

# RSID™-SALIVA: Competitive Analysis

## Forensic Detection of Saliva

	Technology Method	Specificity	Sensitivity	Ease of Use	Running Time	Cost/Test
			Hook Effect			
<b>RSID™-Saliva</b>	Strip Test (antibody)	High‡	Med	Easy	10 min	~US\$ 5.00
			<b>NO HD HOOK*</b>			
Liquid Phase Substrate Enzyme Assay	Enzymic activity	Low	Medium	Medium Difficult	Hours	~US\$ 5.00
			NA			
Solid Phase Substrate Enzyme Assay	Enzymic activity	Low	Med/ High	Medium	Hours	~US\$ 1.00
			NA			
Home Brew [Gel Elektrophoresis]	Enzymic activity	Low	Med/ High	Difficult	Hours to	~US\$ 3.00 O/N
			NA			

‡Specific for human  $\alpha$ -amylase – Multiple body fluid stain detection from single extraction possible

\*No High Dose Hook Effect

## RSID™-SEMEN: Competitive Analysis

### Forensic Detection of Semen

	Technology Method	Specificity	Sensitivity	Ease of Use	Running Time	Cost/Test
			Hook Effect			
RSID™-Semen	Strip Test (antibody)	High <b>CONFIRMATORY‡</b>	High	Easy	10 min	~US\$ 7.00
			Yes			
PSA-Based tests	Strip Test (antibody)	Low	Low to Med	Easy	10 min	~US\$ 5.00
			Yes			
Acid Phosphatase	Enzymic activity	Low	Low	Easy	10 min	~US\$ 1.00
			NA			
Home Brew [Immunodiffusion]	Antibody	Low	Low	Difficult	Hours	~US\$ 3.00
			NA			

**‡Confirmatory test for human semen - No animal or body fluid cross-reactivity - Multiple body fluid stain detection from single extraction possible**

## RSID™-Blood: Competitive Analysis

### Forensic Detection of Blood

	Technology Method	Specificity	Sensitivity	Ease of Use	Running Time	Cost/Test
			Hook Effect			
<b>RSID™-Blood</b>	Strip Test (antibody)	High <b>CONFIRMATORY‡</b>	Med <b>NO HD HOOK*</b>	Easy	10 min	~US\$ 6.00
Hemoglobin-Based Tests	Strip Test (antibody)	Low to Medium	High <b>YES</b>	Med	10 min	~US\$ 4.00
Chemical-Based Tests	Heme Chemistry	Poor	Low NA	Easy	5 min	~US\$ 1.00
Home Brew	Antibody	Low	Low NA	Difficult	Hours	~US\$ 3.00

**‡Confirmatory test for human blood - No animal or primate cross reactivity - Multiple body fluid stain detection from single extraction possible**

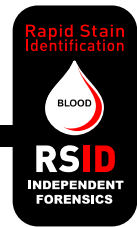
**\*No High Dose Hook Effect**

# BLOOD SALIVA



- No Animal, Bacterial or Fungal Cross Reactivity
- No High Dose Hook Effect  
No HDHE false negatives      No dilutions required
- Multiple Body Fluid Detection from a Single Extraction  
RSID™-Semen, RSID™-Blood, and RSID™-Saliva compatible
- Test Sensitivity Calibrated to DNA-STR analysis  
Positive RSID-Test ≈ sufficient biological material for DNA

# BLOOD SEMEN



- Only Confirmatory Tests for Human Blood  
No other body fluids cross-react  
No animal or Primate cross-reactivity
- Only Confirmatory Tests for Human Semen  
No other body fluids cross-react  
No animal or Primate cross-reactivity
- Multiple Body Fluid Detection from a Single Extraction  
RSID™-Semen, RSID™-Blood, and RSID™-Saliva compatible

# SEMEN



- More Sensitive and More Specific than PSA-based Tests  
No cross reaction with other body fluids  
Sensitivity **unaffected** by blood, saliva, urine or vaginal secretions
- Multiple Body Fluid Detection from a Single Extraction  
RSID™-Semen, RSID™-Blood, and RSID™-Saliva compatible

## **SALIVA**

Current saliva detection methods use the enzymatic activity of amylase to infer the presence of saliva.

Bacterial, fungal and serum amylase activity will all demonstrate positive results with this test – Activity-based amylase activity and gel-based methods.

No specificity for human

No link, direct or indirect to ability to obtain STR data

Both require manipulation and solution preparation

Costs of test are hidden in the time, effort and cost of making and maintaining solutions as compared to RSID-Saliva

Most tests are more time consuming than RSID-Saliva as well

Only RSID-Saliva is specific for human

Only RSID-Saliva requires no dilution – test does not exhibit high dose hook effect so false negatives essentially eliminated.

RSID-Saliva tests for the antigen specific for human saliva – alpha amylase is found in breast milk where it is produced by the mother as an aid to digestion for the newborn and as we all swallow up to a liter of saliva a day, fecal samples can also contain alpha amylase.

Test does not cross-react, but detects presence of antigen, which is unique to humans, but not completely localized to saliva.

## **SEMEN**

Current semen detection methods rely on

strip test format for prostate specific antigen (PSA, also called p30) or

presence of acid phosphatase activity (an enzyme that can be found in seminal fluid) or

microscopic identification of sperm (using non-specific staining)

Issues with PSA/p30 testing:

can be found in blood, female urine and breast milk,

tests rely on differential levels of PSA/p30 in blood and seminal fluid –

test is inhibited by vaginal secretions – sensitivity is reduced for real world samples

Issues with acid phosphatase testing

test is fast and cheap

tests is very non-specific – vaginal secretions, saliva and blood all can cross-react

test is least sensitive test – as compared to both RSID-Semen and PSA tests

## **BLOOD**

Current blood detection either uses hemoglobin-based strip tests or chemical tests for heme.

Chemical tests for heme are completely non-specific: all hemes react, pennies react, metal react, but the tests are fast

Hemoglobin based tests cross react with several animal species and are awkward to use: test sensitivity is not adjusted to current laboratory practice and samples need to be diluted many times.

Hemoglobin-based strip tests for blood have pronounce high dose hook effect and are very prone to false negatives.

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