

Fourier Transform Infrared Spectroscopy (FTIR) vs The Lab : An assessment of FTIR as an independent testing technique for drugs seized in Queensland

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Introduction and Aims: Fourier Transform-Infrared Spectroscopy (FTIR) is a portable, robust and simple-to-use analytical technique, leading to its use in the field in numerous applications, including drug checking. This work assesses the capability of FTIR for the independent identification of drugs and adulterants in tablets, capsules and powders seized in Queensland.

Method / Approach: 177 exhibits seized by law enforcement for forensic analysis were analysed by FTIR and the results compared with those from full laboratory testing. An emphasis in sample selection was placed on tablets and capsules that appeared visually similar with 3,4-methylenedioxyamphetamine (MDMA) presentations. Additionally, powders that appeared visually similar with cocaine or were known to contain unusual compounds or adulterants were included in the sample set.

Key Findings: FTIR analysis identified instances of synthetic cathinone adulteration/substitution in exhibits appearing visually similar to MDMA. Additionally, FTIR analysis of a tablet identified the presence of *para*-chloromethamphetamine, a drug not previously seen in Queensland. Drugs commonly presenting at concentrations of less than 10%, such as 3,4-methylenedioxyamphetamine (MDA) and 2,5-dimethoxy-4-bromophenethylamine (2C-B), were typically not identified by FTIR, indicating additional processes, such as reagent testing or sample extraction, may be required.

Discussions and Conclusions: Understanding the capabilities and limitations of any analytical technique is important to ensure effective usage of data obtained. A direct comparison between analytical results obtained through full forensic testing and FTIR provides information regarding the capabilities of FTIR as a standalone technique for drug identification.

Disclosure of Interest Statement:

KB is currently a volunteer organiser with The Loop Australia. KB was not affiliated with The Loop Australia at the time the project was devised or conducted. FTIR equipment used for the project was provided on loan from Bruker.