

Quantitative determination of major cutting agents in cocaine samples seized in Slovenia in the period from May 2004 to November 2005

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Cocaine hydrochloride is the primary form of cocaine in use. It is also the most adulterated form, as it may contain any added substance. The purpose of this research was to quantify cocaine and major cutting agents content in a total of 190 cocaine hydrochloride samples seized in Slovenia (no cocaine base or “crack” samples were found in the period May 2004 – November 2005).

A purity of cocaine ranged from 10.6% to 80.6%, with an average of 37% (expressed as concentration of cocaine HCl form). During the entire period, a relation between purity and time of seizure (or seizure size) was not observed.

Adulterants or diluents were found in all seizures analysed. Glucose, lactose and mannitol proved to be diluents that were most frequently encountered in cocaine samples (61.6%, 41.6% and 31.6%, respectively). On the other hand, the most common adulterants in cocaine were caffeine (28.4%), lidocaine (22.6%), phenacetin (22.1%), and several other additives were occasionally seen. Diltiazem and hydroxyzine, as examples of new adulterants, were first detected in the second half of 2005. Maximum caffeine content in samples was about a few percentages, whereas samples were diluted by phenacetin in a wide range (from less than 1% to over 50%). All major compounds were quantitated via capillary gas chromatography mass spectrometry (cGC-MS). A sample derivatization was performed with a MSTFA reagent and reaction was completed in 1.5 hours at 80°C. Out of all compounds only TMS-creatinine derivate showed instability in a chloroform solution.

Recent evidence suggests that various unusual cocaine adulterants are being used. Adulterants add an unappreciated dimension to the clinical toxicity of cocaine abuse. There are several reports in the literature indicating that these adulterants may have significant toxicologic effects that amplify those caused by cocaine. On the other hand, diluents e.g. sugars, and inert compounds may not cause significant problems. Determination of cocaine content and adulterants in street samples has not only clinical value but is also of importance in relation to chemical comparison of various street samples.

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