

LABORATORY SERVICES BUREAU

Document: Controlled Substances Analysis Manual

Policy Number:
1534

Revision:
7

Subject: CS-SOP-23 Cocaine

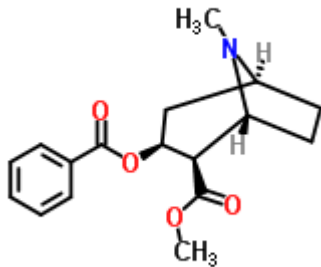
Approved:
Bell, Erica

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1. COCAINE

A. Structure, Empirical Formula, Molecular Weight



Cocaine
 $C_{17}H_{21}NO_4$
MW 303.4

- B. Synonyms: Methylbenzoylecgonine, blow, coke, C, flake, snow, nose candy, coke base, cocaine base, free base, crack, rock
- C. Trade Names: NA
- D. Drug Action: CNS stimulant, local anesthetic
- E. Common pharmaceutical/street forms: 40 mg/mL and 100 mg/mL topical aqueous solution and topical viscous solution. Common street preparations include pressed powder often in kilogram bricks, loose powder, and syringes containing liquid. Cocaine base usually occurs as off-white to tan rocks or fragments.
- F. Solubility:
- (1) Free base: Hydrochloric acid, chloroform, slightly soluble in diethyl ether and methanol, insoluble in water
 - (2) Hydrochloride salt: Water, methanol, slightly soluble in chloroform, insoluble in diethyl ether
- G. Extraction: Dry extraction
- (1) Dissolve in C15 methanol.
 - (2) Filter to remove any insoluble material if necessary.

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H. Chemical indicator tests: The cobalt thiocyanate test **must** be performed to differentiate between the free base and the hydrochloride salt due to the differences in solubility of the two forms in the reagent.

- (1) Cocaine Hydrochloride: Cobalt thiocyanate/chloroform: Blue with extract
- (2) Cocaine Base
 - (a) Cobalt thiocyanate/chloroform: Blue flecks but extract remains clear
 - (b) 0.1 N Hydrochloric acid: Extract becomes blue

For the base form, the 0.1 N hydrochloric acid must be added after the chloroform.

Note: Levamisole {(S)-6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b][1,3]thiazole} is a commonly observed adulterant in cocaine exhibits. **Levamisole base** produces a **cornflower blue color with extract** upon the addition of cobalt thiocyanate/chloroform.

- (3) Liebermann's: Yellow-orange
- (4) Wagner's/0.1 N hydrochloric acid: Brown ppt.

I. TLC:

- (1) Mobile Phase:
 - (a) System 1: Chloroform:methanol (90:10)
 - (b) System 2: Methanol:conc. ammonium hydroxide (100:1.5)
- (2) Locator: Acidified iodoplatinate, Dragendorff reagent

J. GC/MS: Analyze using "Drugs1" program.

K. Comments: Used as a local anesthetic for mucous membranes in the oral, laryngeal, and nasal cavities.

L. Report as:

- (1) Cocaine, a narcotic drug.
- (2) Cocaine base, a narcotic drug.

M. References:

- (1) Analytical Profiles of Cocaine, Local Anesthetics and Common Diluents Found with Cocaine, CND Analytical, Inc., Auburn, AL, 1990.
- (2) A Study of Acids Used for the Acidified Cobalt Thiocyanate Test for Cocaine Base, Microgram Journal, Volume 1, Numbers 1-2 (January-June 2003).