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Synthetic Cannabinoids: Extraction, Identification and Purification

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Abstract : In Australian state Victoria, synthetic cannabinoids have recently been made illegal under an amendment to the drugs, poisons and controlled substances act 1981. Identification of synthetic cannabinoids in popular brands of 'incense' and 'potpourri' has been a difficult and challenging task due to the sample complexity and changes observed in the chemical composition of the cannabinoids of interest. This study has developed analytical methodology for the targeted extraction and determination of synthetic cannabinoids available pre-ban. A simple solvent extraction and solid phase extraction methodology was developed that selectively extracted the cannabinoid of interest. High performance liquid chromatography coupled with UV-visible and chemiluminescence detection (acidic potassium permanganate and tris (2,2-bipyridine) ruthenium(III)) were used to interrogate the synthetic cannabinoid products. Mass spectrometry and nuclear magnetic resonance spectroscopy were used for structural elucidation of the synthetic cannabinoids. The tris(2,2-bipyridine)ruthenium(III) detection was found to offer better sensitivity than the permanganate based reagents. In twelve different brands of herbal incense, cannabinoids were extracted and identified including UR-144, XLR 11, AM2201, 5-F-AKB48 and A796-260.

Keywords : electrospray mass spectrometry, high performance liquid chromatography, solid phase extraction, synthetic cannabinoids
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