ARUP LABORATORIES

Norovirus by RT-PCR

MOLECULAR DIAGNOSIS OF NOROVIRUS INFECTION

Test Highlights

- Real-Time Reverse Transcription Polymerase Chain Reaction (RT-PCR) detection for genogroups I and II.
- Targets the highly conserved ORF1-ORF2 junction.
- More sensitive and specific than traditional methods.
- Utilizes an RNA internal control to monitor nucleic acid extraction and RT-PCR.

Clinical Background

- Noroviruses, also known as "Norwalk-like viruses," are members of the Caliciviridae family of RNA viruses. They are the leading cause of nonbacterial gastroenteritis worldwide, with genogroups I and II accounting for approximately 99 percent of norovirus infections in humans. In the United States, noroviruses cause millions of infections annually, with outbreaks commonly occurring on cruise ships, in restaurants, in schools, and in healthcare facilities.
- Noroviruses have a characteristically low infectious dose and can survive relatively high levels of chlorine and varying temperatures, all of which facilitate their transmission. Transmission occurs mainly through the fecal-oral route by ingestion of contaminated food or water.
- Common symptoms associated with norovirus infection include diarrhea, acute onset vomiting, abdominal cramps, nausea, fever, and headache. Symptoms occur within 24 to 48 hours of infection and can range from 12 to 60 hours in duration.

Indications For Use

This test should be utilized to confirm the presence of norovirus in stool samples from patients presenting with clinical symptoms associated with nonbacterial gastroenteritis including diarrhea, vomiting, and abdominal cramps and suspected of having a norovirus infection.

Interpretation

A positive result is strongly supportive of the diagnosis of norovirus infection.

Limitations

- A negative result does not rule out the presence of norovirus in quantities below the sensitivity of this assay nor the possibility of RT-PCR inhibitors in stool samples.
- Unidentified sequence variations within the conserved regions of the norovirus genome targeted by this assay may lead to a falsenegative result.

Methodology

- RNA is extracted from stool samples suspected of containing norovirus, followed by real-time RT-PCR. Eclipse™ hybridization probes specific to norovirus genogroups I and II are utilized for detection in two separate reactions.
- An RNA internal control is multiplexed into each assay, monitoring the nucleic acid extraction and the reverse transcription and PCR processes for inhibition.

References

1. Atmar RL, Estes MK. "Diagnosis of noncultivatable gastroenteritis viruses, the human caliciviruses." *Clin. Microbiol*. Rev. 2001;14:15-37.
2. Centers for Disease Control and Prevention. "Norwalk-like viruses:" *Public Health Consequences and Outbreak Management*. MMWR 2001;50(RR-9):1-17.
3. Centers for Disease Control and Prevention. Norovirus Activity – United States, 2002. MMWR 2003;52:41-45
4. Kageyama, T., et al. "Broadly reactive and highly sensitive assay for norwalk-like viruses based on real-time quantitative reverse transcription-PCR." *J. Clin. Microbiol*. 2003; 41:1548-1557.

Test Information

0051281 **Norovirus Detection by RT-PCR**

For specific collection, transport, and testing information, refer to the ARUP Web site at www.aruplab.com.

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