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Poster Session V

Molecular diagnostics of respiratory viruses

EVALUATION OF MULTIPLE REALSTAR® (RT-) PCR KITS FOR THE DETECTION OF VIRAL RESPIRATORY TRACT INFECTIONS

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Objectives:

The goal of the study was to evaluate the performance of RealStar® (RT-) PCR Kits (Altona Diagnostics, Hamburg) for the detection and discrimination of Adenovirus (AdV), Influenzavirus A and B (FLU A and B), Respiratory Syncytial Virus (RSV A and B), Parainfluenzavirus (PIV 1– 4), and human Metapneumovirus (hMPV A and B) after automated nucleic acid extraction from different respiratory sample types using the QIASymphony® SP instrument (QIAGEN, Hilden).

Methods:

110 samples from various locations (tracheal secretions, pharyngeal swabs, nasopharyngeal secretions and bronchio-alveolar lavages) were processed with the DSP Virus/Pathogen Mini Kit (Qiagen, Hilden) on the automated QIASymphony® SP instrument (Qiagen, Hilden). The eluates were analyzed in parallel using RealStar® (RT-) PCR kits on Rotor-Gene® 6000 Instrument (Corbett Research) and Seeplex® RV 15 ACE Detection Kit on the GeneAmp® PCR System 9700 (Life Technologies, California) with subsequent analysis using gel electrophoresis system Lab901 ScreenTape™ System (Agilent Technologies, California). Positive results were confirmed by sequencing or other real-time based detection systems.

Results:

110 samples were analyzed. 46 (41.8%) were negative with both assays. 60 (54.5%) were positive with both assays: 11/60 (18.3%) for Influenza A/B, 39/60 (65.0%) for RSV A/B, 2/60 (3.3%) for hMPV A/B, 5/60 (8.3%) for PIV1-4 and 4/60 (6.6%) for AdV. 5 samples showed co-infections. In 105/110 (95.5%) of the samples the PCR results were concordant and the various viruses were detected correctly by both PCR systems. 4 (3.6%) samples showed inconsistent results and were re-analyzed. Two samples were positive for Influenza B by the RealStar® Influenza RT-PCR Kit, but negative by the Seeplex® RV 15 ACE Detection Kit. Positive results were confirmed by another real-time based detection system (Panning et al., 2009). Two samples were positive for RSV A by the RealStar® RSV RT-PCR Kit, but negative by the Seeplex® RV 15 ACE Detection Kit. Positive results were confirmed using another real-time based assay (Kuypers et al., 2004).

Conclusions:

Both the Seeplex® RV 15 ACE and the RealStar® (RT-) PCR Kits provide suitable test systems for the detection of viral respiratory tract infections. The RealStar® PCR Kits proved to be slightly more sensitive and in combination with the automated nucleic acid extraction instrument QIASymphony® SP suitable for the analysis of commonly used respiratory tract sample types in a routine molecular diagnostic laboratory setting.