FORENSIC DISCRIMINATION OF LIPSTICKS BY THIN LAYER CHROMATOGRAPHY AND GAS CHROMATOGRAPHY

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ABSTRACT

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Forensic evidence can be left behind in many different ways. Lipstick smear is one of the most common evidence at a crime scene and can be valuable in forensic analysis if correctly analyzed. The objective of this study is to discriminate lipsticks by using thin layer chromatography (TLC) and gas chromatography-mass spectrometry (GC-MS). Eighteen lipstick samples from six different brands both from branded and non-branded in the red shade colour were selected for this study. The TLC is used to analyse the dyes in lipsticks by giving different retention factor (R_f) for each different components present. Meanwhile the GC-MS is applied to discriminate lipsticks based on their chromatogram pattern. The TLC analysis was carried out using four different solvent systems which are Toluene: Acetone (16:4), Ethyl acetate: Methanol: Ammonia (14:3:3), Isopropyl alcohol: Acetone: Distilled water: Ammonia (7:7:5:1), and Methanol: Dichloromethane (14:6). The best separation of dyes component in lipsticks on the TLC plate was found by Ethyl acetate: Methanol: Ammonia (14:3:3). Toluene was used as an extracting solvent. Both combinations of the TLC and GC-MS techniques would help to link the samples from suspected sources and also from the crime scene.