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The Impact of Henna on Non-Porous Surfaces and The Quality of Latent Fingerprint Development: A Comparative Analysis with The Utilization of Enhancement Powder

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Structured Abstract

Background: Fingerprints are one of the most important evidence in criminal investigations and frequently found at crime scenes. In order to avoid being discovered, criminals use a variety of strategies, such as utilizing tools or protective layers instead of making direct contact with surfaces with their bare hands. The use of daily products like henna has emerged as an effective way of modifying fingerprints chemically or physically. The purpose of this study, which was conducted at Universiti Teknologi Mara in Shah Alam, was to investigate how enhanced fingerprint quality was influenced by both synthetic and natural henna on various non-porous surfaces. The main objectives were to compare and evaluate fingerprint quality using natural and synthetic henna and to investigate how henna affects fingerprint development and visibility. The research additionally examined at the on non-porous surface of metal, plastic, and glass surfaces.

Methods: A single female donor provided 45 fingerprints, with henna products applied on the first distal region of the fingerprint. Then, the fingerprints were placed on the selected non-porous surfaces. All fingerprints were then dusted with the enhancement powder. The final prints were captured by camera, and a scoring system with a range of 0 to 5 was applied for analysis.

Results: According to the results gathered, metal surfaces were the best for producing high- quality latent prints based on the fingerprint evaluation scoring system, both bare hands and natural henna scored 5, and synthetic henna scored 3. Glass surfaces were also found to be acceptable, with a score of 3 for synthetic henna and 4 for both bare hands and natural henna. The study also discovered that the synthetic henna consistently produced the lowest quality fingerprints and score.

Conclusion: As a conclusion, this study clarified that there is a possibility of criminals might modify fingerprints with henna, especially synthetic henna. The results highlighted the influence of natural and synthetic henna on the visibility of fingerprints quality on non-porous surfaces by comparing with score value. Finally, the most optimal non-porous surface to develop fingerprint is metal as compared tp plastic and glass surfaces.

Keywords: Fingerprints, Natural Henna, Synthetic Henna, Non-Porous Surfaces

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