



INDUSTRIAL RESEARCH AND CONSULTANCY CENTRE, IIT BOMBAY

The SARS-CoV-2 affects the lungs of the host where it targets the receptors of human Angiotensin-Converting Enzyme 2 (ACE-2). As the disease progresses, most of the patients show acute respiratory distress leading to breathlessness and later organ failure, which is the major cause of fatality rates.

The existing detection methods include collection of sputum or nasopharyngeal swab to detect higher expression of angiotensin receptor-2 or ACE2, receptor crucial for invading respiratory mucosa, and confirmatory PCR based diagnosis to estimate the viral load. The existing methods are tedious requiring advanced and skilled resources; time consuming; and procedurally challenging as specialized sample storage and transportation requirement not only pose hurdle in convenient handling but may also impact test results. Further, while clinical testing is aimed at identifying the positive vs. negative cases, there are enormous challenges that have emerged with diagnosis of asymptomatic patients.

The present invention provides an assay for convenient, robust and rapid detection of proteins, or their peptides Coronavirus in a sample sputum, nasal/nasopharyngeal secretions etc. by mass spectrometry, and a method for diagnosis of Coronavirus disease in an individual by detecting proteins, or peptides, of Coronavirus, particularly SARS-CoV-2. It consists of protein markers for detection of SARS-associated coronavirus in a sample, and the said panel comprising at least one viral protein, or peptide thereof, selected from a group consisting of Nucleoprotein, Spike glycoprotein and Replicase polyprotein. The invention also provides a selected reaction monitoring (SRM) assay method for detection and quantification of SARS associated coronavirus, proteins or peptides thereof, in a sample.