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DETECTION AND IDENTIFICATION OF IBOGAINE AND HEROIN

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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 *Tabermanthe 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 concen

TABLE I

	Ibogaine		Heroin		Heroin-Quinine Mixed	
	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[1] 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.

tration 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 II

	Jar I	Jar II	Jar III	Jar IV
Quinine.....	.068	.070	.063	.065
Heroin.....	.41	.38	.36	.41
Ibogaine.....	.66	.68	.62	.65

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 ± 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 15λ 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.