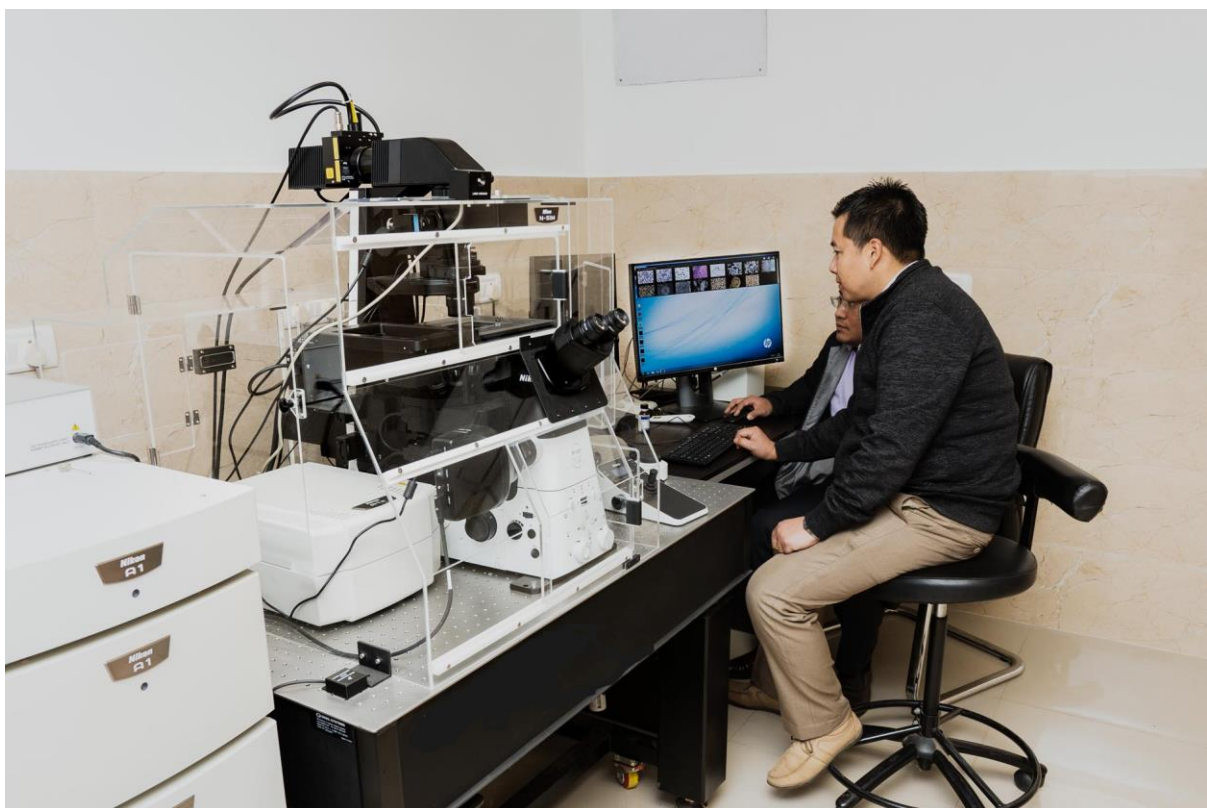


DBT-IBSD study identifies a potential bio-molecule to prevent COVID-19

New Delhi, Dec 08: Traditional fermented foods where lactic acid bacteria are present have become widely popular because of their diverse benefits on human health. The presence of beneficial microorganisms and their bioactive metabolites can have a positive impact on health through different mechanisms. These benefits include antimicrobial, antioxidant, anticancer, antihypertensive, immunomodulatory, and many more. Some of these benefits are due to bioactive peptides produced during fermentation on hydrolysis of food proteins.



A study by researchers from DBT-Institute of Bioresources and Sustainable Development (DBT-IBSD)'s regional centre at Sikkim on peptides from cheese produced from soya milk using a lactic acid bacterium called *Lactobacillus delbrueckii* WS4 has led to the identification of a potential bioactive peptide that can inhibit key receptors of SARS-CoV-2. The bacterium was isolated from chhurpi, a traditional fermented milk product popularly consumed in Sikkim Himalayan region.

The scientists screened more than 1,400 peptides formed during soy milk fermentation for their binding affinity to two major drug targets of SARS-CoV-2: Spike glycoprotein (S1) and Main protease (3CLpro). One peptide having amino acid sequence KFVPPKQPNMIL was identified to be potential in interacting with the critical S1-receptor-binding domain (RBD) as well as the active site amino acids of 3CLpro. The peptide was also shown to have considerable affinity towards the RBD and 3CLpro of other coronaviruses such as SARS-

CoV, MERS-CoV, and HCoV-HKU1. The findings suggest that the soy cheese produced using *Lb. delbrueckii* WS4 could be used as a prophylactic against SARS-CoV-2 and other related viral infections.

North East India boasts of a diverse food culture comprising fermented and non-fermented ethnic foods which could be explored for the discovery and evaluation of potential bioactive peptides towards the development of peptide-based therapeutics to combat emerging infectious diseases. Application of specific strains from traditional fermented foods can lead to the development of functional foods with specific bioactive peptides. The researchers have published the outcome of their work in “Frontiers in Molecular Biosciences”.

Reference:

Rounak Chourasia, Srichandan Padhi, Loreni Chiring Phukon, Minhajul Abedin, Sudhir P Singh and Amit Kumar Rai. 2020. A potential peptide from soy cheese produced using *Lactobacillus delbrueckii* WS4 for effective inhibition of SARS-CoV-2 main protease and S1 glycoprotein. *Frontiers in Molecular Biosciences*, DOI: doi:10.3389/fmolb.2020.601753

The Abstract appears online

<https://www.frontiersin.org/articles/10.3389/fmolb.2020.601753/abstract>

Contact details: Prof Pulok K Mukherjee, Director IBSD, Email- director.ibsd@nic.in

Institute website: <https://ibsd.gov.in/>