

# MENSTRUAL BLOOD

## PMB TEST



### DETECTION OF MENSTRUAL BLOOD

- + fast, sensitive and reliable presumptive test for menstrual blood
- + human d-dimer as marker for menstrual blood
- + human hemoglobin as control marker for human blood
- + test result in as fast as 10 minutes
- + ready-to-use, validated kit
- + buffer and card storable at room temperature

 **SERATEC**<sup>®</sup>  
EXCELLENCE IN FORENSIC BIOLOGY

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### INTERPRETATION OF RESULTS



Menstrual blood: positive



Menstrual blood: negative  
Peripheral blood: positive



Menstrual blood: negative  
Peripheral blood: negative

#### Invalid result: no control line

Sample material remains suitable for other commonly used methods such as DNA extraction and profiling.

SERATEC<sup>®</sup> PMB Test is available in boxes with 8 or 30 cards each, dilution buffer included.  
Catalogue numbers: PMB/8 and PMB/30.

## INTRODUCTION

Identifying the biological source of a crime scene stain is one of the most important components in forensic science practice. A correct origin determination can be crucial for police investigations as it gives the investigators information about the course of the crime. Blood is one of the most commonly found body fluids at crime scenes, and accurate differentiation between peripheral blood and menstrual fluid provides valuable evidence regarding the issue of consent in sexual assault cases. While the presence of peripheral blood might indicate a traumatic cause, menstrual fluid might hint towards a natural bleeding cause. During menstruation, fibrinolysis occurs and is an important step to block blood coagulation and enable the menstrual fluid to easily pour out. A test was developed based on a D-dimer assay that detects degradation products of fibrinolysis and was tested for forensic purposes.

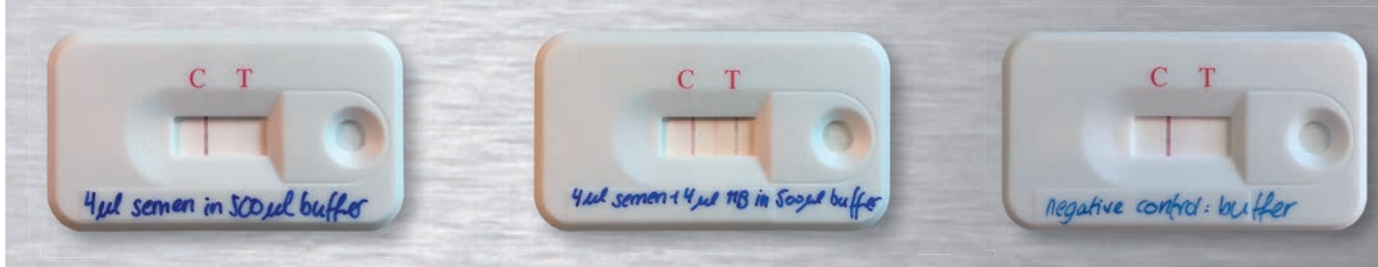
## METHOD

The immunochromatographic SERATEC HemDirect test, which detects the presence of human hemoglobin in a sample and therefore detecting the presence of blood, was used as a basis for the development of a tool for the detection of D-dimer, a menstrual blood marker. Dried menstrual samples and fresh peripheral blood were used for the sensitivity study. Possible cross-reaction were tested on blood mixed with saliva, semen and vaginal fluid. Forensic samples are included in the evaluation of the test's sensibility and protocol development. Additionally, it was also verified if the samples remained suitable for other commonly used methods such as DNA extraction and profiling (still in analysis).

## RESULTS

The results of this study indicate that the D-Dimer/Hemoglobin assay reliably detects the presence of human hemoglobin and identifies samples containing menstrual fluid. Furthermore, it was possible to successfully analyze mixtures of fluids. No false positive

results were obtained for peripheral blood, semen or saliva. The 10<sup>-6</sup> and further dilutions of menstrual blood resulted negative. The sensitivity and robustness of the assay is on trial involving a team of researchers from different institutions and countries.



*cross reaction test and mixture test, both with semen, and negative control*

## CONCLUSION

Considering the preliminary results, the method reliably distinguished between menstrual and peripheral blood, and so it would make a substantial progress in analyzing and interpreting evidence from sexual assault cases.