Detection and Identification of Ibogaine and Heroin

Vincent T. Sullivan
Bernard Newman
Arnold Dihrberg

Follow this and additional works at: https://scholarlycommons.law.northwestern.edu/jclc

Part of the Criminal Law Commons, Criminology Commons, and the Criminology and Criminal Justice Commons

Recommended Citation

This Criminology is brought to you for free and open access by Northwestern University School of Law Scholarly Commons. It has been accepted for inclusion in Journal of Criminal Law and Criminology by an authorized editor of Northwestern University School of Law Scholarly Commons.
DETECTION AND IDENTIFICATION OF IBOGAINE AND HEROIN

VINCENT T. SULLIVAN, BERNARD NEWMAN AND ARNOLD DIHRBERG

Vincent T. Sullivan is a detective assigned to the Police Laboratory of the Suffolk County Police Department, Hauppauge, New York. He is attached to the Research Section of the laboratory and specializes in the adaptation of chromatography to forensic science.

Bernard Newman, Ph.D., Director of the Suffolk County Police Laboratory, has been active in the forensic science field since 1942. He is a senior research scientist, New York University School of Engineering, Fellow of the American Academy of Forensic Science, a senior member of the American Chemical Society and a Fellow of the American Public Health Association.

Arnold Dihrberg is a detective sergeant attached to the Suffolk County Police Laboratory. He is a member of the teaching staff of the State University of Farmingdale in the field of police science.— Editor.

Within the past six months, a drug hitherto unreported on the illicit market, has been found by the narcotics authorities to have been used by the addict. This is "Ibogaine," an alkaloid originally isolated from the plant Tabernanthe iboga, found in Africa.

It is apparent from the foregoing that Ibogaine can be differentiated from heroin, or its diluents (i.e., quinine, mannitol and lactose) by a few well-chosen spot tests with the results being examined under visible and ultraviolet light. Obviously, one can obtain a mixture of Ibogaine in low concentration and heroin in high concentration where the purple color of the Marquis reaction with heroin, masks the blue-green Ibogaine color; similarly for reaction with quinine where its fluorescence under ultraviolet illumination would likewise mask the pink-orange fluorescence of the Ibogaine.

Accordingly, the behavior of Ibogaine on thin layers of silica gel with various solvent systems was next studied. Ibogaine is soluble in ethanol, methanol, diethyl ether, acetone, chloroform and benzene. The heroin salts at our disposal were likewise soluble in these solvents, and in addition, soluble in water, while the Ibogaine was insoluble in water. It was, therefore, considered likely that a solvent system with a strongly polar constituent would separate heroin and Ibogaine, or quinine and Ibogaine, or a mixture of all three.

| TABLE I |
|------------------|------------------|------------------|------------------|
|                  | Ibogaine         | Heroine          | Heroin-Quinine   |
|                  | Marquis | Mecke | Marquis | Mecke | Marquis | Mecke |
| Visible...........| Yellow-Orange    | Blue             | Violet           | Blue-Green      | Violet           | Blue-Green      |
| U-V Long Wave....| Orange          | Dark Green       | —                | —                | Blue-Green       | Blue-Green      |
| U-V Short Wave...| Yellow          | Dark Green       | —                | —                | Blue-Green       | Blue-Green      |

EXPERIMENTAL

Since no analytical procedure for the detection and identification of this material is readily available to the crime laboratory, a study was made of the reactions of Ibogaine to various laboratory reagents, and of the thin-layer chromatography of mixtures of Ibogaine and heroin and various diluents frequently used.

As a screening procedure, the usual reagents, Marquis and Mecke, were used. Ibogaine is reported to fluoresce under ultraviolet light, and therefore, the spot tests were examined under "long-wave and short-wave" ultraviolet light in a darkened room with the results shown in table I.

1 A sample of Ibogaine was obtained thru the courtesy of Drs. Richard H. Roberts and John Marsh of CIBA, Summit, New Jersey.
Of all the systems of developing solvents used, a mixture of 80% Cyclohexane, 19% benzene, and 1% isopropylamine was found to give excellent separation of Ibogaine, heroin, and quinine, with reproducible $R_f$ values in each case. The results shown in table II are representative samplings from a number of such chromatograms. Consistent $R_f$ values with a maximum variation from the mean of $\pm 0.04$, were found. Furthermore, the fluorescent characteristics under ultraviolet light, enabled ready location and identification of the spots.

Solutions to be chromatographed were in chloroform and were spotted on Eastman Chromagram Sheet Type K301 with fluorescent indicator, by means of a 15μ micropipette under control conditions. The conditions under which experiments were run were: constant system temperature @ 29° C; one hour waiting period for system equilibrium; suitable quantitative measurements of reagents and sample concentrations.

**Summary**

A series of tests is presented for the separation and identification of Ibogaine.