Significant technological advances are being made in diagnostic microbiology. An example is BD Max®, a platform that uses PCR methods for the rapid detection and identification of bacteria and viruses. Most of the transport devices in current use were developed for use with culture methods. The best devices will maintain microbiological viability to a sufficient condition, but this may not guarantee compatibility with molecular platforms. The present study has therefore been designed to evaluate some new devices to assess their suitability for use with the BD Max® platform.

## Methods

**Fecal Transwab® (Medical Wire)** is a swab-based system for recovery of enteric pathogens from fecal specimens. The device was tested with stool specimens previously shown by direct testing to be positive for Salmonella, Shigella, Campylobacter and, also for Shiga Toxin. The device was tested in its current format with a Sigma PurFoam Swab (polyurethane foam tip), and also in a development format with a PurFlock Swab (multifilament flocked fibre). In this study the performance of Fecal Transwab® with a BD Max® Fecal Panel for detection of Salmonella, Campylobacter or E. coli O157 was investigated. Swabs with buds of PurFoam Polyfoam (PF) were inoculated from known positive stool samples.

**PurFlock® Polyester (PF)** was developed for nets as well as absorbent materials. This device was tested in its current format with a Sigma PurFoam Swab (polyurethane foam tip), and also in a development format with a PurFlock Swab (multifilament flocked fibre). In this study the performance of PurFoam Swabs with a BD Max® Fecal Panel for detection of Salmonella, Campylobacter or E. coli O157 was investigated. Swabs with buds of PurFoam Polyfoam (PF) were inoculated from known positive stool samples.

**Sigma Virocult®** (Medical Wire) is a virus transport swab. Clinical samples which had previously tested positive on SmartCypher® for either Herpes Simplex Virus Type 1 or Herpes Simplex Virus Type 2 were retested on the BD Max®.

**BD Max®** is a multidimensional PCR based diagnostic platform that uses PCR methods for the rapid detection and identification of viruses or bacteria from swab transport devices. The new BD Max® PCR platform correctly identified all specimens, whether enteric bacteria from Fecal Transwab®, or herpes simplex viruses using Sigma Virocult® Results are shown as Ct values.

**Objectives**

- To assess the compatibility of Sigma Transwab® with the BD Max® platform
- To identify the best transport device for the maximum recovery of target pathogens
- To compare the results obtained using different transport devices with those obtained by direct culture

**Methods**

**Fecal Transwab**: The performance of Fecal Transwab® (Medical Wire) was assessed using the BD Max® Fecal Panel (for detection of Salmonella, Shigella, Campylobacter and E. coli O157) and SmartCycler® (for culture methods). The best devices will maintain microbiological viability to a sufficient condition, but this may not guarantee compatibility with molecular platforms. The present study has therefore been designed to evaluate some new devices to assess their suitability for use with the BD Max® platform.

**Efficiency of Target Recovery**

- **Sigma Virocult** (Medical Wire) is a virus transport swab. Clinical samples which had previously tested positive on SmartCypher® for either Herpes Simplex Virus Type 1 or Herpes Simplex Virus Type 2 were retested on the BD Max®.

**Results**

**Table 1. Results from first run** using Fecal Transwab® and BD Max.**

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>HSV 1</th>
<th>HSV 2</th>
<th>ST</th>
<th>SH</th>
<th>CA</th>
</tr>
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<tbody>
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<td>24</td>
<td>24</td>
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</tr>
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<td>24</td>
<td>24</td>
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<td>0</td>
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</table>

**Table 2. Results from first run** using Sigma Virocult® and BD Max.

<table>
<thead>
<tr>
<th>Sample ID</th>
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<th>HSV 2</th>
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</tbody>
</table>

**Conclusions**

- The new BD Max® PCR platform correctly identified all specimens of herpes simplex viruses from Sigma Virocult®.
- The new BD Max® PCR platform correctly identified all specimens of enteric bacteria from Fecal Transwab®.
- It is concluded that the new BD Max® PCR platform is superior to the direct culture methods for enteric pathogens and for herpes simplex viruses.

**Additional data** to assess compatibility of Sigma Transwab® with BD Max MRSA and SA Test System

In addition to the main experiments reported here, further tests were run to assess the compatibility of Sigma Transwab® with the BD Max® MRSA and SA Test System. The targets chosen for this study were MRSA and Staphylococcus aureus, two of the organisms most widely investigated by culture of Sigma Transwab®. Sigma Transwab® is a transport swab with liquid media medium, routinely available with the BD Max® platform. For this study, some additional swabs were also tested using SmartCycler®.

**Results**

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</tbody>
</table>

**Conclusions**

- The new BD Max® PCR platform correctly identified all specimens of enteric bacteria from Transwab® and Sigma Virocult®.
- It is concluded that the new BD Max® PCR platform is superior to the direct culture methods for enteric pathogens and for herpes simplex viruses.

**Additional data** to assess compatibility of Sigma Transwab® with BD Max MRSA and SA Test System

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