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THE USE OF BLUESTAR® TO DETECT BLOODSTAINS

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Objectives: Detection of blood on washed areas is a challenge for forensic investigators. Although many reagents are presumptive tests for blood, many factors used such as surface type or household cleaning materials can disturb detection and/or DNA analysis.

The purpose of this study is to show that use BLUESTAR® allows blood detection on many bloodstained surfaces washed with different cleaning materials. Furthermore, the BLUESTAR® luminescence can be seen and photographed easily and the reagent is potent and can be used for many weeks.

Nature of the study: This study was designed to test many factors involved in the process of treatment of bloodstain evidence using a new product made with a mixture of Luminol: BLUESTAR®

Materials and Methods: Enamel, concrete, bare wood, iron, glass, tile floor, linoleum, plastic and jeans fabric were used. Each surface divided into quadrants and blood was placed on quadrant I & II. After a few minutes, the quadrant I was washed with a sponge and a household cleaning material. The same cleaning material was deposited on the quadrant III. Nothing was deposited on the quadrant IV. The washed surfaces were allowed to air dry overnight prior BLUESTAR® application in a dark room. Several samples were collected by swabbing the surfaces with a sterile swab, the best technique to obtain sample on the studied surfaces. For DNA analysis, organic extraction was used and extracted DNA was amplified using PCR. These analyses were carried out at different periods: 1, 2, 7, 15 and 30 days after BLUESTAR® treatment.

Results: All bloodstained quadrants washed or not, had a deep blue luminescence. No luminescent area was visible on both quadrant III & IV. We noted that BLUESTAR® testing can be performed, for at least three times.

All the studied surfaces and household cleaning materials don't have an effect on the BLUESTAR® chemical reaction. For all surfaces and all cleaning materials, DNA was obtained and PCR amplified from quadrant I & II of all the samples.

Conclusion: The study shows that the surface on which blood was deposited and the household cleaning materials were used don't have any effect on the process of BLUESTAR® treatment on bloodstained evidence. Furthermore, BLUESTAR® luminescence is deeper and longer in time than luminol I (Grotsky) or II (Weber). So for BLUESTAR® luminescence's photography can easily be take. The reagent can be used for a least one month.

This study also demonstrates that BLUESTAR® doesn't have any adverse effect on subsequent DNA analysis even 30 days after treatment. BLUESTAR® allows diluted blood detection even when DNA analysis is no more reliable.

BLUESTAR® can be used to examine washed crime scene and to locate traces of blood without compromising the potential for subsequent DNA analysis.