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Identification of cannabis

The higher incidence of abuse of cannabis in recent years has necessitated identification of larger numbers of cannabis samples. This in turn has caused workers in the field (e.g. Turk, Dharir & Forney, 1969; de Faubert Maunder, 1969a, b, c) to search for more rapid tests with a view to reducing the time of analysis to the minimum that allows certainty of identification. We should like to describe a procedure for analysis that is advantageous in combining two independent techniques for the detection of three cannabis components and which offers positive identification in a reasonably short time (20 min). It consists of extraction of the suspected cannabis or cannabis resin sample with a stock solution of dibenzylphthalate in light petroleum, the extract then being analysed without further purification by gas chromatography and also by paper chromatography. Both chromatographic systems offer good resolution of the three cannabis components.

An extract is prepared by shaking the cannabis or cannabis resin vigorously for 1 min with sufficient stock solution of dibenzylphthalate (10 mg/ml) in light petroleum (40–60°) to produce a mixture containing approximately 20% w/v cannabis or 10% w/v of cannabis resin. The supernatant solution is used, without further purification, for chromatography.

In our experiments a Pye 104 Gas Chromatograph equipped with a flame ionization detector and a Kelvin Electronics servoscribe recorder has been used. The column is glass, 5 ft × 4 mm internal diameter, packed with 80–100 mesh acid-washed, siliconized Diatomite C which is coated with 1% cyclohexanedimethanol succinate (CDMS). A hydrogen pressure of 18 lb/inch^2, air 7 lb/inch^2, and a nitrogen flow rate of 50 ml/min is used throughout. The operating temperature is 220°. 1 μl of the extract is injected onto the column at an appropriate attenuation and the retention times of cannabidiol (CBD), Δ^1-3,4-*trans*-tetrahydrocannabinol (THC), and cannabinol (CBN) are calculated relative to dibenzylphthalate, (DBT) the internal standard. The total analysis time is approximately 15 min. Retention times of the cannabinols relative to dibenzylphthalate are: cannabidiol 0·26; THC 0·39; cannabinol 0·64.

For paper chromatography, Whatman SG81 paper (7 × 25 cm) is immersed in a 15% w/v solution of silver nitrate in distilled water, the excess solution is allowed to drain off, and the paper is then air dried. After applying spots of the extract of suspected cannabis or cannabis resin, and of Δ^1-3,4-*trans*-tetrahydrocannabinol, the paper is developed in chloroform using the ascending technique. Location of the cannabinols is by spraying successively with a 1% solution of Fast Blue Salt B in water and then 2N sodium hydroxide. Development time is 10 min for a 5 cm run. Rf values are: cannabidiol 0·3; THC 0·6; cannabinol 0·8.

A number of gas chromatographic systems for the analysis of cannabis samples have previously been reported, the most recent of which (Lerner, 1969) has described the use of OV.17 as the stationary phase and (±)-methadone hydrochloride as an

internal standard. This allows quantitation of cannabinols in samples should this be necessary. The method which we have described also allows quantitation of cannabinols but differs from that of Lerner in using an internal standard which has a longer retention time than that of any of the cannabis components. This, in our view, is advantageous in reducing the probability of one of the components of cannabis having the same retention time as the internal standard.

The use of silver nitrate impregnated media for separation of cannabinols has previously been reported by Caddy & Fish (1967), Hively, Mosher & Hoffman (1966) and by Turk & others (1969) and it is our experience that these systems offer satisfactory resolution of the cannabinols. However, the modification which we have described is ideally suited to routine analysis in that a large number of silver nitrate impregnated papers can be prepared in one batch and conveniently stored ready for use in an envelope. Papers may be stored thus, in the dark, for up to one month.

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