A193 Microcrystal Tests of Cocaine With Levamisole and Sugar Added as Adulterants

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After attending this presentation, attendees will have a basic understanding of microcrystal tests, the effect of levamisole and sugar on the cocaine microcrystal morphology, and general trends to observe when performing microcrystal tests on cocaine.

This presentation will impact the forensic science community by documenting crystal behavior of cocaine when diluted with levamisole and sugar and has potential application for profiling cocaine in order to track trends in drug trafficking.

Every year there are tons of pounds of cocaine seized in the United States. However, this cocaine is not always pure. The cocaine submitted into evidence is generally between 60-70% pure. Common adulterants such as lidocaine, sugar, baking soda, caffeine, and levamisole are added to pure cocaine to add bulk and increase the street value. The microcrystal analysis of cocaine, once used as a confirmatory test, still has a place in forensic science. However, there have not been any studies conducted to determine the ratio of adulterant to cocaine in samples of cocaine submitted for analysis. The purpose of this project is to document the changes in the crystal morphology of cocaine in the presence of the sugar and levamisole adulterants.

The most common microcrystal test for cocaine uses gold chloride reagent to form a distinctive cross shape with branches perpendicular to the axis. After preparing and observing samples of these adulterants in concentrations of 10%, 20%, and 50%, the changes in the shape of the cocaine crystals formed were linked to a specific adulterant and concentration.

In order to determine the homogeneity of the powder samples mixed from purchased standards, three samples from different parts of the levamisole/cocaine mixture were injected on a GC/MS and the ratio of cocaine to adulterant was plotted and the correlation determined. Even with careful grinding and mixing with a mortar and pestle, the line of best fit had a correlation of 0.97.

Finally, FTIR spectra of the levamisole/ cocaine powdered mixtures were taken and entered into a searchable library for future analysis of cocaine mixtures.

Future plans include testing the homogeneity of other adulterants and building the library to include more adulterants and illicit drugs. **Microcrystal, Levamisole, Sugar**

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