Prime Scholars Library

Advance Journal of Virology, Epidemic and Pandemic Diseases

Vol. 7 (3), pp.5-6, September, 2022

Perspective

Available online at
https://primescholarslibrary.org/

Optical Spectroscopy Techniques for Viral Detection in Infected Samples

Tahir Judith*

Department of Pharmaceutical Sciences, Division of Pharmacognosy, University of Vienna, Vienna, Austria

Received: 01-Sep-2022, Manuscript No. AJVEPD-22-77556; **Editor assigned:** 06-Sep-2022, PreQC No. AJVEPD-22-77556 (PQ); **Reviewed:** 20-Sep-2022, QC No AJVEPD-22-77556; **Revised:** 28-Sep-2022, Manuscript No. AJVEPD-22-77556 (R); **Published:** 06-Oct-2022, DOI: 10.51268/2937-2709-22.07.013

DESCRIPTION

SARS-CoV-2 can be found using PCR, which has a high level of precision. But getting the data typically takes several processes with different temperatures and chemicals, which can take up to 48 hours. Another widely utilized technique for determining the presence of SARS-CoV-2 is the Rapid Test Kit Antigen (RTK-Ag), which is based on a particular protein virus or antigen. A non-invasive technique that uses light interaction on samples is optical spectroscopy. Sometimes spectroscopy is combined with a pattern recognition model to enhance viral detection performance. According to previous research studies, spectroscopy has demonstrated promising outcomes in accurately and quickly detecting the presence of viruses. Viral Replication Kinetics understanding the dynamics of viral replication and growth is essential for comprehending how viruses interact with their host.

Live cell imaging and analysis capabilities are offered by Biotech Imaging and Microscopy equipment and Automation accessories viral growth kinetics, subcellular localization during virus lifecycle, replication complexes. Viral detection rapid virus detection in a sample is essential to any virology process, both for fundamental research and therapeutic applications. While biotech Liquid Handlers and Material handling equipment improve assay efficiency, biotech Imaging and Detection devices enable the detection of viruses using a variety of techniques.

SARS-CoV-2 detection reduces the risk of false positives, which would require treating healthy people who aren't infected, and helps isolate just diseased patients. The method used most frequently to identify SARS-CoV-2 in samples is polymerase chain reaction (PCR) with the need for quick and reliable detection, research into spectroscopy for SARS-CoV-2 detection is of highest relevance. The primary focus of this paper's review is spectroscopy-based approaches for viral detection in infected samples.

Rayleigh scattering has a significant impact on the measurement of UV absorbance spectra in a material. For viral samples, especially in more recent investigations, UV absorbance spectra have not been thoroughly investigated. UV may have harmful effects on the virus, depending on its intensity. Due to its well-known antiviral effects, UV spectrum is typically used as a disinfectant. The disinfection process uses RNA to absorb UV light, which creates pyrimidine dimers, as shown in the mercury-vapor lamp, which generates UV light at a wavelength of 254 nm, is the type of light source that is most

frequently employed for disinfection. This peak is very close to the highest absorption peak of RNA at 260 nm and falls under the UVC spectrum. Ultraviolet (UV) spectroscopy, Theory of UV spectroscopy (UV) radiation has a wavelength that can be anywhere between 10 nm and 400 nm. It is made of radiation with a higher energy than visible light. There are two standards used to split the UV spectrum. The UV spectrum is typically divided into UVA (320–400 nm), UVB (280–320 nm), and UVC (200–280 nm). Sunlight is the primary source of UVA and UVB emissions that reach Earth's atmosphere. Theory of IR spectroscopy radiation with a wavelength above 750 nm is known as infrared (IR). Compared to visible light, IR typically has lower photon energy. The three primary categories of IR are near infrared (NIR), mid-infrared (MIR), and far infrared (FIR) (FIR). If the wavelength of a radiation beam falls between 750 and 2500 nm, it is known as NIR radiation. IR spectroscopy involves using radiation in the infrared region to study the composition of samples. Recent investigations employing IR spectroscopy of the virus generally utilize NIR and MIR. The majority of NIR research on viruses includes virus samples absorbing NIR radiation. The absorption bands in the NIR range are predicted to be caused by either electronic transitions or molecular harmonics.