Analysis Report

Case # PSA113451

On 29 October 2011, USPS (9502510110261300XXXXXX) delivered to SSDI an envelope containing one pair of panties for testing. The items were logged in and testing was completed on 31 October 2011.

Evidence

The tested item is one lavender pair of ladies panties, manufactured by George, size 8, RN#18980, worn 26 October 2011 (as dated by customer). UV long and short wave light confirmed the locations for testing.

Analysis

A Prostate Specific Antigen (PSA) test was completed. The detection of the PSA on forensic samples is often helpful because it confirms the presence of semen even in samples that involve vasectomized or azoospermic individuals. The PSA is a glycoprotein produced by the prostate gland and secreted in seminal fluid at concentrations (from $2.0 \times 10^5$ to $5.5 \times 10^6$ ng/ml).
A test for the presence of Acid Phosphatase (AP) was conducted. Acid phosphatase is an enzyme present in semen at concentrations of 20 to 400 times other body fluids. The presence of acid phosphatase is a presumptive test for the presence of semen and needs to be confirmed by DNA or the presence of a Prostate Specific Antigen (PSA).

A Microscopic Examination (ME) was completed. This examination for the presence of sperm will be negative unless intact, non-degraded sperm are detected. Intact sperm are rarely visible after 5 days unless the sample was properly stored to prevent the natural degradation of the sperm cells.

A test for human salivary amylase (HSA), an enzyme found in human saliva was performed. This test will detect as little as 1 µl of saliva with no cross-reaction to blood, semen, urine, vaginal secretions or menstrual blood, however a low-level detection from breast milk and human fecal matter may be observed.

A test for Sperm Protein (SP) was performed. SP10 is a protein localized throughout the inner aspect of the outer acrosomal membrane and the outer aspect of the inner acrosomal membrane. When detected, the presence of sperm is confirmed.

**Results**

The panties tested positive for semen by PSA and AP. The panties tested positive for sperm by sperm protein and negative by microscopic examination (degraded sperm heads were detected). The panties tested positive for human saliva. The following chart provides the comparative strengths of the results of the five tests (1 to 10 scale, 10 being the strongest outcome).

<table>
<thead>
<tr>
<th>Item</th>
<th>PSA</th>
<th>AP</th>
<th>ME</th>
<th>HSA</th>
<th>SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lavender Panties</td>
<td>10</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Conclusions**

The panties tested positive for the presence of semen and sperm. The panties tested positive for human saliva. Copulation (intercourse with ejaculation) most likely occurred within 24 hours of when the panties were worn. The relative chance of a successful YPLEX DNA extraction on the item is estimated at 95%. The tested item and proof of test will be held for one year then destroyed unless requested by customer. Results were emailed.

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Results to: