

**FORENSIC DISCRIMINATION OF LIPSTICKS BY THIN LAYER
CHROMATOGRAPHY AND GAS CHROMATOGRAPHY**

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ABSTRACT

Forensic Discrimination of Lipsticks by Thin Layer Chromatography and Gas Chromatography

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.