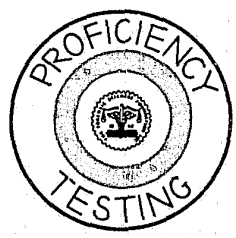
LABORATORY PROFICIENCY TESTING PROGRAM

REPORT NO. 15

DRUG ANALYSIS



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FOREWORD

The analysis summarized in this report is the fifteenth of a series that will be made in conjunction with this proficiency testing research project.

In the course of this testing program participating laboratories will have analyzed and identified different samples of physical evidence similar in nature to the types of evidence normally submitted to them for analysis.

The results for Test Number Fifteen are reflected in the charts and graphs which follow.

The citing of any product or method in this report is done solely for reporting purposes and does not constitute an endorsement by the project sponsors.

Comments or suggestions relating to any portion of this report or of the program in general will be appreciated.

December 1976

BACKGROUND

This laboratory proficiency testing research project, one phase which is summarized in this report, was initiated in the fall of 1974.

This is a research study of how to prepare and distribute specific samples; how to analyze laboratory results; and how to report those results in a meaningful manner. Information is being collected for research and statistical purposes only. Such information will not be revealed or used for any other purpose. Information furnished by any person or agency identifiable to any specific person or laboratory will not be revealed or used for any purposes, other than the research and statistical purposes for which it was obtained.

Participation in the program is voluntary. Accordingly, invitations have been extended to 238 laboratories to share in the research. It is recognized that all laboratories do not perform analyses of all possible types of physical evidence. Thus, in the data summaries included in this report, space opposite some Code Numbers (representing specific laboratories) may be blank, or marked "No Data Returned".

Additional evaluations of individual tests will be published in a separate report.

The Project is under the direct control of the Project Advisory Committee whose members' names are listed on the Title Page. Each is a nationally known criminalistic laboratory authority.

Supporting the Project Advisory Committee in their efforts is the Forensic Sciences Foundation with additional support from the Collaborative Testing Service, Inc., Vienna, Virginia in the area of statistical presentation.

SUMMARY

In this test, 241 laboratories were sent one sample. Partipants were asked to develop information about the sample as if it was evidence in a case involving controlled substances. The Data Sheet is attached at Annex A.

Of the 241 laboratories, 12 indicated that they do not perform controlled substance examinations, 146 responded with data, 82 did not respond, and one indicated that they do drug examinations but were unable to complete the test. This represents a participation rate of 64%.

The information contained in this report is as follows:

Table 1 - Supplier's Characteristics
Table 2 - Referee Laboratory Responses
Table 3 - Responses to Question 1
Table 4 - Responses to Question 2
Table 5 - Summary of Laboratory Responses

ANNEX A

FIGURE 1

LAB CODE B_____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM DRUG ANALYSIS

DATE RECEIVED IN LAB_____

DATE PROCESSED IN LAB_____

DATA SHEET

PROFICIENCY TESTING PROGRAM

TEST #15

DRUG ANALYSIS

1. The enclosed substance was a street buy. The agent needs all the qualitative and quantitative information you can provide.

2. Indicate method (s) used:

Information is being collected for research and statistical purposes only. Such information will not be revealed or used for any other purpose. Information furnished by any person or agency and identifiable to any specific person or laboratory will not be revealed or used for any purpose other than the research and statistical purposes for which it was obtained.

Table 1

Supplier's Characteristics

The drug sample is characterized by the manufacturer as follows:

Component	Composition by Weight	% Composition
dl Methamphetamine HCl	3.0 grams	1%
Ephedrine Sulfate	3.0 grams	1%
Lactose	147 grams	49%
Sodium Carbonate (Annhydrous)	147 grams	49%
	300 grams	100%

A homogeneous mixture was obtained by rotation of the components in a glass jar.

Individual samples (packaged in capsules) were not weighed. Each capsule contained a quantity of the mixture which was determined by volume approximation which may have resulted in net weight difference between samples.

Based on reports from several participating laboratories, it should be noted that samples may have entered laboratories in different conditions as a result of factors beyond the control of the manufacturer or Project Staff.

Table 2

Responses of the Referee Laboratories

	Laboratory A	Laboratory B
Net Weight of Powder in Capsule	0.84 grams	1.09 grams
Drug Found	1.9% d,l-Methamphetamine HCl*	0.5% d,l-Methamphetamine HCl*
	0.5% Ephedrine HCl*	0.9% l-Ephedrine Sulfate*
	* Calculated as the hydrochloride salt	
Excipients Found	Lactose Carbonate	Lactose Sodium Carbonate
Methods Used Qualitative	Gold Chloride (volatility test)	Gold Chloride (volatility test)
	Infrared Spectrophotometry	Infrared Spectrophotometry
	Mass Spectroscopy	X-ray Diffraction
Quantitative	Gas-liquid Chromatography	Ultra-Violet Spectrophotometry
		Liquid-Liquid Chromatography

Table 3

Summary of Responses to Question 1

Question 1: The enclosed substance was a street buy.

The agent needs all the qualitative and quantitative information you can provide.

A) Diluents:

Diluent found	Number of Laboratories Reporting this Response	% of Responding Labs (N=146)
Sugar only	14	9.5%
Carbonate only	23	15.8%
Sugar and Carbonate	46	31.5%
Total Labs Reporting Cutting Agents	83	56.8%

B) Controlled Substances:

Controlled Substance Found	Number of Labs Reporting this Response	% of Responding Labs
Methamphetamine only	31	21.2%
Ephedrine only	17	11.6%
None	7	4.8%
Other Amphetamines	4	2.7%
Methamphetamine and Ephedrine	87	59.6%
Total	146	100.0%

Table 4

Frequency of Reported Methods

Method	Number of Labs Reporting Use of this Method	Percentage of Labs Reporting Use of this Method
Chemical Tests	127	86.4
UV Spectroscopy	115	78.2
Gas Chromatography	103	70.1
Thin-layer Chromatography	96	65.3
Microcrystalline Tests	65	44.2
Infrared Analysis	61	41.5
GC/Mass Spectroscopy	33	22.4
Extraction	16	10.9
X-ray Diffraction	11	7.5
pH	9	6.1
Microscopic Examination	9	6.1
Fluorescent Studies	4	2.7
Emission Spectroscopy	3	2.0
Melting Point	2	1.4
Paper Chromatography	1	.7
Flame Test	1	.7
Derivitization	1	.7
Micro-diffusion	1	.7
Phenylisothiocyanate Derivatives	1	.7

Table 5

Summary of Laboratory Responses

	Diluents		Controlled Substances		Method Used								
Lab Code	Sugar	Carbonate	Meth.*	Eph.*	Chemical	Micro-Crystalline	TLC	GC	UV	IR	X-ray Diff.	GC/MS	Other
201			.4%	.6%	X	X	X						
202		X	.51%	.74%	X			X	X	X			Extraction
205	X	X		X	X	X		X	X	X			
207			X	X	X			X	X				
209			.5%	1.5%	X		X	X					
210	X	X	X	X	X	X				X			Extraction
211				X	X		X	X	X	X			
212		X	.76%	.84%	X	X		X				X	
214			1.0%	X	X	X	X	X					
215	X	X	X	X	X		X		X	X			
216		X	.5%	1.0%	X			X	X			X	
217			None Found		X	X	X		X		X		
218	X	X	.5%	1.0%	X	X	X		X				
219			1.4%		X		X	X	X	X			
224	X		1-3%		X	X	X		X				
225	X	X		3.0%	X		X	X	X	X	X		Extraction pH Microscopic
227				1.0%	X		X	X	X	X			Extraction
236	X	X		X	X			X					Extraction
237			X		X	X	X						
238		X	X	X	X	X	X		X				
239			X	X	X		X	X	X			X	
243	X		.84%	.72%	X			X	X	X			
246				X			X	X	X				
247		X	1.96%		X		X	X	X				
249		X	X	X	X			X		X			
250			None		X				X	X			
252				X	X		X	X	X	X			
253	X		X	X	X		X		X	X			
254	X	X	X	X			X	X		X		X	
256	X	X	X	X	X		X	X		X			pH
257		X	1.0%	X	X	X		X		X			Extraction
258			X										

* Meth. = Methamphetamine
Eph. = Ephedrine

Table 5 (continued)

	Diluents		Controlled Substances		Method Used								
Lab Code	Sugar	Carbonate	Meth.*	Eph.*	Chemical	Micro-Crystalline	TLC	GC	UV	IR	X-ray Diff.	GC/MS	Other
259	X	X	None										
260	X	X	X	X	X	X	X	X	X	X			Extraction Microscopic Melting Point
261	X	X	.05%	.5%	X			X		X			X-ray Fluorescence
262			X	X			X	X	X			X	
266				1%	X		X		X	X			
269			X		X								
271			X	X	X		X	X	X			X	
273		X	X	X	X	X		X	X			X	
274	X	X	5%	5%	X			X	X	X		X	
276	Incomplete Analysis												
277			X	X		X		X	X			X	
278		X	X		X		X	X	X	X			pH
279			X		X		X		X	X			
282	X	X	X	X	X	X	X		X	X	X		Extraction Emission Spect
285			1%	1.05%	X		X	X	X	X			
286			X	X	X		X		X	X			Extraction
291			2%		X	X			X				
295			.72%				X	X	X	X			
297			X	X	X	X	X		X				
298			.7%	.7%	X		X	X		X			
300			None		X		X	X	X	X			
307			X	X	X		X		X	X			
309	X		X	X	X	X	X	X		X			
312			X		X	X	X		X				
313			X	X	X	X	X	X	X			X	Extraction Fluorescence Derivitezation
314				X			X	X	X	X			
316			None		X	X	X		X	X			
317	X	X	X	X	X		X	X	X		X	X	Emission Spec. Microscope
319			X		X	X	X		X				
320			.6%	X	X	X		X	X				
322		X	X	X	X			X	X				
324			X	X	X		X	X	X			X	
325			X		X		X						

* Meth. = Methamphetamine
Eph. = Ephedrine

Table 5 (continued)

Lab Code	Diluents		Controlled Substances		Method Used								
	Sugar	Carbonate	Meth.*	Eph.*	Chemical	Micro-Crystalline	TLC	GC	UV	IR	X-ray Diff.	GC/MS	Other
326	X		X		X	X		X	X				
330			.5%	.5%	X		X	X	X				
333	98.39%		1.07%	.54%	X			X	X	X			
336	X			2.50%	X		X	X		X			
337	X	X	X	X	X				X	X		X	
338	X		X	X	X		X	X	X				
339	X	X	X	X	X	X	X	X	X	X			
340			X		X	X	X		X	X			
345	X	X	X	X	X		X	X	X				
347	X	X	X	Amphe-tamine	X	X	X	X	X	X			
349					X	X				X		X	
350		X	X	X	X			X	X	X			Distillation
353	X		X					X	X	X		X	
356	X	X	X		X	X	X	X					Polarized Microscopy
359				X			X		X				Extraction
363	X		X		X	X	X	X	X				
371	X	X		X	X		X		X	X			Partition Separation Gravimetric Determination
372	X	X	X	X	X	X	X	X	X	X	X		pH Extraction
373		X	X	X	X	X	X	X	X	X			pH Flame Test
375			None		X	X		X	X	X	X	X	Melting Point Isothiocyanate
376	X	X	X	X	X	X		X		X			
378			X	X	X		X	X	X			X	
379	X	X	X		X		X			X			
384		X	X	X	X			X	X	X			
385			.47%	.51%			X	X	X			X	Extractions
387	X	X	X	X	X	X	X	X	X	X	X	X	Emission Spec.
388	X	X	X		X			X	X				
390				Phenypro-panolamine	X			X		X			Fluorescent Spec.

* Meth. = Methamphetamine
Eph. = Ephedrine

Table 5 (continued)

	Diluents		Controlled Substances		Method Used								
Lab Code	Sugar	Carbonate	Meth.*	Eph.*	Chemical	Micro-Crystalline	TLC	GC	UV	IR	X-ray Diff.	GC/MS	Other
391	X		X	X	X	X	X		X	X			
392		X	X	X	X		X		X				
393	X	X	X	X	X		X	X	X	X			
394			X	X				X		X		X	
395		X	X				X	X	X	X			
397		X	X	X	X		X	X	X				
398	X	X	.80%	.35%	X		X	X	X	X	X	X	
400					X		X	X	X				
401	X	X	X		X	X	X		X				Microscopic
402	X	X		X	X	X	X	X	X	X			
403	X	X		X	X			X	X	X			Microscopic pH
404			1.5%		X		X	X	X	X			
406			X	X	X		X	X	X	X			
407				X			X	X	X	X			
408				X		X	X	X	X	X			
409		X	.8%	.7%	X			X	X				
417			.42%	X	X	X	X	X					
421			.4%	.7%	X	X		X	X				
422			X	X		X		X		X			
428		X	X		X	X	X		X				UV Fluorescence
429			X		X	X	X	X	X				Extraction Micro-diffusion
431	X	X	X	X	X	X	X	X	X			X	
432		X	X	X	X	X		X	X				
433		X	Amphetamine		X	X			X				
436	X	X	X	X	X	X		X	X			X	
437		X	X	X	X	X			X				
441	X	X	X		X	X	X		X				
443		X	None				X	X		X			
444			X	X	X	X	X	X		X			
445	X	X	Amphetamine		X	X			X				pH Microscopy
446			X	X	X		X	X	X				
449	X	X	1.1%		X		X	X	X	X			

* Meth. = Methamphetamine
Eph. = Ephedrine

Table 5 (continued)

	Diluents		Controlled Substances		Method Used								
Lab Code	Sugar	Carbonate	Meth.*	Eph.*	Chemical	Micro-Crystalline	TLC	GC	UV	IR	X-ray Diff.	GC/MS	Other
450			.7%		X		X	X	X	X		X	Extraction
452			X	X	X	X		X	X		X	X	
453			1.0%	1.2%	X			X	X	X		X	
455	X	X	X	X	X	X	X			X			
460	X		X		X		X	X	X				
462	X	X	X	X	X	X	X	X	X	X			pH Microscopic
465	X		2%	X	X	X		X	X			X	Paper Chromato-graphy
468	X	X	X	X	X		X		X	X			Extraction
469	X	X	X	X	X	X	X		X	X			
470				X	X				X	X			
471	X	X	X	X	X	X	X		X				pH
473	X		X	X			X	X	X			X	
474	X	X	X	X	X	X	X	X	X	X		X	
475			.33%	X	X	X		X					
476			X	X			X	X	X	X		X	
478	X	X	X	X	X	X		X	X			X	
479	X	X	X	X	X	X		X	X		X		
480	X	X	X	X	X	X	X	X	X	X			
481	X	X	X	X	X	X	X	X	X			X	
482		X	X	X	X		X	X	X	X			
489	X	X	X	X	X	X		X	X		X	X	
493			X		X		X	X	X	X			

* Meth. = Methamphetamine
Eph. = Ephedrine

END