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GAS CHROMATOGRAPHIC SEPARATION OF SOME ANTITUBERCULAR DRUGS

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SUMMARY

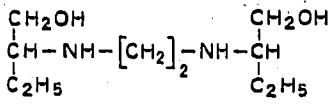
The working conditions for the application of gas chromatography to the separation of some antitubercular drugs in mixtures are described. In particular, ethambutol, iproniazid and isoniazid were studied.

Peaks with good shapes characterized by specific retention times were obtained for each component.

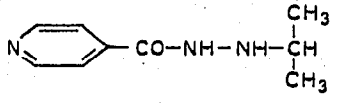
The gas chromatographic separation of several drugs and their determination in pharmaceutical preparations has already been reported from this laboratory[1].

We have now studied the application of this method to the determination of some antitubercular drugs in pharmaceutical preparations and in feeds and foodstuffs. Specifically isoniazid, iproniazid and ethambutol (Fig. 1) have been submitted to gas chromatographic analysis.

ETHAMBUTOL



IPRONIAZID



ISONIAZID

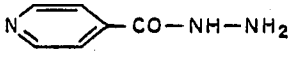


Fig. 1.

Ethambutol has been determined along with other antitubercular drugs in blood, plasma, and urine by colorimetric methods[2] and by microbiological methods[3]. The gas chromatographic behaviour of iproniazid, used earlier as an antitubercular

agent, but now more commonly as an inhibitor of monoamine oxidase, has been studied by CARDINI *et al.*[4]

Good separations were obtained using the following apparatus and operating conditions:

Perkin Elmer 801 gas chromatograph, with a differential ionization flame detector.

Glass columns, length 1.80 m and internal diameter 2 mm.

Stationary phase/concentration: QF1/6 %.

Support: Chromosorb G silanized, 80–100 mesh.

Glass injector.

Carrier gas flow rate: nitrogen, 50 ml/min.

Operating temperatures: column, programmed 120° to 250° at 8.33°/min; injector 250°; detector 250°.

Samples: 1 μl of a 1 % benzene solution of TMS ethambutol; 0.5 μl of a 1 % alcoholic solution of isoniazid and 1 μl of a 1 % ethereal solution of iproniazid were injected.

Peaks with good shapes characterized by specific retention times were obtained for each component. A chromatogram of the separation of the three drugs is shown in Fig. 2.

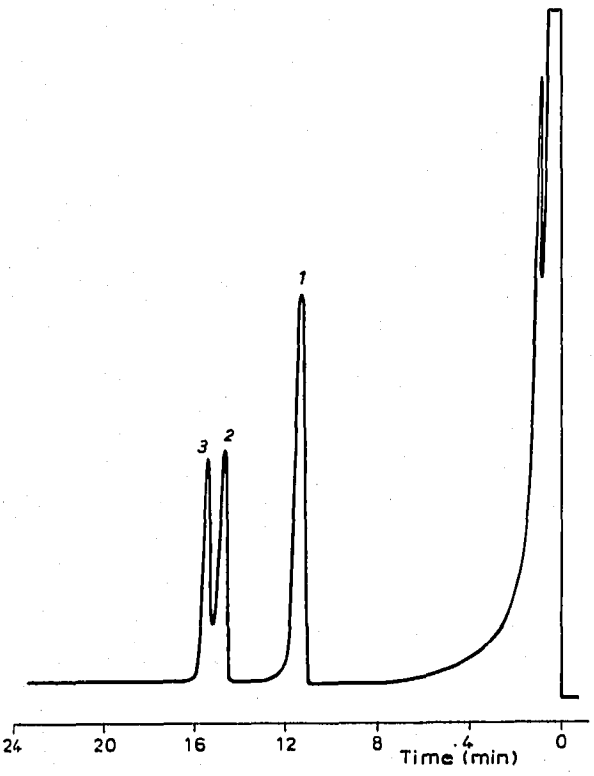


Fig. 2. Separation of (1) ethambutol, (2) isoniazid and (3) iproniazid.

These findings indicate that gas chromatography is an extremely sensitive technique suitable for the detection and determination of these drugs in biological fluids, thus making it possible to study their concentration and metabolic fate in the body. The method could also be useful in the analysis of pharmaceutical preparations

(although antitubercular drugs are seldom found in mixtures), and especially of feeds and foodstuffs containing small quantities of antitubercular drugs. This technique is being extended, both with respect to the compounds mentioned above and to other antitubercular agents.

REFERENCES

1 C. CARDINI, V. QUERCIA AND A. CALÒ, *Boll. Chim. Farm.*, 106 (1967) 215,452 and 459.
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3 D. THOMAS, Cyanamid-Lederle Division, personal communication.
4 C. CARDINI, V. QUERCIA AND A. CALÒ, *J. Chromatog.*, 37 (1968) 190.