

DRDO study on increasing working capacity of jawans

Jaisalmer: The Defence Research & Development Organisation (DRDO) has started a study to increase the working capacity of BSF jawans living in adverse conditions in the country and to keep them disease-free. DRDO's Defence Institute of Physiology and Allied Science (DIPAS) section (Timarpur, Delhi) is studying around 50 jawans. In the last 10 days data has been collected and work will soon begin.

Sources said that DRDO scientists have been studying jawans for last 10 days in the morning and at the peak time when temperature crosses 50 degrees. Blood sugar, heartbeat, pulse rate etc of these jawans are being noted. Sources added that deployment of jawans in areas with excessive heat and their activities are being tested in a scientific manner under this module. A scientist of DRDO who reached Jaisalmer said that a special module has been introduced by DIPAS group of DRDO.

The module will try and find out how to reduce body temperature, mental stress, make the digestive system better and keep the BP and heart rate normal. Activities where jawans do not feel thirsty frequently or do not face the problem of heatstroke will also be conducted.

Source said that government will act on the recommendation of this study. BSF Rajasthan Frontier IG Anil Paliwal has confirmed that DRDO is doing a study on BSF jawans.

<https://timesofindia.indiatimes.com/city/jaipur/drdo-study-on-increasing-working-capacity-of-jawans/articleshow/69833387.cms>

DownToEarth

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DRDO, JNU scientists develop more potent Anthrax vaccine

Claim new vaccine superior than existing ones as it can generate immune response to anthrax toxin as well as spores

By Aditi Jain

A group of Indian scientists have developed a new vaccine against anthrax. It is claimed to be superior over existing vaccines as it can generate immune response to anthrax toxin as well as its spores rather than the toxin alone.

Anthrax is a deadly human disease caused by bacterium *Bacillus anthracis* that also infects animals like horses, sheep, cattle and goats. Humans, pigs and dogs are comparatively less susceptible and only get infected if exposed to copious amount of spores. In 2001, these spores were used as agents of bio-terrorism when letters containing anthrax spores were sent to some people in America, leading to widespread panic.

Spores of the bacterium that causes anthrax are present in soil and can stay in latent form for years.



However, under favourable environmental conditions, they become active and start to infect. Often, animals pick up spores while grazing, following which spores germinate in their body and produce toxins.

The anti-anthrax vaccines available in market generate immune response against a Bacillus protein-protective antigen — a protein that helps in transport of bacillus toxins inside the cells. This means that immune response is triggered only when spores germinate in body and start producing bacterial proteins. Anyone vaccinated with such a vaccine would show no immune response to bacillus spores and only perform once spores germinate and release toxins.

Studies have, however, shown that when inactivated spores are injected in addition to vaccine, the protection towards bacillus is enhanced. Researchers from the Defence Research and Development Laboratory (DRDL), Mysore and Jawaharlal Nehru University (JNU) decided to develop a single vaccine which is effective against both the toxin and its spores so as to provide complete protection.

For this, they stitched together portions of two genes: protective antigen protein and protein present in outer layer of spore. The protein thus produced was fusion of the two proteins and was injected into mice.

After a few days, scientists found that injected mice had high concentration of antibodies against fused proteins in its blood, showing immune response against the injected protein. It was found that these antibodies were also able to individually bind both protective antigen and spore protein demonstrating that the vaccine can produce immune response against both spores and the toxin.

“The ability of fused protein to generate protective immune responses against both spores and toxin suggests it as an efficient vaccine candidate against *B. anthracis* infection,” Joseph Kingston, a scientist at DRDL, told *ISW*.

While antibiotics are also available, vaccines for anthrax are necessary as the infection can cause death within two-three days leaving no scope for diagnosis and treatment.

While discussing the future directions, Rakesh Bhatnagar, co-author of the study and a professor at JNU, said, “We intend to study protective efficacy of this vaccine against *Bacillus* spores and toxins in higher animal models.”

The research team also included Saugata Majumder, Shreya Das, Shivakiran S Makam from DRDL and Vikas Kumar Somani from JNU. The research results have been published in journal *Frontiers in Immunology*. (India Science Wire)

<https://www.downtoearth.org.in/news/health/drdo-jnu-scientists-develop-more-potent-anthrax-vaccine-65125>



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India to get NASAMS-II from US, Israel, Russia

Two places in Rajasthan will be the epicentres for launching the National Advanced Surface to Air Missile System II (NASAMS-II) which will be used to create the ambitious multi-layered shield over Delhi and Mumbai

By Prakash Bhandari

Jaipur: Two places in Rajasthan will be the epicentres for launching the National Advanced Surface to Air Missile System II (NASAMS-II) which will be used to create the ambitious multi-layered shield over Delhi and Mumbai.

India is in the process of acquiring the NASAMS-II from the US along with the Israeli, Russian and home-made systems. Once the deal is signed off, the missile system would cost Rs 6000 crore.



Two places in the state will going to be important for the NASAMS-II. These locations are in two little known villages in Alwar and Pali districts will soon gain strategic importance as they have been selected by the Defence Ministry's Defence Research and Development Organisation (DRDO) for setting up radars to track enemy missiles.

The forest department has cleared the acquisition of 850 hectares of land in Khoa in Kishangarhbas tehsil of Alwar district and 350 hectares in Roopnagar, near Beawar in Pali district for installing ballistic missile defence grid that will protect the western and northern parts of the country.

This was done after the union ministry of environment and forest in 2014 cleared the DRDO proposal on the conditions laid down by the ministry. The ballistic missile defence grid will help guard New Delhi and Mumbai.

The state government has also allotted 80 hectares of land in Pilani for setting up the Bramhos missile assembly line.

These two sites in Khoa and Rupnagar have been strategically chosen by UDRDO and has a stealth feature. The ballistic missile defence system can be put in place at short notice.

To counter air-borne threats, DRDO will put a mixture of counter-attack missiles which will be able to shoot down enemy missiles both within the earth's atmosphere (endo-atmospheric) and outside it (exo-atmospheric).

<https://www.freepressjournal.in/india/india-to-get-nasams-ii-from-us-israel-russia>