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Methylamphetamine synthesized from cold medication as precursor source via two different routes show significantly different stable isotope signatures

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This work exposes the variation in light element stable isotopic abundance values of 13C, 2H and 15N) derived from the analysis of methylamphetamine synthesized via 2 different synthetic routes popular with clandestine laboraties, the Hypophosphorous and the Moscow route. We repeatedly prepared the final product using known clandestine synthetic methods where the precursors, catalysts and reducing agents have themselves been derived from house hold products and commonly available cold medications. Methylamphetamine was prepared from both lab grade pseudoephedrine and pseudoephedrine extracted (using three different solvent systems) from Sudafed®, an over-the-counter cold medication widely available in the United Kingdom. Six repetitive batches of the final product were produced in each case to provide within and between batch variations thus yielding a total of 48 samples (24 for each route).

We have demonstrated that stable isotope analysis by Isotope Ratio Mass Spectrometry (IRMS) is potentially useful in the comparison and discrimination of batches of methylamphetamine produced for each route and for each precursor depending on the solvent used for extracting the pseudoephedrine starting material.

To our knowledge this is the first time multivariate stable isotope analysis has been applied to methylamphetamine samples synthesized from pseudoephedrine extracted from over-the-counter cold medications.