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EXPRESS HEALTHCARE

Sun, 28 June 2020

Naval doctor Dr Arnab Ghosh develops NavRakshak PPEs

Agra-based company bags NRDC license for manufacturing NavRakshak PPEs

Naval doctor Dr Arnab Ghosh has developed NavRakshak PPEs. The prototype development took place earlier at the Naval Dockyard, Mumbai, and it was tested and certified at the Institute of Nuclear Medicine & Allied Sciences (INMAS), Defence Research and Development Organisation (DRDO), an accredited lab authorised by the Ministry of Textile for PPE prototype sample testing as per the prevailing ISO standards and guidelines of the Ministry of Health and Family Welfare and the Ministry of Textile.

Dr Ghosh has incorporated his personal experiences in using the PPE for the comfort and protection of the doctors. It incorporates superior quality breathable fabric to make the PPE suit while its design innovation eliminates the need for costly taping and sealing of the seam which is otherwise needed in other PPEs available in the market. The fabric, suit and seam have been found to meet the synthetic blood penetration resistance criteria comfortably.

The National Research Development Cooperation (NRDC) has signed a technology licensing agreement for the manufacturing know-how of a PPE Suit named NavRakshak with an Agra-based apparel manufacturing entity, the Indian Garment Company. This company is also a registered micro-enterprise under the Ministry of Micro, Small and Medium Enterprises (MSME) Act. The entity is already manufacturing PPE kits in and around Agra and supplying to various hospitals and has now proposed an annual production target of over one million PPE kits using the licensed know-how of NavRakshak to meet the increased requirement of PPEs enforced by COVID crisis.

https://www.expresshealthcare.in/news/naval-doctor-dr-arnab-ghosh-develops-navrakshak-ppes/422406/

अमर उजाला

Sun, 28 June 2020

'आकाश' से होगी एलएसी की सुरक्षा...मिसाइल प्रणाली तैनात

चंद सेकंड में ही चीन के किसी उकसावे की कार्रवाई का जवाब देने में सक्षम

नई दिल्ली। पूर्वी लद्दाख में वास्तविक नियंत्रण रेखा (एलएसी) पर भारत ने चीन के किसी भी दुस्साहस का जवाब देने के लिए सतह से हवा में मार करने वाली आकाश मिसाइल रक्षा प्रणाली तैनात कर दी है। यह मिसाइल रक्षा प्रणाली किसी भी उकसावे की कार्रवाई की स्थिति में चंद सेकंड में ही करारा जवाब देने में सक्षम है।

भारत ने यह कदम सीमा पर चीन के जंगी विमानों और हेलिकॉप्टरों की तैनाती बढ़ाए जाने के बाद उठाया है। आकाश मिसाइल ब्रह्मोस की तरह सुपरसॉनिक मिसाइल है। ध्वनि की गति से साढ़े तीन गुना तेजी के साथ यह लक्ष्य तबाह कर सकती हैं। इसकी अधिकतम रफ्तार 2.5 मैक या 3,087 किमी प्रति घंटा है।

यह मध्यम रेंज मिसाइल है, जो 25 से 30 किमी तक मार कर सकती है। विशेष रडार सिस्टम से लैस आकाश मिसाइलें एक साथ दुश्मनों के 40 लक्ष्यों को ट्रैक कर सकती हैं। एजेंसी

हालात के अनुसार बदलाव

मौजूदा हालात को देखते हुए मिसाइल में जरूरी बदलाव किए गए हैं, जिनसे बेहद ऊंचाई वाले दुर्गम पहाड़ी इलाकों में भी दुश्मन को करारा जवाब दिया जा सकता है। यह लड़ाकू विमान, ड्रोन, क्रूज मिसाइल और हवा से जमीन में मार करने वाली मिसाइल को ध्वस्त कर सकती है।

सीमा पर 10 किमी से भी अंदर चीनी जहाज

सीमा से 10 किमी की दूरी बनाए रखने की अनिवार्य शर्त होने के बावजूद चीन के लड़ाकू विमान भारतीय क्षेत्र के काफी करीब देखे गए। सूत्रों ने बताया कि चीन के हेलिकॉप्टर एलएसी पर भारतीय क्षेत्र दौलत बेग ओल्डी, पेट्रोलिंग प्वाइंट 14 के पास गलवां घाटी, पेट्रोलिंग प्वाइंट 15, 17 और 17ए (हॉट स्प्रिंग एरिया) और पैंगोंग झील और फिंगर एरिया के पास खास तौर से फिंगर 3 एरिया के पास देखे गए। लिहाजा भारत ने भी आकाश मिसाइल प्रणाली के अलावा चीन सीमा पर सुखोई-30 और अपने बमवर्षक विमान विवाद वाली जगहों पर तैनात किए हैं।

INDIA TV

Sun, 28 June 2020

India deploys Akash missiles at Ladakh LAC to tackle Chinese threat

Indian Army on Saturday deployed Akash air defence system at Line of Actual control in Ladakh. Even as India and China are holding rounds of discussion to de-escalate the situation at the LAC, India is not taking any chances and beefing up its security presence on the frontline

By Manish Prasad

Indian Army on Saturday deployed Akash air defence system at Line of Actual control in Ladakh. Even as India and China are holding rounds of discussion to de-escalate the situation at the LAC, India is not taking any chances and beefing up its security presence on the frontline. India has already pressed Sukhoi fighter jets and bomber planes to aid the manoeuvres of Indian Army on ground which is busy staving of misadventures of Chinese army.

The Sukhoi fighters are patrolling the skies close to Line of Actual control. Deployment of Akash missile air defence system is sure to boost Indian firepower in Eastern Ladakh. This can also be a deterrent for the Chinese.

India deploys Akash missiles at Ladakh LAC to tackle Chinese threat (representative image)

Akash missiles are surface-to-air missiles and the air defence system has been indigenously developed in the country. Akash missiles are extremely effective against any airborne target. Enemy aircrafts, drones can be struck down with the help of Akash missiles. Moreover, the missile system can be used to strike down a missile fired by the enemy.

The missiles, developed by Defence Research and Development Organisation (DRDO) can be fired from a tank or a wheeled truck.

India and Chinese forces are locked in a forward military in Ladakh but both countries are engaged in a dialogue through diplomatic and military channels. Although situation is not completely back to normal, tension appears to have reduced a notch after the talks.

https://www.indiatvnews.com/news/india/ladakh-lac-akash-missile-air-defence-system-indian-army-china-latest-news-629727

THE TIMES OF INDIA

Sun, 28 June 2020

India moves air defence missile systems into Eastern Ladakh sector

New Delhi: Amid heightened Chinese fighter aircraft and helicopter activities along the Line of Actual Control (LAC), the Indian armed forces have deployed their advanced very quick-reaction surface-to-air missile defence systems in the Eastern Ladakh sector.

"As part of the ongoing build-up in the sector, the air defence systems of both Indian Army and the Indian Air Force have been deployed in the sector to prevent any misadventure by the Chinese Air Force fighter jets or the People's Liberation Army choppers there," government sources told ANI.

In the last couple of weeks, the Chinese forces have brought in heavy air superiority aircraft like the Sukhoi-30 and its strategic bombers to the rear locations which have been detected flying near the Indian territory maintaining the 10 km plus distance from the boundary.

Sources said that India is also very shortly getting a highly capable air defence system from a friendly country which can be deployed and the entire area can be taken care of to prevent any enemy flying there.

Sources said the Chinese choppers have been flying very close to the Indian LAC in all the troubled sectors including the Sub Sector North (Daulat Beg Oldie sector), Galwan valley near Patrolling Point 14, Patrolling Point 15, Patrolling Point 17 and 17A (Hot Springs area) along with the Pangong Tso and Finger area where they are now moving closer to the Finger 3 area.

The Indian quick reaction air defence system includes the Akash missile which can take down very fast-moving combat aircraft and drones in few seconds and many modifications and upgrades have already been done in it to make it suitable for deployment in the high mountainous terrain. The fighter aircrafts of the Indian Air Force have also been very active in the Eastern Ladakh area as they are coming into the troubled theatre fully loaded after taking off from the nearby air bases in the plains.

The surveillance gaps have also been plugged and no enemy aircraft would be able to go undetected from the eyes of defence forces.

Soon after the Chinese started transgressing into Indian territory in May first week, the Indian Air Force had sent its Su-30MKIs to Eastern Ladakh after they were found close to entering the Indian air space there. The Chinese choppers have been coming frequently up to their claim lines in the Ladakh sector including a construction site close to the Galwan valley there.

https://timesofindia.indiatimes.com/india/india-moves-air-defence-missile-systems-into-eastern-ladakh-sector/articleshow/76661064.cms

THE ASIAN AGE

Sun, 28 June 2020

IAF deploys air defence missile systems in Eastern Ladakh to counter Chinese build-up

India has also filled the surveillance gaps to ensure that no enemy aircraft would be able to go undetected

New Delhi: Indian defence forces have deployed their advanced "quick-reaction surface-to-air missile defence systems" in the Eastern Ladakh sector after PLA air force increased its air activity near LAC in Ladakh and Chinese aircraft were seen last week landing in a Pakistan Occupied Kashmir (PoK) airbase.

Representational image. (PTI)

The air defence systems of both Indian Army and the Indian Air Force have been deployed in Ladakh to take on any aerial threat. India has also filled the surveillance gaps to ensure that no enemy aircraft would be able to go undetected.

Indian quick reaction air defence missile includes the Akash missile which can take down fast-moving combat aircraft and drones in few seconds. It has been modified to make it suitable for deployment in the high mountainous terrain.

A Chinese refueller aircraft is reported to have been seen in Skardu airbase in PoK last week, which is 100 kilometers from Leh air base. In case of a confrontation, Pakistan could provide its air bases to the China to use against India.

The Chinese air force is reported to have deployed advance fighters at Hotan airbase in Xinjiang. It has also brought in aircraft like the Sukhoi-30 and its strategic bombers to the rear locations, which have been detected flying near the Indian territory. There has also been an increase in helicopter activity near the LAC.

The Indian Air Force has also deployed Sukhoi-30MKI, Mirage 2000 and Jaguar fighter aircrafts to advanced positions. It is also carrying out sorties in Leh.

Last week, IAF chief RKS Bhadauria had visited Leh and Srinagar air bases, which will be important for any action in Eastern Ladakh. He checked the operational readiness and reviewed the preparation of all platforms deployed in these bases.

https://www.asianage.com/india/all-india/280620/iaf-deploys-air-defence-missile-systems-in-eastern-ladakh-to-counter-chinese-build-up.html

Defence News

Defence Strategic: National/International

Sun, 28 June 2020

Those who cast an evil eye on Indian soil in Ladakh got befitting response: PM Modi

Exalting their valour in defending the country, Prime Minister Narendra Modi on Sunday paid tributes to the 20 Indian soldiers who had died in the violent clashes with Chinese troops on June 15 in Galwan Valley and asserted that India had given a befitting reply to those who cast an evil eye on its territory.

While addressing the nation during his monthly radio show Mann ki Baat, Modi said: "Those who cast an evil eye on Indian soil in Ladakh have got a befitting response. India honours the spirit of friendship… she is also capable of giving an appropriate response to any adversary, without shying away. Our brave soldiers have proven that they will not let anyone cast an evil eye on the glory and honour of Mother India."

The Prime Minister also said that the "entire country comes together in paying tributes to the bravery of our soldiers who attained martyrdom in Ladakh" and added that "the entire country bows them in reverence, with gratitude".

"Just like their family members, every Indian painfully regrets the loss. The pride and devotion to country felt by the family members on the sacrifice made by the soldiers, is the strength of the country," he said in his address.

Modi's remarks came more than a week after he said that there was no intrusion into the Indian territory and no one had captured any military posts. "Na wahan koi hamari seema mein ghus aaya hai, na hi koi ghusa hua hai, na hi hamari koi post kisi doosre ke kabze main hai. Ladakh mein hamaare 20 jaanbaaz shaheed hue, lekin jinhone Bharat mata ki taraf aankh uthakar dekha tha unhe wo sabak sikhakar gaye," the Prime Minister had told top political leaders in his concluding

address after a nearly three-hour-long all-party meeting that discussed the situation on the India-China border.

Referring to the remarks of father of one of the soldiers, Kundan Kumar of Bihar, who was killed in the clashes, Modi said that "he had mentioned sending even his grandsons to the army to defend the country".

"This spirit permeates across all martyrs families. Truly, the sense of sacrifice displayed by these family members is worth veneration. The resolve with which our soldiers made the supreme sacrifice for the security of Mother India, should be the aim of our lives, and it applies to each an everyone of us," he said.

In vigorous push for the use of locally made products, Modi said that making the country self-reliant will be a tribute to the soldiers. "Our pursuits and endeavours should be in the same direction," he said, adding that "we should strive towards enhancing the country's capabilities and capacities in safeguarding our borders.

"A self-reliant India would be a tribute to our martyrs in the truest, deepest sense," he stressed.

He also said that "India's solemn resolve is to safeguard her honour and sovereignty" and to be self-reliant. "India's tradition is -trust and friendship. India's spirit is brotherhood."

On the defence sector, Modi said that before independence, "our country was ahead of many countries in the world" as there were "multitude of ordnance factories". Many countries that lagged behind India then, he said "are ahead of us now".

The Prime Minister, however, did speak about the standoff with China which began in early May. There has been a significant military build-up in eastern Ladakh by China in their depth area, which has been matched by India as well.

The clashes of June 15 took place after Indian troops, led by Colonel B Santosh Babu had gone to remove tents from an observation post that China had erected on the Indian side of the Line of Actual Control (LAC).

https://idrw.org/those-who-cast-an-evil-eye-on-indian-soil-in-ladakh-got-befitting-response-pm-modi/#more-230001

hindustantimes

Sun, 28 June 2020

India waits for China's PLA to disengage at Ladakh, says won't allow a 'new normal'

India-China border stand-off: The Modi government is watching the time taken by the PLA to restore status quo ante as anything less would be an exercise in perfidy

By Shishir Gupta

New Delhi: Border tensions in East Ladakh have come down a notch with India waiting for the Chinese People's Liberation Army (PLA) to fulfil its June 6 commitment of de-escalating and disengaging its troops along the 1,597 km Line of Actual Control (LAC) in the western sector.

While the two armies are locked in a forward military posture in the Ladakh sector, reports of some lowering of tensions from two out of four standoff points are trickling in despite both the sides continuing to remain in high military alert.

"The border situation continues to be dynamic and it is for the PLA to restore status quo ante after it unilaterally tried to change the ground situation over the last month in violation with the existing agreements and confidence building measures," said a senior official.

The Narendra Modi government is very clear that the PLA does not establish a new normal on the LAC and wants it to go back to its earlier positions for peace and tranquility to prevail on the

border and for bilateral ties to be restored. It is also watching the time taken by the PLA to restore status quo ante as anything less would be an exercise in perfidy.

Both the sides are engaged in a dialogue through diplomatic and military channels with India looking at physical verification of the PLA withdrawal before coming out with any positive statement. With the Darbuk-Shyok Daulat Beg Oldi (DSDBO) road complete, Indian Army engineers are now connecting patrolling posts with roads so that the capacity and capability of troops to respond to any unilateral action from across the border rises manifold.

With China deploying surface-to-air missiles in Aksai Chin in May, the Indian side has also responded in the same fashion with long-range weapons placed all along the 3,488 km LAC. Besides China, the Indian Army is also watching the Pakistani posture in occupied Gilgit-Baltistan.

Although many a western strategists have stated that India will take help of its key ally US in case the red flag goes up, the mood in the Narendra Modi government is to go solo with sufficient force deployed to repel any action of the adversary. The Indian military is deployed in air, land and at sea with submarines patrolling the deep ocean and ready for any deterrent action.

However, national security planners are confident that better sense will prevail over PLA Commander-in-Chief Xi Jinping and Western Theatre Commander Zhao Zongqi as no conflict is one sided.

https://www.hindustantimes.com/india-news/india-waits-for-china-s-pla-to-disengage-at-ladakh-says-won-t-allow-a-new-normal/story-qqCFMq1SCROHOwfgUeNSYN.html

INDIA TV

Mon, 29 June 2020

Indian Air Force now ready to take on China within 8 minutes if situation demands

Indian Air Force is on high alert and is closely monitoring situation unfolding not only at Line of Actual Control (LAC) in Ladakh but the entire stretch of Sino-Indian border. Ever since the standoff between India and China began, Indian Air Force has been amping up its capabilities.

By Manish Prasad

New Delhi: Indian Air Force is on high alert and is closely monitoring situation unfolding not only at Line of Actual Control (LAC) in Ladakh but the entire stretch of Sino-Indian border. Ever since the standoff between India and China began, Indian Air Force has been amping up its capabilities. Now the IAF is in a position to take to the skies and protect Indian forces and striking a blow to the enemy within 8 minutes.

Indian helicopters are capable of striking in the narrow mountain passes Ladakh's rough geography features. As per reports acquired by India TV, the Indian armed forces are in a state of alert for 60 days.

China is currently activating its airbases along the border. There are three airbases in Chinese territory opposite Ladakh. At the same time, China is eyeing Skardu airbase in Pakistan-Occupied-Kashmir.

Indian Air Force now ready to take on China within 8 minutes if situation demands

China has deployed J-8 fighters and bomber planes at their airbases. At this time, China has constructed a strategic base at Hotan that falls under Xinjiang Military command. There are about 35 to 40 fighter planes at that base. These include J-11, J-8, bomber planes and AEWACS planes. China is also depending on its strength in an airbase in the Kashgar province.

However, there is a major factor that puts odds in India's favour. Indian fighter jets are more adept at high altitude warfare. Indian Air Force has Sukhoi, Mirage, Jaguar, Mig planes that can trump Chinese planes should an airfight occur at high-altitude in Ladakh.

Moreover, though China is trying to use Pakistan's Skardu airbase for its advantage, only 1 out of the 2 airstrips are active there.

India has been amping up its security profile along the LAC with China. On Saturday, the Indian Army deployed Akash missile system. These missiles are capable of striking down enemy aircrafts, drone and even missiles.

https://www.indiatvnews.com/news/india/indian-air-force-china-ladakh-lac-latest-news-629968

THE TIMES OF INDIA

Sun, 28 June 2020

IAF watching Chinese bases, sure of matching air power

By Rajat Pandit

New Delhi: India is closely tracking Chinese air bases in Tibet and Xinjiang, which witnessed an initial build-up of fighters, bombers, drones and other aircraft as border tensions escalated on the ground, but is not too perturbed about air combat power along the LAC, with IAF seen to pack a solid operational punch.

There has been "no major or fresh infusion of assets" by the People's Liberation Army-Air Force at Hotan and Kashgar in Xinjiang as well as Gargunsa, Lhasa-Gonggar and Shigatse airbases, some of which also function as civilian airfields, said defence sources. But the Indian Army and IAF, as part of their "total combat potential" deployed along the 3,488-km LAC after border skirmishes in Ladakh, moved forward surface-to-air missiles and other such systems to tackle aerial threats.

China's air force suffers from 'terrain disadvantage'

Frontline Sukhoi-30MKI, MiG-29 and Jaguar fighters were earlier inducted into forward air bases, as was reported by TOI.

PLAAF does have four times the number of fighters and bombers as compared to IAF, but what will operationally matter is the actual number they can "throw at us" in the event of a conventional military conflict, said sources.

At present, the main Hotan airbase facing eastern Ladakh has around 35-40 J-11, J-8 and other fighters, along with a few AEW&C (airborne early-warning and control) aircraft and armed drones. Kashgar, in turn, has six to eight Xian H-6K bombers, with a sprinkling of fighters deployed in other airbases.

"Quantitatively, IAF can quickly deploy more fighters than PLAAF from its several airbases near the LAC to degrade China's military capabilities on the ground," said a source. More

importantly, despite grappling with just 30 fighter squadrons when at least 42 are needed to tackle the collusive China-Pakistan threat, IAF also has a qualitative edge over PLAAF. The impending progressive induction of 36 Rafale fighters will further add to it.

PLAAF also suffers from a "terrain disadvantage" of high-altitude and rarefied air at its airbases facing India, which severely limits the weapon and fuel-carrying capacity of its fighters.

In contrast, fully-loaded Sukhoi-30MKIs (IAF has over 250 of them) and other fighters can easily take off from bases at Bareilly, Tezpur, Chabua and Hasimara, among others, for strike missions across the LAC.

But there will also be huge challenges and several imponderables in a conflict with China. IAF, for instance, has often war-gamed that the PLA will take recourse to long-range missile strikes from the air and ground in a bid to disable its air bases during a conflict. This is a major operational worry for IAF, though contingencies have been planned for.

Moreover, IAF fighters will have to face robust air defence measures. The PLA is armed with a wide array of surface-to-air missile systems, including the latest S-400 batteries from Russia, to take on hostile fighters and bombers. "All these scenarios are fine but I don't think both India and China want a war right now," said a senior officer.

https://timesofindia.indiatimes.com/india/iaf-watching-chinese-bases-sure-of-matching-air-power/articleshow/76667968.cms

INDIAN DEFENCE RESEARCH WING

Sun, 28 June 2020

Indian Army rides RE Himalayan to Karakoram Pass near India-China border

This is a record ride which was executed in 2019 – Royal Enfield Himalayan has become the first to ride to the Karakoram Pass As a tribute to the unparalleled courage and bravery of Indian Armed Forces who secure our borders and keep us safe, Royal Enfield has shared a video on the occasion of Kargil Vijay Diwas. Held every year on June 26, Kargil Vijay Diwas celebrates India's victory in the Kargil war in 1999. The video posted by Royal Enfield reveals the historic ride to the daunting Karakoram Pass located in Northern Ladakh. Last year, in 2019, Royal Enfield had partnered with the Indian army to conquer the mighty Karakoram Pass.

It is located near the India-China border and is the highest pass on the ancient caravan route. This was the first time that anyone has ridden a motorcycle to the Karakoram Pass. The area is known for its unforgiving terrain and extreme temperature. The riders on the expedition had to deal with extremely chilly weather of up to -30 degree Celsius. Watch the video below shared by Royal Enfield.

Royal Enfield Himalayan was used for the expedition, as the motorcycle has been designed for extreme off-roading and it can adapt to any terrain. At that time the BS4 variant was used. The current BS6 model is powered by a 411 cc air cooled, single cylinder engine that churns out 24.3 bhp of max power and 32 Nm of max torque. Engine is mated to a 5-speed constant mesh gearbox. RE Himalayan utilizes a half-duplex split cradle frame suspended on 41 mm telescopic front suspension and monoshock rear suspension.

The Himalayan Heights Motorcycle Expedition started from Karu in Leh and traversed around 1,000 km along the Line of Actual Control (LAC) between India and China and Pakistan. The route passed through some of the most panoramic places in the world such as Chongtash, Siachen Glacier, Depsang Plains and Daulat Beg Oldi. This is actually an old Afghan trade route, but it was

never explored on a motorcycle. The expedition reached Karakoram Pass after travelling for 10 days.

A total of eleven members were part of the expedition, comprising six Indian army personnel, four members from Royal Enfield and one belonging to Himalayan Motorsports Association. The team had two women officers who proved to be just as tough and skilful as others in the group. The expedition was held at a time when the army's 14 Corps, also called the 'Fire and Fury Corps' was proudly celebrating the twentieth anniversary of Kargil Vijay Diwas.

Riding a motorcycle to Karakoram Pass was an extremely challenging journey, but our Indian army bravehearts successfully conquered it. A lot of preparation was required for the expedition including a back-breaking selection process that was held in Himachal Pradesh. The eleven finalists had to further undergo ever tougher training, where the riders were taught to ride on ice, snow and slush. Royal Enfield Himalayan turned out to be a worthy companion on the expedition, as no major issues were reported by the team.

https://idrw.org/indian-army-rides-re-himalayan-to-karakoram-pass-near-india-china-border/

Sun, 28 June 2020

BSF enhances sky vigil to foil Pak's 'drone plot' against India

Days after BSF successfully foiled nefarious design of Pakistan to smuggle arms and ammunition through flying object on this side of the border, BSF has enhanced the sky vigil to foil Pakistan's "drone plot" against India along International border. Top intelligence sources said that Pakistan using its observation posts and towers is now trying to carry out "drone plot" to smuggle weapons and to spy on this side.

"Though BSF troops have successfully shot down the arms laden drone on June 20 in Hiranagar sector but before that and after this incident as well, Pakistani drones were seen flying close to Indian territory and probably they are spying our activities," sources expressed. As per exclusive inputs received, Pakistan is plotting against India through its posts and observation towers along the border. "Pakistan is now executing its nefarious conspiracies against India through LoC and international posts as well as observation towers along the Jammu border," sources said.

In Jammu, they said that Pakistan has posts after every half kilometer on the 202 Km long stretch of international border and 284 km long LoC but there is an Observation Post on Pakistan after every one kilometer."After unsuccessful attempts to infiltrate the terrorists on the Indo-Pakistan border this year by violating the ceasefire more than 2000 times, the neighbour is now plotting a 'drone plot' against India," they added.

According to the security agencies, now Pakistan is in the position of using its LoC in Pakistan and drones on the international border to execute its nefarious plans."Pakistan is not only trying to send weapons to India by flying drones from its posts and observation towers along the border, but it is also collecting important information on this side of the border by flying drones equipped with cameras," they said.

Pertinent to mention here that on June 20 arms loaded drone was shot down by bsf in Hiranagar.

Post 'drone plot', the BSF has intensified the patrol along the border not only to stop the infiltration but also to keep an eye on the sky conspiracy being planned by Pakistan. Along with

this, sources said that BSF jawans are also keeping an eye on every nefarious conspiracy of Pakistan with their observation towers.

BSF sources claimed that they are familiar with this new sky plot of Pakistan and BSF personnel is fully prepared to deal with it. “BSF is using modern equipment along with its jawans to keep an eye on every nefarious activity of Pakistan,” they asserted.

https://idrw.org/bsf-enhances-sky-vigil-to-foil-paks-drone-plot-against-india/#more-229973

ZEENEWS

Mon, 29 June 2020

India's Ghatak commandos ready for China's martial arts trained Army at LAC

Even before the clashes on June 15 at Galwan Valley in Ladakh, China had recruited local martial arts trainers from Tibet's local clubs into their army division

Edited By Namrata Agrawal

New Delhi: Even as the border tensions between India and China at the Line of Actual Control (LAC) has de-escalated, China's People's Liberation Army (PLA) is employing martial arts trainers to train their military officers. As per reports in the Chinese media, at least 20 martial arts trainers have been sent to Tibet to train Chinese soldiers.

Even before the clashes on June 15 at Galwan Valley in Ladakh, China had recruited local martial arts trainers from Tibet's local clubs into their army division.

To counter the martial arts' trained Chinese Army, the Indian Army has deployed its Ghatak commandos. According to an army officer, a Ghatak commando undergos a specialised 43-day Commando Training Course at Belgaum in Karnataka. The training includes running for 40-kilometers non-stop with a weight of about 35 kg which strengthens them physically.

Apart from weapons training they are also trained in hand-to-hand combat. They also specialise in martial arts. Even when they are posted in a unit they are trained there too. There are different training for high altitude areas and desert areas.

According to an agreement between India and China signed in 1996, it was agreed that there would be no firing within a two kilometer radius of the LAC, no usage of any dangerous chemical weapons, guns, or any kind of explosives will be allowed.

An Army official said that although the unit of Ghatak commandos consists of about 22 personnel including an officer, a JCO, but almost a whole team is also kept as a backup. This way, there are 40–45 commandos in a unit at all times.

Every Infantry Officer in the Indian Army has to undergo the training and only selected soldiers are given this training. Every year, 30-40 new jawans arrive in every unit and then some of the new jawans are kept in the commando team. The soldiers who replace these deadly commando teams also remain in the unit. In this way, besides the Ghatak commando team, there are about 50% soldiers in the unit who are experts in it.

Meanwhile, India and China have agrred to hold talks every week to find ways to reduce the tension at the LAC. Sources associated with the government said that it has been agreed between the two countries that a meeting of the WMCC (Working Mechanism for Consultation and Coordination, WMCC) will be held every week to discuss the issue East Ladakh border issue. Representatives from several ministries including the Ministry of External Affairs, Ministry of Defense, Ministry of Home Affairs and Security Forces from the Indian side will be included in the meet.

Sources said that the WMCC met last week to discuss the issue of tension in eastern Ladakh and steps were taken to resolve the issues. During the talks, the issue of violent clash of soldiers in Galvan Valley was also discussed.

https://zeenews.india.com/india/indias-ghatak-commandos-ready-for-chinas-martial-arts-trained-army-at-lac-2292466.html

THE WEEK

Sun, 28 June 2020

Army works overtime to maintain supply chain to forward posts on China border

As Ladakh stand-off continues, replenishing Army posts has become a huge challenge

By Pradip R Sagar

During the summer, the key task of the Leh-based XIV Corps is to stock up its high-altitude border posts with clothing, food, ammunition and fuel for the harsh winter ahead. It is in this little window between April and September, that the Army gets time to replenish its posts. Now, with no immediate de-escalation in sight on the Ladakh sector and both sides in war-like build up, maintaining crucial logistic supply poses a new challenge for the armies of both India and China.

A defence source, familiar with the development, told The WEEK that with huge mobilisation of troops on Ladakh sector, stocking the border posts with essentials is a "humongous" task for the force.

"It is always a tough task to do the winter stocking. But with additional deployment, the task has become more challenging. But we working round the clock to ensure uninterrupted supply," said a source. After three months, Ladakh and the surrounding region will be cut off from the rest of India for six months due to snow.

Winter sets in in these high-altitude areas by October. Before passes close, Army does the stocking of goods like tents, snow clothing, ammunition, fuel jerricans, ration, fruit juices and even high calorie chocolates. After trucks are unloaded at various points, the stocks are divided into 'air portable' or parachute compatible weights, and subsequently, they are air-drooped at locations by helicopters or even by AN-32 transport aircraft.

Indian and Chinese troops are locked in an eyeball to eyeball situation for nearly two months in Eastern Ladakh. Chinese PLA troops have made advancements into certain Indian occupied territories in the Galwan Valley and Pangong Tso Lake, Depsang region in Ladakh and significantly built up its military presence by a massive deployment of infantry soldiers, artillery guns and logistic support along the Line of Actual Control in Ladakh sector.

Indian Army has also done the mirror-deployment by dispatching additional troops on the border. According to an estimate, besides regular force strength, three additional division level (nearly 30,000 troops) have already been deployed by the Indian Army to counter any contingency. And after the June 15 clash in Galwan Valley, in which 20 Indian soldiers were killed, the situation has become increasingly tense.

Military analysts have started believing that with aggressive posturing by Chines, normalisation of situation on the borders appears to be 'distant'.

"With huge mobilisation of force, de-engagement process takes time. We should not expect anything before two-three months. With the Chinese refusing to pulling back, Indian Army is gearing up for a long haul," said a defence source, while adding that livestock planning is being

done at the Army headquarters level to ensure uninterrupted supply. With winter coming in next three months, the 'long haul' could end up being really long and tough.

Replenishing stock is also a serious problem for Chinese military. Despite better road connectivity and terrain advantage, Chinese military is also worried about it stocking to support 'long haul'. They have amassed troops, tanks, missile units and fighter planes along the border and is building infrastructure in areas within India's side, including a helipad being laid out near finger 4 in Pangong Tso.

After the last meeting on June 22 between Corps Commanders, where both sides agreed to mutual disengagement, no further talks is scheduled between local commanders to carry forward the pullback process.

In fact, in the recent development, People's Liberation Army has deployed its four nechanised division opposite DBO-Debang, while six mechanised division is positioned between Pangong Tso to Chumar. Another division is opposite Demchok.

A military observer said the PLA's objectives could be to threaten a section of the 255km Darbuk–Shyok–DBO Road, aimed to cut off the DBO sector that could restrict India's access to the Karakoram pass.

https://www.theweek.in/news/india/2020/06/27/army-works-overtime-to-maintain-supply-chain-to-forward-posts-on-china-border.html

INDIA TODAY

Mon, 29 June 2020

India-China standoff: Detailed review by Army and other agencies

The Indian Army deployment has now doubled in the last few months across eastern Ladakh as China has made forays. 40,000-45,000 troops have been deployed across Ladakh, up from 20,000-24,000. Besides, more ITBP troops are also on the ground

By Abhishek Bhalla

Leh/Ladakh: The Indian Army and various agencies reviewed the current situation in Ladakh on Sunday.

Here are details of the review done by the Army:

The Indian Army deployment has now doubled in the last few months across eastern Ladakh as China has made forays. 40,000-45,000 troops have been deployed across Ladakh, up from 20,000-24,000. Besides, more ITBP troops are also on the ground.

Sources said that the de-escalation at Pangong Tso will be most critical for calm to return in eastern Ladakh. (Image for representation: Reuters)

Meanwhile, Chinese deployed 30,000-35,000 troops in the area, an official said.

As China attempts to change the status quo in Chumar, Depsang, Demchok, Gogra, Galwan, Pangong Lake, Trig Heights, India has also heightened its aerial activities.

By May-end, China had started heavy mobilisation of tanks, artillery guns near Gogra. These additional combat forces are in addition to their regular troop deployment.

"That was when it was clear that the Chinese aggression is not limited to one or two areas," said an official.

China's repeated obstruction of Indian patrols in the Ladakh's Galwan Valley on May 5 triggered a clash between Indian and Chinese troops close to Patrol Point (PP 14) that has now emerged as a big flashpoint in the ongoing tussle between the two armies. A brutal clash took place

in the valley on June 15 when 20 Indian army men were killed. China has not revealed its casualties even though inputs suggested that it also faced losses.

According to inputs, the Chinese troops have also enhanced their boat patrols at Pangong Lake.

In addition to this, the Chinese deployment in the northern bank of the lake has also increased. The strength of Chinese troops varies from 1,000 to 1,500 personnel between Finger 4 and Finger 8.

The Chinese troops have built bunkers, observation posts between Finger 4 and Finger 8 in a clear violation of agreements changing status quo, officials said.

Sources said that the de-escalation at Pangong Tso will be most critical for calm to return in eastern Ladakh.

Sources also said that not only has China come and camped in big numbers on the northern bank of the lake, but they have also enhanced their fortifications, observation posts and troop deployment between Finger 4 and Finger 8 that was considered a grey zone even though India claims territory till Finger 8.

The lake is divided into 8 fingers. In military parlance, the mountainous spurs jutting out into the lake are referred to as fingers.

In addition to border forces, the People's Liberation Army (PLA) mobilised combat from sixth mechanised division part of the South Xinjiang military district.

Earlier, India deployed air defence systems in Ladakh to counter Chinese flying activity. Seeking to check the Chinese fighter aircraft and helicopter movements near Eastern Ladakh area, the Indian Army and Air Force deployed their air defence missiles in the eastern Ladakh area.

https://www.indiatoday.in/india/story/india-china-standoff-ladakh-detailed-review-army-agencies-1694798-2020-06-28

DEFENCE AVIATION POST
Your Connect To The World Of Defence And Aviation

Sun, 28 June 2020

Why is the Indian Air Force not afraid of a Chinese stealth fighter aircraft J-20?

China’s fifth-generation Chengdu J-20, its most advanced fighter jet, has recently successfully completed its first maritime combat training. The latest Chinese jet has been in development since 2002 and entered into service in 2017.

Air Chief Marshal Birender Singh Dhanoa said the Indian Air Force is capable enough to take on Chinese forces and is fully prepared to meet any challenges.

On a query whether China’s newly inducted J20 stealth fighters will impact our combat capabilities as these can dodge radars, Dhanoa replied that J20s can be picked up easily by 230 SU from several kilometers against the held belief. reported by Tribune India

“The Sukhoi’s radar can see them. The new Chinese jets are not so invisible after all. No special technology is required to detect the J-20, as it can be detected by ordinary radar stations,” Indian Air Force commander Arup Shaha said.

Indian Air Force has no reasons to be afraid of the Chinese fighter J20. There are certain reasons for the same. Puneet Rastogi mentions the same on his answer on Quora.

1. Indian Air force is a professional competent unit, even if they think Chinese 5th generation Chengdu J-20 fighter jet is a possible threat to Indian security, they will make multiple counter plans and strategies to counter this threat.

But any professional & reputed military will never panic because of just one weapon or weapon delivery system of adversary. India has already inducted a Brahmos Regiment in North east in the

border near China. China does not have any counter measure for Bhramos ramjet supersonic cruise missiles, does this mean Chinese army/Air force should be in panic? China and India has always had a healthy rivalry but honestly I dont think there is any possibility of a hostile war or chances of any direct conflict in near future any ways. Our economic ties and dependency hardly allow for any military conflicts.

2. India possesses extremely potent and tested anti aircraft weaponry as well as air defense & early warning systems. India's air defense network has two principal components- the Air Defense Ground Environment System(ADGES) and the Base Air Defense Zones(BADZ).

The ADGES network provides for wide area radar coverage and permits the detection and interception of most aerial incursions into Indian airspace. The BADZ system, however, is far more concentrated with radars, interceptors, SAMs and AAA units working in conjunction to provide an intense and highly effective defensive barrier to attacks on vital targets.

Most Indian bases and vital targets are protected by full squadron of S-125 Pechora-1b SAMs and some critical spots are protected by additional deployments of OSA-AKM mobile SAMs. J-20 has never been pitched against Indian Air defense capabilities and Indian radar systems.

https://www.defenceaviationpost.com/2020/06/why-is-the-indian-air-force-not-afraid-of-a-chinese-stealth-fighter-aircraft-j-20/

THE WEEK

Sun, 28 June 2020

'India should open Andaman to US, Japan to track Chinese submarines'

Close to 80 per cent of China's seaborne trade passes through this region

The clash in Galwan between the Indian and Chinese armies and the subsequent military build-up by both sides has triggered the worst bout of tension between the two countries in decades.

Interestingly, one domain of competition between India and China has seemingly been ignored in the din over the Galwan debate: The maritime arena. This is perplexing as China's People's Liberation Army Navy (PLAN) has mounted a massive modernisation and shipbuilding programme in the past two decades and also increased forays into the Indian Ocean region.

On Friday, Sujan R. Chinoy, a retired diplomat and seasoned China watcher, argued that India must consider "opening up of the Andaman and Nicobar Islands to the friendly navies of the US, Japan, Australia and France, among others". Chinoy is the director-general of the Manohar Parrikar Institute of Defence Studies and Analyses, a major think tank. Chinoy had served as India's ambassador to Japan and also as consul general in Shanghai.

Chinoy expressed his views in a policy brief of IDSA that was published on Friday. Chinoy noted the "Tri-Services Andaman and Nicobar Command (ANC) has progressively emerged as a lynchpin of India's regional maritime engagement in the Bay of Bengal and the Andaman Sea", where a number of regional navies had made port calls. Chinoy discussed visits to Port Blair of ships of the navies of the UK, Australia and France since the past two decades.

Chinoy noted that Chinese ships and submarines have been making regular forays into the Indian Ocean in recent years and referred to increased ties between Beijing and the governments of Myanmar, Bangladesh and Thailand. Both Bangladesh and Thailand have signed deals for Chinese submarines. Chinoy noted China's interest in the Indian Ocean would increase as its economic and strategic interests grow. This could result in "regular forays by Chinese nuclear submarines". "While monitoring warships is relatively simpler, keeping track of Chinese submarines through a

wide strategic anti-submarine warfare (ASW) network is an asset-intensive and complex task," Chinoy explained.

"The Andaman & Nicobar Islands are a strategic asset for India to assert its dominance on the major East-West maritime trade route that passes through the Malacca Strait. It has often been referred to as India's 'unsinkable aircraft carrier' to the East. As close to 80 per cent of China's seaborne trade passes through this region, the possibility of it being throttled raises the spectre of the 'Malacca Dilemma' for China," Chinoy wrote.

Chinoy referred to close cooperation between the US and Japan in anti-submarine warfare based on development of underwater surveillance sensors and deployment of maritime patrol aircraft. "A similar approach for strategic ASW surveillance has been suggested in the Indian Ocean through collaboration between India, Japan, Australia and the US," Chinoy wrote.

Chinoy argued that access for US Navy ships to Andaman and Nicobar is in accordance with the Logistics Exchange Memorandum of Agreement the two nations signed. Prime Minister Narendra Modi had agreed to a similar pact with Scott Morrison, his Australian counterpart, in a summit earlier in June. Chinoy said India and Australia "should consider expanding the scope of cooperation by formalising a protocol for ensuring an effective underwater surveillance system".

https://www.theweek.in/news/india/2020/06/27/india-should-open-andaman-to-us-japan-to-track-chinese-submarines.html

hindustantimes

Sun, 28 June 2020

'Need to be close to our friends': India holds naval exercise with Japan amid stand-off with China

The Japanese navy has become one of the principal partners of the Indian Navy. Japan was one of the few countries who publicly supported India during the Doklam crisis

By Pramit Palchaudhuri

New Delhi: Indian and Japanese warships conducted exercises in the Indian Ocean on Saturday, announced the navies of both the countries. The Japanese Maritime Self-Defence Force described the manoeuvres as designed to "promote mutual understanding" and consisted of four warships, two from each country.

Naval exercises are now routine between India and Japan, but the timing of the present exercise will be bracketed with the military stand-off between India and China in Ladakh.

"We are using the exercises for strategic communications," said Vice-Admiral Pradeep Chauhan, director-general of the National Maritime Foundation. The navies were "not there for combat purposes but for signalling," he added.

JS Kashima and JS ShimayukI (TV 3513), the JMSDF Training Squadron, conducted an exercise with INS Rana and INS Kulish, Indian Navy. This is the 15th exercise undertaken by the navies of these two nations in the last three years. (@jmsdf_pao_eng)

"We need to be proximate with our friends and the Chinese know there is a direct ladder of escalation between Japan and the United States," said the Vice-Admiral.

The Indian navy training vessels INS Rana and INS Kulush were joined by the Japanese navy's JS Kashima and JS Shimayuki. The Japanese embassy in New Delhi said this was the 15th such exercise in three years. "The content of this exercise is tactical training and communications training," said embassy spokesperson Toshihide Ando, "with no specific scenario."

The Japanese navy has become one of the principal partners of the Indian Navy. Indian naval ships take part in the exercise, both bilaterally with their Japanese counterparts and as part of the Malabar Exercises, which include the United States.

Vice-Admiral Chauhan noted that Indian Army deployments were "sector specific" but India needed to apply pressure across military theatres. Exercises like these remind Beijing that Indian military can quickly deny air cover for Chinese naval assets in the Indian Ocean - and that such plans are ready. "They are still far away from deploying a carrier in the Indian Ocean," he added.

Japan was one of the few countries who publicly supported India during the Doklam crisis. New Delhi and Beijing have preferred to let the Ladakh crisis be handled bilaterally, one reason it rejected US President Donald Trump's offer of mediation. Tokyo has only expressed condolences over the deaths of the Indian soldiers in Galwan Valley and pointedly said nothing about Chinese casualties.

The Japanese navy has itself been upgraded and expanded in recent years because of the territorial disputes it has with an increasingly aggressive China. Despite its Pacific constitution, Tokyo has inducted a "helicopter destroyer" that has the some tonnage as India's aircraft carriers and is now building a "helicopter carrier" which has a full flight deck.

Japan has one of the best non-nuclear submarines in the world and cutting edge anti-submarine warfare technology. Masashi Nishihara, head of the Japanese defence think tank, Research Institute for Peace and Security, says, "We are leaders in submarine detection. Not only can we find them, we can identify any variety of submarine."

https://www.hindustantimes.com/india-news/china-ladakh-indian-army-galwan-valley-need-to-be-close-to-our-friends-india-holds-naval-exercise-with-japan-amid-stand-off-with-china/story-clZK5EzU9TBfp1iVd7uJXN.html

ThePrint

Sun, 28 June 2020

India must believe threat of war is real, even if Chinese build-up is coercive diplomacy

India invented coercive diplomacy with Op Parakram. But unlike Pakistan back then, it must never blink, be prepared for war, and wear out the Chinese

By Shekhar Gupta

Why have the Chinese ratcheted up a war-like situation and piled up their forces with the heavy stuff along Ladakh? What is it that they want from India? How India should respond will depend on our reading of this.

Not surprisingly, this has spawned an industry of Sinologists, geo-strategists and military-planners. Besides, we keep falling back on the odd words of strategic wisdom inherited from Sun Tzu or Kautilya. With Clausewitz and Machiavelli occasionally surfacing like an item number in a Hindi movie. For the ancient duo, you can attribute just about anything to them, as people often do about Confucius or Buddha. Nobody can fact-check you out of it.

If the first presumption, that today's big powers still act on strategic wisdom inherited from more than two millennia ago, isn't dodgy enough, check out the other one. Oh, the Indians are still caught with their chess mindset, while the Chinese play Go.

In chess, you target the opposing king. No such problem with Go. It involves the creation of several knots and blocks to throttle the adversary until he is down on his knees.

Once again, interesting thinking, especially in an era when WhatsApp is the divine fountain that spreads intellect around the world. And when all those who've been epidemiologists and virologists lately can become entomologists overnight when the locusts arrive, and psychiatrists when Sushant Singh Rajput dies, have now become grand strategists.

There is twin peril in letting cultural stereotypes take over our minds. Today's China and India are systems with new complexities that cannot be explained in such generalisations. That closes our minds.

As long as we remain caught in these cultural and ethnic traps, the fog in our minds will only get thicker (sorry, Clausewitz fans). But if you switch to current reality, you might find some plausible answers.

So, what are the Chinese up to in Ladakh? What do they want?

Go back about 20 years and see how India has been dealing with Pakistan. And remember that strategic concept that India invented: Coercive diplomacy.

I can't say for sure who invented this brilliant two-word formulation, Jaswant Singh or the late Brajesh Mishra. One of them did, to explain Op Parakram that India launched in December 2001, after the terror attack on our Parliament. It entailed piling up Indian forces along the borders — heavy stuff, live ammunition and all — as if every bit poised for war. Seems familiar when you look across the LAC, eastwards?

Could it be that rather than applying any ancient wisdom, the Chinese have taken a leaf out of our book? That their unprecedented and somewhat-too-visible build-up is their own attempt at coercive diplomacy with India? And if so, what is it that they could be expecting as a quid pro quo?

It can't be a few morsels of territory in Ladakh. That will be too minimalistic for such a risky move. Nor can it be an acceptance of CPEC, or formal ceding of Aksai Chin, or a Tawang-sized capitulation in the east. That is too maximalist. It will never happen. So, what is it that the Chinese want in return for their exertions in the rarefied air at 14,000 feet?

Let's presume for now that the Chinese are playing the game of coercive diplomacy: You want us off your backs, do this, deliver that, be good boys here. Or, maybe a combination of all three. What could these be, how might the game unfold hereon, and what's the best way for India to respond?

More recent, and recorded references and parallels are much more realistic than any ancient wisdom or mantras. What did India achieve with its coercive diplomacy? What were its objectives? How did the Pakistanis respond?

I appreciate the risks in using that parallel. India is not Pakistan, of course. Never. But we are only wargaming. You can use 'green land', 'yellow land' or whatever.

India wanted Pakistan to guarantee that it gives up the use of terrorism as an instrument of state policy. That was achieved within a month of the Parliament attack, when Musharraf made exactly those commitments in an address broadcast worldwide. In fact, he went so far as to acknowledge the list of 24 terrorists in Pakistan wanted in India, including Dawood Ibrahim, and promised to look for them and turn them over "because it is not as if we've given them asylum here".

India wanted something more tangible and the war-like stand-off continued. It nearly got out of hand a couple of times, especially when terrorists attacked the families of Indian soldiers at Kaluchak cantonment near Jammu. But, restraint prevailed, partly because of foreign pressure on Pakistan, but mostly because India had never intended to go to war.

I had then asked all key players on our side — Jaswant Singh, Brajesh Mishra and Atal Bihari Vajpayee — if the risk of an uncontrollable escalation wasn't always there. The answer Mishra gave me, in a *Walk The Talk* interview on NDTV, was that for coercive diplomacy to work, the threat had to be so real that even we'd start to believe it. It was brinkmanship of the stronger power. Seems familiar, again, as you look east of LAC?

India achieved much from that policy. It bought us peace for several years afterwards. Of course, nobody expected Pakistan to keep its word forever. But we have to also underline what each side did right and didn't.

India began brilliantly to launch a realistic build-up, but missed a trick in not knowing when to declare victory. It could have been done the day Musharraf made that speech. Pakistan had erred in

blinking so early in the game. If India had declared victory then and called off the build-up, the gain would have been no more or less than what came eventually, but an enormous cost, attrition and uncertainty would've been avoided. It would've also been a clearer victory of coercive diplomacy. Our expectations were somehow maximalist.

The Pakistanis, on the other hand, recovered in the course of time and decided to stay put in defence, to tire India out. And they succeeded too. After a while, the stand-off became pointless and petered out like a dull draw on day five of a cricket Test.

Here are the lessons India can take forward then, being at the other end of the same equation:

1. s

https://theprint.in/national-interest/india-must-believe-threat-of-war-is-real-even-if-chinese-build-up-is-coercive-diplomacy/449566/

THE TIMES OF INDIA

Sun, 28 June 2020

LAC stand-off: Is there a playbook to counter Xi Jinping, China?

New Delhi: India on Friday warned China that trying to alter the status quo on the ground by resorting to force will not just damage the peace that existed on the border areas but can also have "ripples and repercussions" in the broader bilateral relationship, and demanded that Beijing stop its activities in eastern Ladakh. The disengagement may happen, but the problem will not go away. The Chinese will be back, because they are pushing more than a boundary claim with India. However, is there a playbook to counter China?

Experts say China's manoeuvres along the Line of Actual Control (LAC) are aimed at securing strategic gains in the area, as it invests heavily in the China-Pakistan Economic Corridor — a BRI project — that snakes through Aksai Chin and Pak-occupied Kashmir towards Gwadar, near the Persian Gulf.

That means talks aimed at disengagement, though crucial, can only achieve so much. India needs a long-term strategy to counter China — one that requires partners and thus multilateralism (as against protectionism).

The conflict will bring New Delhi closer to Washington. However, there will be some hesitation in New Delhi about "putting all its eggs in the American basket", Tanvi Madan of Brookings Institution writes on Foreign Affairs. The expectations are, the informal "quad" group comprising US, India, Japan and Australia could be strengthened.

But Quad is still not a formal alliance, and there is no military protection (unlike NATO). Hence, some warn against expecting too much from it, at least in the current form. There are also differences between India and the US, over trade, Russia and Iran. "Will the US give India the room it needs", Pratap Bhanu Mehta, the former chief of the Centre for Policy Research, asks here.

Donald Trump's transactional approach to foreign policy is also a concern. An explosive tell-all by John Bolton, Trump's former national security adviser, alleges that the US President was "pleading with" Xi Jinping to increase agricultural purchases from the US to improve his electoral prospects in the farm states. Also, in an interview with Axios, Trump said he held off on sanctions against China over the Uighur issue because "we were in the middle of a major trade deal".

Former Australian Prime Minister Kevin Rudd, currently pursuing PhD on China under Xi Jinping at Oxford University, calls for a magnificent 7 or 10 to counter China by strengthening multilateralism. He says European countries of Germany, France, and the UK, and in the Asia Pacific, Japan, South Korea, Indonesia, India and Australia, plus Canada and Mexico should pool their "diplomatic, financial and political capital" to triage international institutions. Rudd cites

Shinzo Abe's Japan as a model — maintaining economic relations even as it opposes China's territorial claims over Senkaku Islands. Japan, though, has the US military guarantee.

Experts say this 'multilateralism vs China' could be Joe Biden's playbook, if he is the next US President.

https://timesofindia.indiatimes.com/india/is-there-a-playbook-to-counter-china/articleshow/76657010.cms

Science & Technology News

THE TIMES OF INDIA

Mon, 29 June 2020

New space board IN-SPACe won't be influenced by ISRO and it won't influence ISRO: Space agency Chief K Sivan

By Surendra Singh

To enable India to expand its footprint in the $360 billion space market, the government last week said a regulatory body called the Indian National Space Promotion and Authorisation Centre (IN-SPACe) will be established. It's expected to encourage private participation. Indian Space Research Organisation (Isro) chairman K Sivan, who's also the secretary of the department of space, explains the underlying idea to TOI's Surendra Singh in an exclusive interview. Excerpts:

Will IN-SPACe affect the functioning of ISRO?

No, the setting up of nodal agency IN-SPACe won't affect Isro's functioning as the proposed nodal agency will be a fourth vertical under the department of space. Currently, Isro is one vertical under which there are so many centres, then the second vertical is of autonomous bodies and the third one is the public sector entity New Space India Ltd (NSIL). IN-SPACe will be a totally autonomous body, which won't be influenced by Isro and it won't influence Isro's work. It will have its chairman, directorate and cadre.

Will IN-SPACe's decisions be binding on ISRO?

When a private company makes a demand before IN-SPACe for either using testing facilities or systems of Isro, the nodal agency will talk to the respective Isro centres for providing the facility to the company. Once IN-SPACe has made a decision on an application in consultation with Isro, then that decision will be binding on Isro and other stakeholders. So, only the mission-specific IN-SPACe's decision will be binding.

As per space reforms, private sector will now play a big role in the space sector. How?

Till now, private players or a consortium of companies had been making and supplying components of rockets and satellites to Isro. Now, private companies can produce their own satellites and rockets and use Isro's launch facility to launch them for a fee. So, the private players will be involved in a project from start to finish. This will spur commercialisation of satellite and rocket manufacturing and revolutionise the entire process, which till now was confined to ISRO. Students can make mini-satellites and can launch them from Isro facilities and we can give them a concession. We may also allow a free launch on a case-to-case basis.

What's your overview of new space reforms?

It's an excellent initiative and has come at the right time. Right now, India's contribution in the $360 billion space economy is just 3%. The reforms will bring drastic changes in the space sector. Second, the requirement for space-based applications has increased manifold. With the implementation of the government's digital programme, the demand for such applications will

explode in the near future, which Isro won't be able to fulfil alone. Therefore, PM Modi's initiative to allow bigger participation of private players will help meet the country's requirement for such space-based applications effectively and efficiently.

Why can't we have a common policy in the space sector?

Each application has a different characteristic. Like when we are talking about satcom [satellite communication], we are talking about commercial applications. Remote sensing application, on the other hand, is not commercial but is meant for societal good. Navigation has both the things – commercial and strategic purposes. Satcom and remote sensing policies are already there but they will now be modified to include provisions for private players. Navigation policy doesn't exist and we are trying to put one together.

Is any satellite launch possible this year?

We had lined up a lot of missions this year. But due to the pandemic, our industry (that supplies rocket and satellite components) is not able to work with full capacity and our officials are facing travel curbs. We're targeting to launch 4-5 satellite missions, including remote sensing (surveillance) and communication satellites, this year.

Is it possible to meet the 2022 deadline of Gaganyaan manned mission after astronauts' training has halted in Russia?

Though the pandemic had halted the training of four astronauts in Russia, it won't affect the 2022 launch deadline of the Gaganyaan manned mission as we have kept a "cushion" both in the training programme and launch deadline. In the 15-month training period in Russia, we have kept four months of cushion. The training of astronauts has now resumed. We had earlier planned to launch the manned mission in December 2021 but we have time till August 2022 as our PM had said India would reach space before the 75th anniversary of Independence Day. With the present situation, we are facing a lot of operational difficulties and therefore the unmanned mission carrying a 'humanoid' won't be possible this year. However, we are targeting to launch two unmanned missions before the final one by next year.

What is the mission status of Chandrayaan-3?

With the present situation, we are targeting launch of Chandrayaan-3 mission next year. However, this mission will involve only lander, rover and a propulsion system to carry the module to moon. It won't have the orbiter as our previous orbiter is fully operational.

https://timesofindia.indiatimes.com/india/new-space-board-in-space-wont-be-influenced-by-isro-and-it-wont-influence-isro-space-agency-chief-k-sivan/articleshow/76680563.cms

THE HINDU

Sun, 28 June 2020

Many start-ups have come forward in space sector but no big corporates yet, ISRO Chairman says

Privatisation will increase India's share in the global space market and will not diminish ISRO's role, K. Sivan said

Chennai: While many start-ups have already shown interest to participate in the space sector that has now been opened up for private players, big corporates are yet to come forward, said the K. Sivan, chairman of the Indian Space Research Organisation (ISRO) and Secretary of the Department of Space.

Interacting with media personnel from Chennai through video-conferencing on Indian National Space Promotion and Authorisation Centre (IN-SPACe), the body created to enable the participation of private players, he said that a majority of start-ups have shown interest in space applications.

Highlighting that the roughly $350 billion global space market is comprised of around 2% in launch vehicles, 5% satellites, 45% in space applications and 48% in ground equipment, he said, "There is a lot of revenue in space applications and ground equipment. Launch vehicles and satellites have less revenue and are technically complex." However, since launch vehicles and satellites were needed to better participate in the other two sectors, he said he expected the private sector's participation in all these sectors.

A file photograph of ISRO Chairman K Sivan | Photo Credit: Shailendra Bhojak/PTI

Pointing out that the private sector was already contributing in a significant manner through the supply chain to ISRO, Mr. Sivan said that even for the ongoing Gaganyaan mission, ISRO has invited participation from private players for the new technologies that will have to be developed.

He stressed that the opening up of space to the private sector was necessary to improve India's share in the $350 billion global space market, which is presently stuck at around 3%.

Though private players will be allowed to participate in all activities at ISRO including building their own launchpads, launch vehicles, satellites and providing commercial services, he said that this will not diminish the role of ISRO in the Indian space sector. He said that ISRO will be able to focus more on advanced technology development, indigenisation of technologies, and capacity building.

Arguing that private players had a lot of scope, he, however, said that he did not foresee them offering services to the government like ISRO in the near future. He said it was his belief that India had adequate human resources, skilled professionals in particular, for private players to emerge in the space sector.

On the impact of COVID-19 and the consequent lockdown on ISRO's activities, he acknowledged that work was affected and said it will have an impact on Gaganyaan mission's schedule. "We will have to wait for the present situation to improve for a better picture to emerge," he said.

Regarding the proposed launch facility for SSLVs in Kulasekarapattinam in Thoothukudi district in Tamil Nadu, he said that the land acquisition by Tamil Nadu government was in progress. "Once the land is handed over to the Department of Space, work will progress," he said.

https://www.thehindu.com/news/national/tamil-nadu/many-start-ups-have-come-forward-in-space-sector-but-no-big-corporates-yet-isro-chairman-says/article31932780.ece

THE FINANCIAL EXPRESS

Sun, 28 June 2020

IN-SPACe: If ISRO now focuses on missions of its own, India can aim to have a SpaceX or a Blue Origin

Initial decision to open up sector, including FDI of up to 74%, was taken in 2000, but nothing moved after that

Despite the unfortunate accident with the lander on Chandrayaan-II, there can be little doubt Isro has acquitted itself very well; indeed, it was able to put an orbiter on the moon at a tenth of the cost of most international space missions, and it has made a name for itself when it comes to low-cost satellite launches. Yet, as its chief K Sivan said in an interview to The Hindu in 2018, it would take Isro at least four years to make and launch the required number of satellites. Indeed, with better technology, demand is skyrocketing—as an example, standard TV uses 400,000 megapixels per frame but this goes up to 2 million for HDTV and to 8 million for 4K TV; a single transponder could, then, cater to four standard TV channels but just one HD channel. And, to use an example from another sector, technology has changed dramatically—from 2G to 2.5G (EDGE), 3G, 4G and now 5G—in telecom, and this has increased capacity while resulting in costs getting slashed. In the space sector, too, capacities that each satellite can handle are up dramatically—modern satellites have up to 1,000 times the speed of some of Isro's older satellites—and, as it happens, Isro is so short of capacity, a very large part of the satellite capacity it has is rented from private satellite firms.

It is to be able to keep pace with both demand and technology that, way back in 2000, the Atal Bihari Vajpayee government opened up the space sector to private firms including those from overseas who set up shop here; FDI levels of up to 74% were allowed. But such was the power of the establishment that the guidelines for private sector firms were not put out till 2010! When these were notified, US-headquartered firm Hughes Network System put in an application—through an Indian venture where FDI was at the requisite level—to build satellites with data delivery speeds that, at that time, were 100 times what India's conventional satellites offered. No decision was taken for years and then, on the eve of US president Barack Obama's visit in 2015, it was supposed to have been fast-tracked. The proposal, though, has still not been cleared; ironically, in 2016, the sector was opened up further to 100% FDI. Indeed, it is because there was no transparency in how operations were to be run that the Antrix-Devas controversy occurred, and the net result of that is the government has to pay large sums of money in damages.

In this context, it is just as well that the government has decided to set up an Indian National Space Promotion and Authorisation Centre (IN-SPACe) to act as a bridge for private sector players. While more details are not available as yet, from all indications, IN-SPACe will be like a regulator since, as the minister of space said, it would provide a level-playing field for private sector participants to use Indian space infrastructure; he added that this would allow Isro to focus more on R&D activities. If Isro now focusses on technology transfers and helping build capacity—and on missions of its own, like putting a man on the moon by 2022—India can aim to have a SpaceX or a BlueOrigin and, more important, Indians can get enhanced data capabilities; indeed, in lightly populated, or less affluent, areas, satellite also offers a good alternative to offering high-speed internet. This time around, though, it is critical the sector is genuinely opened up.

https://www.financialexpress.com/opinion/in-space-if-isro-now-focuses-on-missions-of-its-own-india-can-aim-to-have-a-spacex-or-a-blue-origin/2006583/

नईदुनिया

Sun, 28 June 2020

इस रसायन के संपर्क में खुद खत्म हो जाता है कोरोना वायरस, IIT मुंबई की प्रोफेसर ने किया तैयार

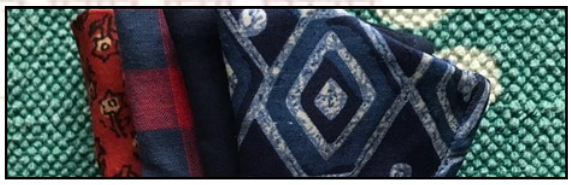
यह 20 बार की धुलाई में भी कपड़े की सतह से अलग नहीं होता, इसलिए इसका उपयोग मास्क, पीपीई किट आदि में हो सकता है।

ओमप्रकाश तिवारी

मुंबई: आईआईटी मुंबई की प्रोफेसर डॉक्टर रिंटी बनर्जी ने एक ऐसा रसायन तैयार किया है, जिसके संपर्क में आते ही कोरोना वायरस खुद खत्म हो जाता है। इस रसायन की कोटिंग वाले कपड़ों से मास्क एवं अन्य वस्त्र तैयार किए जा सकते हैं। क्योंकि 20 बार से अधिक की धुलाई में भी इस कोटिंग का असर कम नहीं होता। गुजरात की एक कंपनी ने इस रसायन की कोटिंग वाले मास्क बनाने भी शुरू कर दिए हैं।

आईआईटी मुंबई के बायोसाइंसेज एंड बायोइंजीनियरिंग विभाग में प्रोफेसर डॉक्टर रिंटी चटर्जी ने मूल रूप से मेडिकल की छात्रा रही हैं। एमबीबीएस की पढ़ाई पूरी करने के बावजूद डॉक्टर बनने के बजाय शोध क्षेत्र में उनकी रुचि उन्हें आईआईटी में ले आई और यहां वह कई प्रकार के शोध में व्यस्त हैं। अपने शोधों पर वह अब तक कई पेटेंट भी हासिल कर चुकी हैं। ऐसे ही शोधों के क्रम में उन्होंने पिछले तीन माह में एक ऐसा रसायन तैयार किया है, जिसकी कोटिंग (लेप) किए हुए कपड़े पर आते ही कोरोना वायरस खुद खत्म हो जाता है।

चूंकि यह 20 बार की धुलाई में भी कपड़े की सतह से अलग नहीं होता, इसलिए इसका उपयोग मास्क, पीपीई किट, स्पोर्ट्स ग्लब्ज या सामान्य रूप से पहनने के काम आनेवाले वस्त्रों पर भी किया जा सकता है। इसे ड्यूराप्रॉट कोटिंग के नाम से जाना जाता है। गुजरात की मास्क बनाने वाली एक कंपनी ने इसका उपयोग शुरू भी कर दिया है। डॉ. रिंटी बताती हैं कि मोजे एवं अंतःवस्त्रों से आनेवाली पसीने की दुर्गंध को दूर करने के लिए वह एक जीवाणुरोधी रसायन पर शोध कर रही थीं, उन्हीं दिनों देश में कोविड-19 का संकट शुरू हो गया।



तब उन्होंने विषाणुरोधी रसायन की खोज पर शोध शुरू कर दिया है। चूंकि इस रसायन का इस्तेमाल कपड़ों पर कोटिंग के लिए किया जाना था, इसलिए थर्ड पार्टी वैलीडेशन साउथ इंडिया टेक्सटाइल रिसर्च एसोसिएशन (सिट्रा) से करवाना पड़ा। सिट्रा से मिली मान्यता यह सिद्ध करती है कि इस रसायन का शरीर पर कोई घातक असर नहीं होता है। इसके बाद यह भी सिद्ध होना जरूरी था कि इस रसायन के लेप वाले कपड़ों पर कोरोना वायरस खत्म होते हैं, या नहीं?

इसके लिए मुंबई में कोरोना इलाज के प्रमुख केंद्र कस्तूरबा अस्पताल से मदद मिली, और यह सिद्ध हो गया कि मुंह या नाक से निकले ड्रॉप लेट्स में मौजूद कोविड-19 के विषाणु इस रसायन के संपर्क में आने पर खत्म हो जाते हैं। डॉ. रिंटी बनर्जी के अनुसार यह उनका यह शोध किसी व्यावसायिक अनुबंध का हिस्सा नहीं है। सिर्फ समाजहित को ध्यान में रखते हुए उन्होंने इसे तैयार किया है। इस पर लागत भी अधिक नहीं आती। इसलिए मास्क, पीपीई किट या वस्त्र बनानेवाली कोई कंपनी उनसे संपर्क करती है, तो वह इसके उपयोग का लाइसेंस उसे दे सकती हैं।

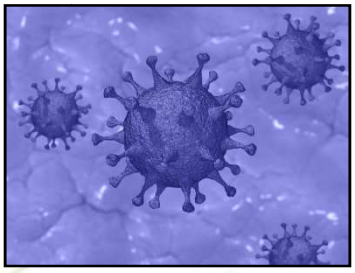
https://www.naidunia.com/national-iit-mumbai-professor-prepares-chemical-whose-coating-on-mask-can-kill-corona-virus-5679433

DECCAN HERALD

Mon, 29 June 2020

Children more resilient against Covid-19: Lancet study

Houston: The majority of children with Covid-19 in 26 countries fared well clinically compared to adults, according to a review of studies which assessed research published during the first four months of the pandemic.



According to the scientists, only a small number of patients met inclusion for multisystem inflammatory syndrome in children. Credit: Pixabay Photo

Scientists, including those from The University of Texas in the US, performed the largest systematic review to date of children and young adults with Covid-19, assessing the clinical data of more than 7,500 individuals.

In the findings, published in the journal EClinicalMedicine, a journal of The Lancet, they said nearly a fifth of the pediatric population with Covid-19 did not exhibit any symptoms, and 21 per cent of the children exhibited patchy marks of tissue injury on lung X-rays.

The researchers said 5.6 per cent of the children assessed in the studies suffered from co-infections, such as flu, on top of Covid-19, and a little more than 3 per cent were admitted to intensive care units.

Seven deaths were reported, according to the review research.

"Our data is compiled from 131 studies and encompasses 7,780 patients who span the pediatric age spectrum," said study senior author Alvaro Moreira from UT.

The research reported the most common symptoms, quantified laboratory findings, and described X-ray scan characteristics of children with Covid-19.

"Furthermore, we summarise treatments that were administered and offer an initial glimpse of a handful of patients who met the US Centers for Disease Control and Prevention (CDC) criteria for multisystem inflammatory syndrome in children," Moreira said.

According to the study, the most frequent symptoms, similar to the adult population, were fever and cough -- found in 59 and 56 per cent of the pediatric population, respectively.

In 233 individuals, the scientists said a past medical history was noted with 152 children in the group presenting with compromised immune systems, or had underlying respiratory or cardiac disease.

"Although we are hearing about severe forms of the disease in children, this is occurring in very rare circumstances," Moreira said.

Based on laboratory measures noted in the reviewed studies, the scientists said pediatric Covid-19 patients had abnormal levels of molecules signifying inflammation in the body like creatine kinase, interleukin-6, and procalcitonin.

According to the scientists, only a small number of patients met inclusion for multisystem inflammatory syndrome in children.

They said the disease condition in these children paralleled the extreme forms of Covid-19 seen in adults.

"Children with systemic inflammation had a significant decrease in the amount of lymphocytes in their blood," Moreira said.

Covid-positive children who didn't have the extreme form of the disease had 42 per cent of the immune cells called lymphocytes in their blood, versus 11 per cent in children with the multisystem syndrome, he added.

The scientists said kidney failure was seen in nine pediatric patients, liver failure also in nine, and shock in 19.

They said mechanical ventilation was required by 42 patients.

While the review research provides evidence that children with Covid-19 have an overall better prognosis, the scientists said further studies are needed to confirm the findings, and "better understand which patients are at increased risk for developing severe inflammation and multiorgan failure."

https://www.deccanherald.com/science-and-environment/children-more-resilient-against-covid-19-lancet-study-854714.html

EXPRESS PHARMA

Sun, 28 June 2020

Study identifies immune cells involved in protection against COVID-19

It may lead to new vaccine development strategies against COVID-19

A study, published in the journal Science Immunology, assessed T cells from 10 COVID-19 patients under intensive care treatment. It revealed that patients suffering from severe respiratory symptoms due to the novel coronavirus infection can rapidly generate an immune response in the form of virus-attacking T cells.

The findings, according to the researchers, address the poorly understood question of whether SARS-CoV-2-specific T cell responses vary in patients over time depending on disease severity. It may lead to new vaccine development strategies against COVID-19.

According to the researchers, including those from the University of California in the US, two out of 10 healthy individuals without prior exposure to the virus also harboured SARS-CoV-2-reactive T cells.

Based on this observation, they said these T cells may be cross-reacting to the novel coronavirus, SARS-CoV-2, due to past infection with related coronaviruses that cause common cold symptoms.

The findings, according to the researchers, address the poorly understood question of whether SARS-CoV-2-specific T cell responses vary in patients over time depending on disease severity.

They said the study may help understand whether patients with more severe symptoms can generate protective virus-specific T cells at all, and offer clues regarding the cells responsible for excessive immune responses which has led to the deaths of many COVID-19 patients.

In the research, scientists, including Daniela Weiskopf from the La Jolla Institute for Immunology in the US, extracted blood cells from 10 patients at weekly intervals starting soon after they were admitted to the ICU for COVID-19.

They exposed these cells to “megapools” of known SARS-CoV-2 protein components in a technique meant to capture a large fraction of total viral-reactive T cells.

The researchers found that SARS-CoV-2-specific CD4+ helper T cells were active in all 10 patients, and CD8+ “killer” T cells were present in 8 out of 10 patients.

They also characterised the cells’ production of specific inflammation-triggering cell-cell signalling molecules called cytokines.

According to the scientists, the strongest responses were directed to the virus’ spike (S) surface protein, supporting prior work that has pointed to this protein as a promising target to induce virus-specific T cells.

On screening all patients at 0, 7, and 14 days after inclusion in the study revealed that SARS-CoV-2-specific T cells were present relatively early during the course of infection, and increased in these patients over time.

Using the same T cell stimulation technique in age-matched healthy controls, the researchers found SARS-CoV-2-reactive T cells in 2 out of the 10 individuals.

They believe a future study of how preexisting SARS-CoV-2-specific T cells in healthy controls correlate to protection against COVID-19 can help shed more light on the disease and "and also inform vaccine design and evaluation."

https://www.expresspharma.in/covid19-updates/study-identifies-immune-cells-involved-in-protection-against-covid-19/

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Sun, 28 June 2020

Common childhood vaccine might prevent severe complications of Covid-19, says study

The scientists suggested that adults working in high-risk settings who are not immuno-compromised, pregnant, or allergic to vaccinations, get an MMR vaccine

Washington: Vaccines such as those used against measles may prevent severe lung inflammation associated with COVID-19, according to a study which may lead to a new strategy to protect the vulnerable from the pandemic.

The research, published in the journal mBio, suggested that live attenuated vaccines which contain weakened pathogens can activate immune cells to train the white blood cells of the immune system to mount a more effective defense against unrelated infections.

Researchers, including those from the Louisiana State University (LSU) in the US, showed in lab experiments that vaccination with a live attenuated fungal strain generated trained innate protection against blood poisoning (sepsis) caused by a combination of disease-causing fungi and bacteria.

According to the scientists, the protection from an unrelated live attenuated vaccine is produced by long-lived immune cells which were previously reported to inhibit septic inflammation and mortality in several experimental models.

They said a live attenuated MMR (measles, mumps, rubella) vaccine concept is not suggested to be directed against COVID-19, but may act as an immune preventive measure against the severe symptoms of COVID-19.

Vaccination with MMR in immunocompetent individuals, according to the scientists, has no contraindications and may be especially effective for health care workers who can easily be exposed to COVID-19.

"The use of childhood live attenuated vaccines such as MMR given to adults to induce bystander cells that can dampen or reduce severe complications associated with COVID-19 infection is a low risk - high reward preventive measure during a critical period of the pandemic," said Paul Fidel, study co-author from LSU.

Fidel said the bystander cells are long-lived but not life-long.

"Anyone who had an MMR vaccination as a child, while likely to still have immune antibodies directed against measles, mumps, or rubella, will not likely still have the immune cells directed against sepsis," he added.

According to Fidel, it could be important to get the MMR vaccination as an adult to protect better against COVID-19-related sepsis. He said clinical trials and animal model studies could be initiated to test the hypothesis that the MMR vaccine given to adults induces the bystander cells that we propose can inhibit the severe lung inflammation/sepsis associated with COVID-19.

Meanwhile, the scientists suggested that adults working in high-risk settings who are not immuno-compromised, pregnant, or allergic to vaccinations, get an MMR vaccine.

"If we're correct, an MMR-vaccinated person may suffer less if infected with COVID-19. If we're wrong, the person has better immunity to measles, mumps, and rubella. A sort of no harm no foul action," Fidel said.

https://economictimes.indiatimes.com/magazines/panache/common-childhood-vaccine-might-prevent-severe-complications-of-covid-19-says-study/articleshow/76660932.cms

GlobeNewswire

Sun, 28 June 2020

Cell publication elucidates how SARS-CoV-2 dramatically rewires important cell programming; Identifies existing therapeutics that may fight covid-19

- ***For the First Time, Images Show Rapid Spread of Infection May be Explained by Extensive Filopodia, Stringy Protrusions in Virally Infected Cells***
- ***Discoveries Emanate from QBI UCSF "Blueprint Map" Revealing how SARS-CoV-2 Hijacks Human Cells***

San Francisco: Pioneering a new paradigm in drug discovery by leveraging biological understanding of how a virus interacts with its host, an international team of researchers conducted a global analysis of proteins in human cells to determine mechanisms by which SARS-CoV-2 shifts cellular activity in infected cells. During the study, the researchers discovered for the first time that cells infected with SARS-CoV-2 exhibit filopodia, stringy arm-like extensions, which may explain rapid viral spread throughout the body.

Fluorescence microscopy image of a two cell cluster of Caco-2 cells (human colon cells) infected with SARS-CoV-2 virus, the causative agent of COVID-19. Infected cells produce filopodia protrusions (white) extending out from the cell surface containing viral particles (M protein in red). Photo credits to Dr. Robert Grosse, CIBSS, University of Freiburg.

The quantitative study, 'The Global Phosphorylation Landscape of SARS-CoV-2 Infection' online now in *Cell,* builds upon a previously published novel "blueprint" of the 332 human proteins that interact with 27 SARS-CoV-2 viral proteins. In an extension of the blueprint, the scientists evaluated all human proteins that exhibited changes in phosphorylation. Phosphorylation, the addition of a phosphoryl group to a protein by an enzyme class called kinases, plays a pivotal role in the regulation of most cell processes including the production of the cytoskeleton, protein function, cell-to-cell communication, cell growth and cell death. The scientists collaborated with Zoic Labs to overlay this new phosphorylation information onto the interactive version of the previously published protein-protein interaction map.

"By conducting a systematic analysis of the changes in cell programming through phosphorylation when SARS-CoV-2 infects a cell, we identified several key factors that will not only inform the next areas of biological study but also therapies that may be repurposed to treat patients with COVID-19," said Nevan Krogan, Ph.D., director of the Quantitative Biosciences Institute (QBI) at the School of Pharmacy at UC San Francisco, senior investigator at Gladstone Institutes, and lead investigator of the study. Key scientists from UCSF, QBI's Coronavirus Research Group (QCRG), Gladstone, EMBL's European Biosciences Institute (EMBL-EBI) in Cambridge, England, Icahn School of Medicine at Mount Sinai in New York, Institut Pasteur in Paris, University of Freiburg in Germany and NIH Rocky Mountain Laboratories in Montana participated in the research.

”Our understanding of how this virus co-opts human cells continues to be a fruitful source of key virus-host cell interactions, which are leading us to promising therapies already in existence that can disrupt the virus’ clever way of surviving and thriving within the body,” continued Dr. Krogan.

Phosphorylation of Viral and Human Host Proteins during Infection

The team determined that 40 of the 332 human proteins that interact with SARS-CoV-2 were significantly differentially phosphorylated in cells infected with SARS-CoV-2. In addition, they identified 49 human kinases, out of a total of 518, that showed changes – either upregulation or downregulation – of phosphorylation activity.

The most strongly hijacked kinases include casein kinase II (CK2), kinases within the p38/MAP kinase (p38/MAPK) pathway, cyclin-dependent kinases (CDKs) and phosphatidylinositol 5-kinase (PIKFYVE), all of which fall within a set of cell signaling pathways. Because kinases possess certain structural features, they are very druggable targets with more than 500 compounds commercially available or in development.

Researchers then set out to evaluate whether existing compounds would inhibit SARS-CoV-2 in infected cells in which specific kinases had been manipulated by the virus.

“We employed state-of-the-art bioinformatics approaches to readily identify regulated kinases from sparse phosphorylation profiles, many of which are likely to be established drug targets with therapeutic potential,” commented Pedro Beltrao, Ph.D., group leader at EMBL’s European Bioinformatics Institute.

Specifically, the researchers found that:

- CK2, a kinase that plays a key role in cytoskeleton formation, cell growth and proliferation as well as apoptosis (cell death), physically interacted with the SARS-CoV-2 viral N protein and was significantly more activated in virally infected cells. Using a CK2 inhibitor in the laboratory experiments eliminated the virus.
- Several kinases within the p38/MAPK pathway respond to and control the production of potentially harmful pro-inflammatory cytokines including IL-6, IL-10 and TNF-alpha. Inhibiting p38/MAPK signaling in virally infected suppressed the overproduction of inflammatory cytokines and directly impaired viral replication, suggesting that p38/MAPK inhibition may target multiple mechanisms related to COVID-19 pathogenesis.
- CDKs are kinases that regulate cell cycle and DNA damage response. Cells infected with SARS-CoV-2 have significantly reduced CDK activities, which may facilitate viral replication. Inhibition of CDKs may halt viral replication.
- PIKFYVE, a FYVE finger-containing phosphoinositide kinase that regulates cytoskeleton function, is targeted in a variety of different cancers. The compound apilimod that targets this kinase potently inhibited SARS-CoV-2 in the laboratory setting.

Repurposing Kinase Inhibitors for Treatment of COVID-19

The team triangulated changes in phosphorylation to specific protein kinase targets and identified 87 U.S. Food and Drug Administration (FDA) approved drugs and compounds in clinical trials or development. Based on an initial systematic review of these compounds, the researchers identified seven agents, primarily anti-cancer and anti-inflammatory compounds, that demonstrated antiviral activity in laboratory experiments: silmitasertib, gilteritnib, MAPK13-IN-1, SB203580, ralimetinib, apilimod and dinaciclib.

“We are encouraged by our findings that drugs targeting differentially phosphorylated proteins inhibited SARS-CoV-2 infection in cell culture,” said Kevan Shokat, Ph.D., professor in the department of Cellular and Molecular Pharmacology at UC San Francisco (UCSF). “We expect to build upon this work by testing many other kinase inhibitors while concurrently conducting gene knockout experiments with RNAi technologies to continue to identify both the underlying pathways and additional potential therapeutics that may intervene in COVID-19 effectively.”

Importantly, additional studies are needed to further characterize the anti-viral potential of the compounds identified through this analysis.

Filopodia on Virally Infected Cells Newly Discovered Through Advanced Imaging

Interestingly, while studying the impact of SARS-CoV-2 on CK2, high resolution imaging of virally infected cells produced by the NIH/NIAID/Rocky Mountain Laboratories and University of Freiburg revealed actin-rich filopodia containing viral proteins. Human CK2 and the viral N protein were found co-localized within the filopodia, suggesting that SARS-CoV-2 hijacks CK2 and co-opts it into creating these tentacle-like protrusions that poke holes in their neighboring cells.

Conversely, other viruses including vaccinia, Ebola and Marburg take over the host cell cytoskeleton to promote egress and rapid cell-to-cell spread. However, in SARS-CoV-2 infected cells, the filopodia exhibit longer tentacles and branches, enabling more aggressive transmission than some other viral infections.

"The distinct visualization of the extensive branching of the filopodia once again elucidates how understanding the biology of virus-host interaction can illuminate possible points of intervention in the disease," continued Dr. Krogan. "Our data driven approach for drug discovery has identified a new set of drugs that have great potential to fight COVID-19, either by themselves or in combination with other drugs, and we are excited to see if they will help end this pandemic."

About QBI: The Quantitative Biosciences Institute (QBI) is a University of California organized research unit reporting through the UCSF School of Pharmacy. QBI fosters collaborations across the biomedical and the physical sciences, seeking quantitative methods to address pressing problems in biology and biomedicine. Motivated by problems of human disease, QBI is committed to investigating fundamental biological mechanisms, because ultimately solutions to many diseases have been revealed by unexpected discoveries in the basic sciences. Learn more at qbi.ucsf.edu.

https://www.globenewswire.com/news-release/2020/06/28/2054406/0/en/Cell-Publication-Elucidates-How-SARS-CoV-2-Dramatically-Rewires-Important-Cell-Programming-Identifies-Existing-Therapeutics-That-May-Fight-COVID-19.html

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Coronavirus (Covid-19) vaccine status check: Oxford vaccine most advanced, says WHO; Sanofi accelerates trials

Coronavirus (Covid-19) Vaccine Latest Update: The World Health Organisation has identified the candidates developed by Oxford University-AstraZeneca and Moderna Inc as the front-runners

Coronavirus (Covid-19) Vaccine Latest Update: Even though there are more than 13 experimental vaccines in clinical trials among the 140 being developed to combat Covid-19, the World Health Organisation has identified the candidates developed by Oxford University-AstraZeneca and Moderna Inc as the front-runners

"Certainly in terms of how advanced they are, the stage at which they are, they are I think probably the leading candidate," Reuters quoted WHO chief scientist Soumya Swaminathan as saying.

"We do know that Moderna's vaccine is also going to go into phase three clinical trials, probably from the middle of July, and so that vaccine candidate is not far behind. AstraZeneca certainly has a more global scope at the moment in terms of where they are doing and planning their vaccine trials," Swaminathan said.

Coronavirus (Covid-19) vaccine status, latest updates:

Oxford University-AstraZeneca coronavirus vaccine

AstraZeneca, which has already begun phase III human trials of its AZD1222 (formerly known as ChAdOx1 nCoV-19) vaccine candidate, signed its tenth supply-and-manufacturing deal. Brazil announced on Saturday it had signed a $127 million agreement to start producing locally the Oxford-AstraZeneca vaccine.

Elcio Franco, Brazil's No.2 public health official, said in a press conference that the country would initially produce 30 million doses of the vaccine — half by December and half by January of next year, Reuters reported.

The first to get the vaccine, which will be produced by local vaccine maker Fiocruz, will be high-risk groups such as the elderly, people with co-morbidities and health and security professionals.

Earlier this month, the AstraZeneca CEO told a radio station that the vaccine candidate would likely provide protection against Covid-19 for one year.

Moderna coronavirus vaccine status

US firm Moderna Inc, which has already started phase II trials for its vaccine candidate mRNA-1273, has partnered with drugmaker Catalent Inc to produce 100 million doses starting in the third quarter of 2020.

Under the deal, Catalent will also provide packaging and labeling, storage and distribution services to support Moderna's late-stage clinical trial for the vaccine. Catalent is already in partnership with Johnson and Johnson as well as AstraZeneca.

Recently, Moderna Inc Chief Executive Officer Stephane Bancel told Bloomberg that efficacy data for its Covid-19 jab could be available by as soon as Thanksgiving (November) if everything goes right. Final-stage trials of the Moderna vaccine is set to begin next month on 30,000 people.

Sanofi-GSK coronavirus vaccine status

French pharmaceutical giant Sanofi, which has developed a Covid-19 vaccine candidate with GSK, recently said it had accelerated the start of phase 1/2 clinical trials to September from December. In a statement, Sanofi said they have "multiple Covid-19 vaccine candidates" in the works and hope to start a clinical trial with humans in the fourth quarter of this year.

Sanofi also announced it would invest $425 million to expand its vaccine development venture with US start-up Translate Bio.

Sanofi CEO Paul Hudson told journalists earlier this week that his firm's most promising Covid-19 treatment is "the only vaccine in the race which is offering a proven platform which works at scale".

Sanofi is using one of GSK's proprietary adjuvants — a compound that boosts the immune response — with this vaccine. The French firm expects to have 100 million doses of the recombinant vaccine by the end of 2020 and an additional 1 billion doses in 2021.

Thailand coronavirus vaccine status

Thailand, which has seven Covid-19 vaccine studies underway using a variety of methods, has said human trials of one of the candidates could start as early as October.

Kiat Ruxrungtham, head researcher at Chulalongkorn University's Center of Excellence in Vaccine Research and Development, said blood results after the first injection in monkeys showed all generated antibodies, Bloomberg reported.

The scientist said the majority also developed neutralising antibodies, meaning the virus can be blocked from entering or damaging cells. The Chulalongkorn project employs new mRNA vaccine technology and the team expects final results from the animal-testing stage in the next two weeks.

The next plan is to immediately produce about 10,000 vaccine doses in San Diego and Vancouver and ship them to Thailand for human trials, Kiat told Bloomberg.

https://indianexpress.com/article/coronavirus/coronavirus-covid-19-vaccine-latest-updates-oxford-astrazeneca-moderna-sanofi-6480235/