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ACCEPTED MANUSCRIPT

Technical Note: Investigation by Direct-Infusion ESI-MS and GC-MS of an Alleged Leuckart Route-Specific Impurity of Methamphetamine

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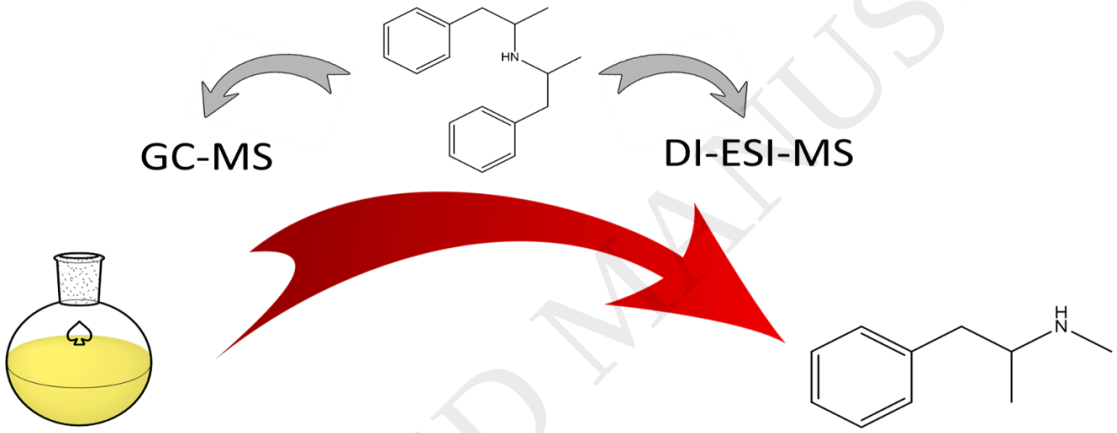
Graphical abstract



Highlights

- Route specific impurities can be used to profile specific illicit syntheses.
- Data shows the presence of a Leuckart-specific impurity in a different route.
- GC-MS and DI-ESI-MS analyses indicate bis(1-phenylpropan-2-yl)amine as nonspecific.
- This impurity is specific to reductive amination, but not a particular route.

Abstract

Impurity profiling has been used as a useful tool for analyzing nearly every drug class currently known on the illicit market. Impurities present within seized samples have the potential to determine source of origin, route of synthesis used, as well as provide a useful clue into the potential reaction mechanisms that are present for each synthetic procedure. Perhaps the most well studied of these impurity profiles exists for methamphetamine, including information to more than one route of synthesis. Within the present study, a complete synthesis of methamphetamine was performed, including a reductive amination of phenylpropanone (P2P) using methylamine hydrochloride and sodium triacetoxyborohydride (STAB) rather than the

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