The Prove-it™ Herpes assay is a rapid, broad-range PCR and microarray-based assay designed to identify seven human herpesviruses. The product is CE-IVD marked for the identification of seven human herpesviruses from isolated DNA of cerebrospinal fluid (CSF) specimens.

The detection of viral targets is based on PCR amplification followed by specific identification of targets on the Prove-it™ Herpes TubeArray. First, DNA is extracted from a sample followed by multiple-PCR based on various primer pairs which target highly conserved regions of DNA polymerase genes of herpesviruses. The subsequent microarray step detects and identifies the amplified PCR products through hybridisation. Hybridization capture probes in the TubeArray have been designed for sequences flanked by the PCR primers. Each probe on the array has a match for a particular virus present in the Prove-it™ panel.

The analysis and result reporting is realized with Prove-it™ Tube Array System. The result reporting consists of the name of identified viral targets, either alone or in combinations, when the assay controls that validate the reliability of the results, are reported.

INTRODUCTION

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PROVE-IT™ HERPES IN CLINICAL SETTING

We conducted a performance evaluation study for the Prove-it™ Herpes assay to compare results to those of current PCR-based herpes diagnostics. Altogether, 497 cerebrospinal fluid samples were analyzed by both methods in five laboratories in Finland, Ireland, and Switzerland. For Prove-it™ Herpes, extracted DNA was amplified by PCR followed by hybridization and detection by Prove-it™ Advisor software according to manufacturer's instructions. Reference PCRs were performed as determined by laboratories. Discrepancy results were studied by additional PCRs and DNA sequencing.

PROVE-IT™ HERPES REVEALED TARGETS WHICH WERE NOT OBSERVED BASED ON INITIAL REQUEST TO THE LABORATORY

Prove-it™ Herpes revealed multiple additional viral targets, either alone or in combinations, when compared to reference PCR workflows. In 13 confirmed multi-infections, combinations such as HSV-1, HSV-2, VZV, EBV, CMV, and HHV-6 were observed in nine cases together with other herpesviruses and in eight cases alone.

Prove-it™ Herpes revealed additional targets not suspected initially by clinicians at patient's profile such as HHV-6, HSV-7, EBV, CMV and CMV.

Prove-it™ Herpes covers seven viruses in the same assay revealing a complete picture of herpesvirus targets in the sample at once. This helps clinicians since the decision of tested herpes targets needs not to be based on clinical picture alone.

PROVE-IT™ HERPES RESULTS FOR QUALITY CONTROL FOR MOLECULAR DIAGNOSTICS 2009 PANEL WERE EXCELLENT

2009 QCMD panels for VZV, HSV, EBV, CMV, and HHV-6 were assessed by one of the evaluation sites using Prove-it™ Herpes assay and reference PCR method. Results were excellent by both of the methods.

PERFORMANCE OF THE TARGETS IN THE PROVE-IT™ HERPES PANEL AS COMPARED TO REFERENCE PCR METHODS

<table>
<thead>
<tr>
<th>Reference PCR result (confirmed by reference PCR)</th>
<th>Prove-it™ Herpes result (confirmed by reference PCR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSV-1, HSV-2, VZV: Negative</td>
<td>HSV-1, HSV-2, VZV: Negative</td>
</tr>
<tr>
<td>HSV-1, HSV-2, VZV: Positive</td>
<td>HSV-1, HSV-2, VZV: Positive</td>
</tr>
<tr>
<td>HSV-1, HSV-2, VZV: Not screened</td>
<td>HSV-1, HSV-2, VZV: Not screened</td>
</tr>
</tbody>
</table>

Note that this opens a pop-up containing a copy of each reaction.

CONCLUSIONS

Prove-it™ Herpes was considered as a rapid and robust diagnostic platform that was easily implemented into laboratory workflows. The broad target coverage and small sample volume required by the assay could benefit diagnostics, and thus, the treatment of life-threatening infections of the central nervous system.

FACTS

- 7 herpesviruses and controls detected in a single reaction
- Sensitivity 92%, specificity 98%
- Results from QCMD 2009 panel excellent
- Multi-infections not missed
- Low sample consumption
- Easy-to-use with short hands on time
- Suitable for all laboratories using PCR-based techniques