placebo.)

Dr. Denise Faustman, director of immunobiology at Massachusetts General Hospital, is seeking funding to start a clinical trial of the vaccine in health care workers in Boston as well. Preliminary results could be available in as little as four months.

“We have really strong data from clinical trials with humans — not mice — that this vaccine protects you from viral and parasitic infections,” said Dr. Faustman. “I’d like to start today.”

The B.C.G. vaccine has an unusual history. It was inspired in the 1800s by the observation that milkmaids did not develop tuberculosis. The vaccine is named after its inventors, Dr. Albert Calmette and Dr. Camille Guerin, who developed it in the early 1900s from mycobacterium bovis, a form of tuberculosis that infects cattle.

The scientists cultured bacterial scrapings from cow udders, and continued to culture bovine TB for over a decade until it was weak enough that it no longer caused virulent disease when given to lab animals.

The vaccine was first used in humans in 1921 and was widely adopted after World War II. Now B.C.G. is primarily used in the developing world and in countries where TB is still prevalent, where it is given to over 100 million babies a year.

Like other vaccines, B.C.G. has a specific target: TB. But evidence accumulating over the past decade suggests the vaccine also has so-called off-target effects, reducing viral illnesses, respiratory infections and sepsis, and appears to bolster the body's immune system.

The idea is an offshoot of the "hygiene hypothesis," which suggests that the modern emphasis on cleanliness has deprived children of exposure to germs. The lack of "training" has resulted in weakened immune systems, less able to resist disease.

One of the earliest studies hinting at the broad benefits of B.C.G. vaccination was a randomized trial of 2,320 babies in Guinea-Bissau in West Africa, published in 2011, that reported that death rates among low-birth-weight babies were dramatically reduced after vaccination. A follow-up trial reported that infectious-disease mortality rates in low-birth-weight babies who were vaccinated were cut by more than 40 percent.

Other epidemiological studies — including a 25-year study of over 150,000 children in 33 countries — have reported a 40 percent lower risk of acute lower respiratory tract infections in children who received a B.C.G. vaccine.

A study in the elderly found that consecutive B.C.G. vaccinations reduced the incidence of acute upper respiratory tract infections.

A recent review by the World Health Organization concluded that B.C.G. had beneficial "off-target effects," and recommended doing more trials of the vaccine against a wider range of infections.

"This vaccine has saved as many lives as the polio vaccine — it's an amazing story," said Dr. Curtis, who designed and launched the B.C.G. trial in Melbourne in less than a month, hoping to stay one step ahead of the coronavirus's spread in Australia.

While he described the B.C.G. vaccine as underappreciated, he emphasized that it was "not a specific Covid-19 vaccine." B.C.G. also cannot be administered to anyone who has a compromised immune system, because it is a live-attenuated vaccine — meaning it contains live but weakened TB.

Dr. Faustman said it should not be used in hospitalized patients with active disease, because it may not work fast enough and could interact poorly with other treatments.

Not everyone is convinced B.C.G. holds much promise. Dr. Domenico Accili, an endocrinologist at Columbia University, said he thought efforts to use the vaccine against the coronavirus sound "a bit like magical thinking."

While acknowledging that B.C.G. is "a non-specific booster of the immune system," he said, "we should be able to deploy a more tailored approach."

One question is what effect the vaccine may have in patients whose immune systems overreact to the coronavirus, resulting in what are called cytokine storms. Dr. Randy Cron, an expert on cytokine storms at the University of Alabama at Birmingham, said it was impossible to know.

A recent analysis of the disparate toll the new coronavirus has taken on middle- and high-income countries found a correlation with B.C.G. policies, concluding that countries that did not implement or had abandoned universal B.C.G. vaccination have had more coronavirus infections per capita and higher death rates. (Low-income countries were excluded from the analysis because of unreliable Covid-19 reporting data and generally poor medical systems.)

"You can make a new vaccine," Dr. Faustman said. "We're really smart, and we can do that. But it's two years off, and two years is going to be two years too late."

"If we've got something generic globally at hand that we can use to make the human host stronger, this is a win-win for the public right away."

<https://www.nytimes.com/2020/04/03/health/coronavirus-bcg-vaccine.html>