

Cadaver Free Fatty Acid Distribution Associated with Burial in Mangrove and Oil Palm Plantation Soils under Tropical Climate

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Abstract : Locating clandestine cadaver is crucially important in forensic investigations. However, it requires a lot of man power, costly and time consuming. Therefore, the development of a new method to locate the clandestine graves is urgently needed as the cases involve burial of cadaver in different types of soils under tropical climates are still not well explored. This study focused on the burial in mangrove and oil palm plantation soils, comparing the fatty acid distributions in different soil acidities. A stimulated burial experiment was conducted using domestic pig (*Sus scrofa*) to substitute human tissues. Approximately 20g of pig fatty flesh was allowed to decompose in mangrove and oil palm plantation soils, mimicking burial in a shallow grave. The associated soils were collected at different designated sampling points, corresponding different decomposition stages. Modified Bligh-Dyer Extraction method was applied to extract the soil free fatty acids. Then, the obtained free fatty acids were analyzed with gas chromatography-flame ionization (GC-FID). A similar fatty acid distribution was observed for both mangrove and oil palm plantations soils. Palmitic acid (C_{16}) was the most abundance of free fatty acid, followed by stearic acid (C_{18}). However, the concentration of palmitic acid (C_{16}) higher in oil palm plantation compare to mangrove soils. Conclusion, the decomposition rate of cadaver can be affected by different type of soils.

Keywords : clandestine grave, burial, soils, free fatty acid

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