



Product Information

HemoCheck-S & EndoCheck

Test for detection of blood residues



Introduction

HemoCheck-S & EndoCheck is a test for detecting blood residues on instruments, Lumens (Biopsy channel) or other surfaces which had contact with blood before cleaning. Blood residues can be detected due to its high content of Peroxidases by means of enzymatic reactions. Colour change of Guajac resin or Benzidin give positive test result for blood diluted 1:1 Million (Lit.1). Also other methods like the Kastle-Meyer-Test are described (Lit. 2). The peroxidases in blood will catalyse the oxidation of leuco-compounds in the presence of Hydrogen peroxide to yield coloured substances which are easily detected. This reaction can show blood residues in liquids or on surfaces by a colour change to blue. Peroxidases in blood will still show a positive result after the influence of heat, alkalinity or aldehydes.

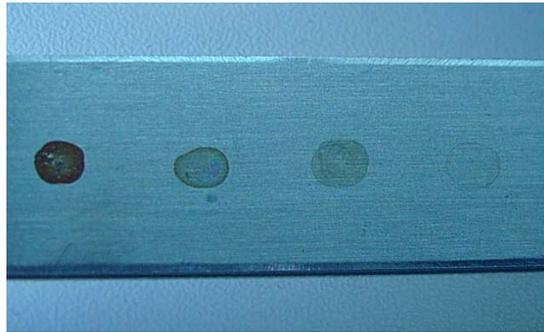
Test procedure

A swab is used to sample lumens or surfaces. If the original swab is not used care should be taken that the swab does not react with the test solution by doing a blind control. If surfaces are dry, the swab is moistened with a drop of clean non chlorinated water. The test is activated by transferring the test solution into the activator-vial. The swab is then dropped into the activated solution and blood residues on the swab is indicated within seconds by an intense blue colour. HemoCheck-S & EndoCheck can even detect 0.1 µg of heat denaturated blood residue resulting in a colour change easily visible .

NOTE: HemoCheck-S & EndoCheck can be used to indicate blood residue or residue of blood or hemoglobin based test soils. However bleached blood residue (eg. contact to peracetic acid or hydrogenperoxide) may not be detected due to the destruction of peroxidase.

Validation of the detection limit

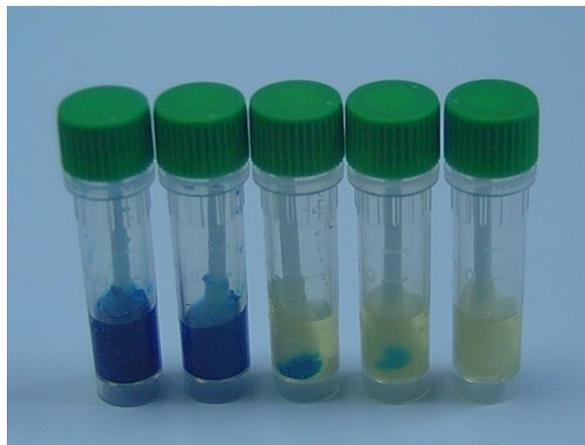
100µl of fresh Blood was allowed to dry at room temperature for 2 hours. Gravimetric measurement was used to measure the content of solids in dried blood showing 26.5mg in 100µl of fresh blood. Fresh human blood was diluted with demin. Water: 1:10, 1:100, 1:1000 and 1:10.000. 3.8µl of the 4 diluted samples gave approx.: 100µg, 10µg, 1µg and 0.1µg of dried blood (picture 1). The diluted blood was pipetted onto stainless steel plates at 90°C in order to mimic denaturated blood residue found after the disinfection cycle of a washer-disinfector. Sampling of the spots with a swab was used to validate the detection limits of HomoCheck-S for blood residues.



Picture 1
From left to right: 100µg, 10µg, 1µg and 0.1µg of blood residues

Results

Picture 2 shows the HemoCheck-S results for the dried blood samples (from left to right: 100µg, 10µg, 1µg, 0.1µg, Blind control). The Peroxidase reaction gave immediate results as shown in picture 2. All samples except the blind control gave positive result indicated by a colour change to blue. The high level of blood residue (100µg and 10 µg) even changed the indicator solution completely to blue. An additional 1:100.000 diluted blood sample was used to test 0.01µg of dried blood and did not give a positive result.



Picture 2
Result of the HemoCheck-S test, amount of blood shown from left to right: 100µg, 10µg, 1µg, 0.1µg, Blind control

Discussion

Due to the enzymatic peroxide reaction HemoCheck-S & EndoCheck can detect smaller amount of blood residue than protein tests based on the Biuret reaction or Ninhydrin reaction. Another outstanding property of this forensic test is its sensitivity specific for blood residue, our major hygiene risk in the medical field. Sources of harmless residues like fingerprints will not give a positive result. There is no need for a long reaction time or a high reaction temperature which make HemoCheck-S & EndoCheck especially easy to use giving immediate and safe results. HemoCheck-S & EndoCheck can be used to check reprocessed surgical instruments and other surfaces whenever there is doubt that there could be blood residue left due to handling or processing problems.

Literature

1. G. Schrader, G. Görisch : The Limitations of Instrument Cleaning Based on Data Collected on vCJD-Risks Posed by Medical Instrument. Hygiene & Medizin August 2003, 28. Jahrgang S. 306-309
2. Louise M. Edmunds, Andrew Rawlinson: The effect of cleaning on blood contamination in the dental surgery following periodontal procedures. Australian Dental Journal 1998; 43: (5):349-353

Hazard Identification

The HemoCheck-S & EndoCheck test solution is slightly acidic and may cause irritation.

Maßnahmen bei unbeabsichtigter Freisetzung

All chemicals can be disposed of as non-risk waste

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