Direct microanalysis of LSD by gas chromatography

Gas chromatography was employed in this laboratory in searching for a sensitive and simple method for the detection of lysergic acid diethylamide (LSD). To our knowledge, only RADECKA AND NIGAN[1] have described a procedure to identify hydrogenated LSD by gas chromatography. However, this method was reported as unsatisfactory because of its low sensitivity and irreproducibility, and 50 μg failed to give a convincing detectable result.

This communication describes a sensitive qualitative and quantitative method for the direct analysis of submicrogram amounts of LSD by gas chromatography.

Experimental

Extraction. The drug was extracted with methanol from a sugar cube, filter paper, or bicarbonate capsula of LSD respectively. The extract was filtered, evaporated to dryness under vacuum, brought to a 0.2 ml volume with methanol, and injected directly into the gas chromatograph.

Gas chromatography. A Perkin Elmer 881 instrument equipped with a flame ionization detector was employed. The glass column (6 ft. × 1/8 in.) with a built-in glass injector port was packed with 0.3 % SE-30 on micro glass beads. Operating temperatures for the injector, column, and detector were 315, 280, and 285°, respectively. Two μl were injected with a helium flow of 70 ml/min and an attenuation × 10. The retention time for LSD was 4 min.

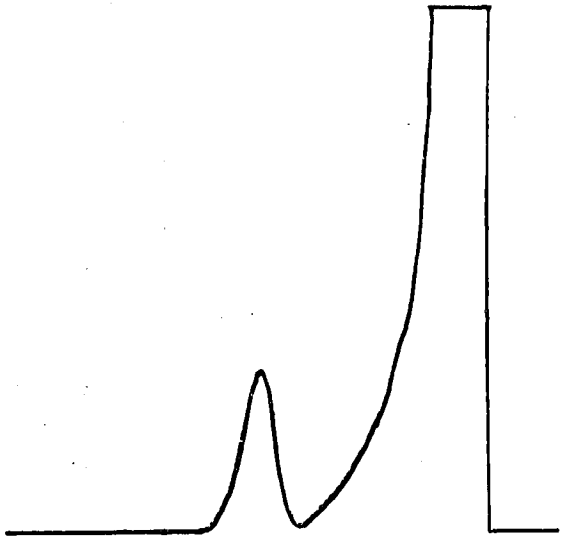

Fig. 1. A chromatogram of 0.8 μg of LSD with methanol as a solvent.

Results and discussion

The chromatogram shown in Fig. 1 demonstrates the nice and symmetrical LSD peak obtained, with down to base line separation from the methanol solvent. The detector response proved to be linear at low concentrations (Fig. 2), and 0.5 μg could be easily detected and quantified. There was no need for hydrogenation or derivation of LSD to obtain accurate and reproducible results.

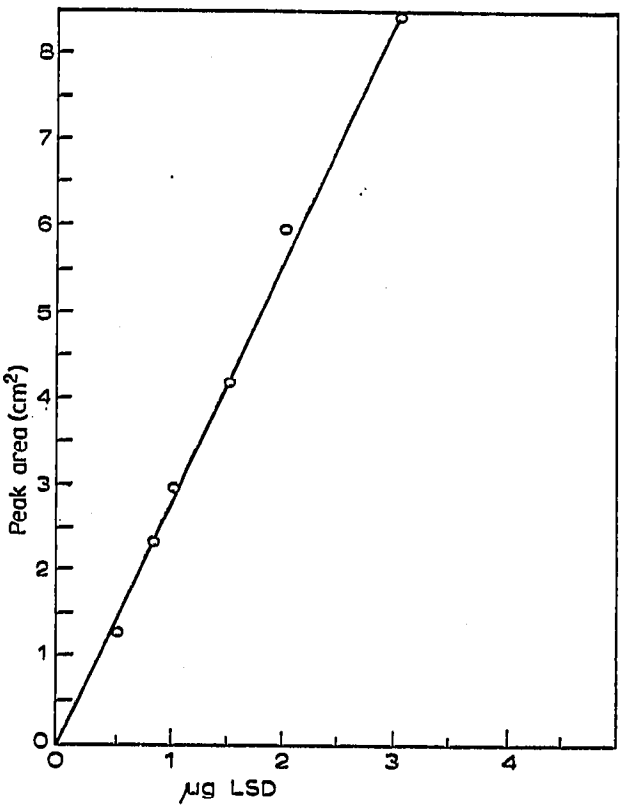

Fig. 2. A standard calibration curve of LSD.

The relative simplicity and speed in which the described method gives qualitative and quantitative results, makes it an important analytical tool for the detection of this psychomimetic drug.

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1 C. RADECKA AND I. C. NIGAN, *J. Pharm. Sci.*, 55 (1966) 861.

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