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### Gas Chromatographic-mass Spectrometric Analysis Of Methaqualone, Phendimetrazine And Phenmetrazine

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**GAS CHROMATOGRAPHIC-MASS SPECTROMETRIC ANALYSIS  
OF METHAQUALONE, PHENDIMETRAZINE AND PHENMETRAZINE**

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Gas chromatographic - mass spectrometric techniques are gaining acceptance as a tool for drug identification. Standard techniques for the analysis of street drugs are still based upon infrared and ultraviolet spectra in conjunction with specific chemical test. These standard methods are adequate for the identification of a majority of confiscated drugs; but due to the increasing diversification of street drugs, these methods are becoming less conclusive.

The Louisiana State Police recently submitted to the Louisiana State Crime Laboratory two drugs which were unidentifiable by methods at the Labs disposal. The first drug of interest was unlike any known drug when analyzed by the standard tests. The second street sample had an ultraviolet spectra identical to phenmetrazine, but had different gas chromatographic characteristics. At the request of the Crime Lab, successful analysis was performed by gas chromatographic-mass spectrometric techniques.

EXPERIMENTAL

Phenmetrazine and phendimetrazine were obtained by chloroform extraction of a basic solution containing dissolved tablets of the drug. Interfering organics were removed by prior extraction from an acidic solution. Methaqualone was obtained by chloroform extraction from a mildly acidic solution.

All gas chromatographic-mass spectrometric analyses were performed on an Hitachi Perkin-Elmer RMS 4 Mass Spectrometer interfaced with a Perkin-Elmer 990 Gas Chromatograph, equipped with a stream splitter and a flame detector. Separation was accomplished with a 6 foot OV-1 column. Reference spectra were obtained under as similar as possible conditions using commercially obtained drugs.

CONCLUSIONS

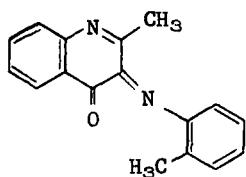
Analysis of the cracking pattern obtained for the first drug indicated that it might be 2-methyl-3-o-tolyl-4(3H)-quinazolinone, commonly referred to as methaqualone. A mass spectrum of known methaqualone was obtained using as similar as possible conditions. Comparison of the two spectra (Figure 1) confirmed identification of the drug as methaqualone. The second street drug of interest was similarly identified to be 3,4-dimethyl-2-phenylmorpholine, commonly known as phendimetrazine. Figure 2 contains the spectra obtained from the confiscated sample as well as the known phendimetrazine and phenmetrazine, 3-methyl-2-phenylmorpholine.

This work illustrates the utility of gas chromatographic-mass spectrometric techniques for drug identification. Mass

## GAS CHROMATOGRAPHIC-MASS SPECTROMETRIC ANALYSIS

FIGURE 1

## **Methaqualone**



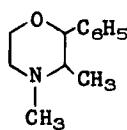
Fragment Ion	Relative Percentages of Ions	
	Unknown Drug	Known Methaqualone
39	11	6.6
50	12	8.1
51	8.2	5.6
63	6.9	5.3
65	23	17
75	4.2	3.8
76	19	17
89	8.2	8.4
90	10	9.5
91	50	47
92	4.8	4.9
102	4.7	4.8
103.5	3.8	4.8
104	3.6	4
104.5	4.9	6
116	4.6	5.1
117	6.2	6.6
132	13	15

FIGURE 1--(Continued)

Fragment Ion	Relative Percentages of Ions	
	Unknown Drug	Known Methaqualone
143	9.1	10
180	2.7	3
233	28	29
234	7.9	8.3
235	100	100
236	17	17
249	7.3	7.5
250	40	43
251	8.8	8.7

FIGURE 2

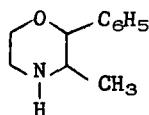
## Phendimetrazine



Fragment Ion	Relative Percentages of Ions	
	Unknown Drug	Known Phendimetrazine
42	43	69
56	17	18
57	100	100
58	5.6	5.2
70	12	9.2
77	6.2	4.2
85	88	52
86	5.7	3.3

GAS CHROMATOGRAPHIC-MASS SPECTROMETRIC ANALYSIS  
FIGURE 2--(Continued)

Known Phenmetrazine



Fragment Ion	Relative Percentages of Ions	
	Unknown Drug	Known Phendimetrazine
91	4.8	2.7
105	3.6	1.9
191	4.3	2.1
42		42
43		33
56		31
71		100
77		7.6
91		4.3
105		5.3
177		7.5

spectrometric techniques are an excellent complement to the standard ultraviolet and infrared methods, especially for the non-routine samples. It also shows the dangers inherent in depending upon the less specific forms of analysis. Incorrect identification of phenmetrazine and phendimetrazine could be dangerous due to the toxic nature of the latter.

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