

DBT-IBSD-JNIMS Covid-19 testing laboratory tests nearly 4,000 samples

New Delhi, April 01 The DBT-IBSD-JNIMS Covid-19 testing laboratory set up jointly by DBT-Institute of Bioresources and Sustainable Development (DBT-IBSD) and Jawaharlal Nehru Institute of Medical Sciences (JNIMS) at Imphal, Manipur has tested 35 more samples. With this, it has so far tested 3996 samples.



The laboratory was accorded approval by Indian Council of Medical Research (ICMR) on July 11, 2020. It initiated independent testing soon after. It is testing the sample for two districts in Manipur - Kangpokpi and Pherzawl.

Link: <https://ibsd.gov.in>

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DBT-IBSD studies natural compounds to develop anti-Coronavirus drugs

With microbial and plant secondary metabolites have been serving as lead molecules in finding potential therapeutic solutions for many infectious diseases since generations, researchers at DBT-Institute of Bioresources and Sustainable Development (DBT-IBSD) have screened a library of 415 natural compounds of microbial and medicinal plant origin to

find out whether they can find a drug for the COVID-19 pandemic that is sweeping the world.



The investigation was done in collaboration of Prof. Antonio Evidente and his team at the University of Naples Federico II, Italy. The screening was done *in silico* against two major proteins of SARS-CoV-2 virus - receptor binding domain (RBD) of Spike (S1) glycoprotein and the main protease.

The study has found some microbial metabolites exhibiting significant binding affinity towards the main protease active site and interruption of its catalytic functionality by blocking important catalytic residues. Among the tested compounds, three – putaminoxins B and D, and jasmonic acid were found to be largely effective indicating that they could be explored as promising inhibitors of SARs-CoV-2 virus.

The team is also exploring the possibility of using peptides from food proteins produced during microbial fermentation for effective inhibition of SARs-CoV-2 virus. They hope some strain or the other of food fermenting bacteria may result in production of peptides that can inhibit specific receptors of SARs-CoV-2 virus.

The team is working on the assumption that since the north east region of India is a rich habitat for various microbes and plants, it could help produce bioactive metabolites having potential to inhibit viral diseases and that the secondary metabolites and food derived metabolites associated with these resources could be explored for the inhibition and control of SARS-CoV-2 infection. If successful, these studies could be later followed up with experimental investigations to develop effective therapeutics to deal with the COVID-19 pandemic. The researchers have written an article on their work in European Journal of Pharmacology.

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Development of platform technologies for testing anti-infectives against animal coronaviruses

The National Institute of Animal Biotechnology (DBT-NIAB), Hyderabad in collaboration with Translational Health Science & Technology Institute (DBT-THSTI), Faridabad has recently initiated a project to explore establishment of platforms for large-scale (high-throughput) screening of compounds which may have the ability to block the virus to propagate in relevant cells, focusing on pig and poultry coronaviruses and using mouse and rat coronaviruses as models. The proposed platforms involve engineering of cells and viruses so as to avoid the handling of live viruses and developing read-outs through color development.

The project is funded by the Department of Biotechnology (DBT) and is envisaged to result in the establishment of a technology platform that can be further fine-tuned against animal and human coronaviruses, with the potential to apply similar techniques to other viral infections of humans and animals.



The recent pandemic of COVID-19 has highlighted that coronaviruses are an important threat to public health. Coronaviruses are a group of respiratory and enteric viruses which infect birds and mammals alike. In humans, four coronaviruses have been known to be associated with common cold. Two others, including the one that causes COVID-19 leads to severe acute respiratory syndrome. One coronavirus, the Middle Eastern Respiratory Syndrome Virus has caused outbreaks in the last two decades, with fatal outcomes.

Several old as well as new coronaviruses with serious disease burden also exist in domestic animals and poultry. These include at least four coronaviruses that cause diarrhea and at least one coronavirus which causes respiratory disease in pigs, a coronavirus which causes two

different disease conditions in cats, and a coronavirus which causes severe and fatal respiratory disease in poultry. In addition, mouse and rat coronaviruses are important pathogens which affect the health of laboratory animals, and have implications for the interpretation of results of experiments conducted on these animals.

Mammalian coronaviruses causing disease are acquired mostly from bats but also from rodents. It is hypothesized that a diverse range of coronaviruses exist and do not cause disease in bats, and that spill-over and adaptation of such coronaviruses to animals and man and subsequent disease can be anticipated. There is a need to investigate and understand various aspects of this group of zoonotic viruses. At the same time, there is a requirement for the establishment of protocols and platforms to study ways and means to treat or prevent the viral infection.

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