Gas Chromatographic Data for Some Antihistamines

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METHYL SILICONE POLYMER SE-30 (General Electric Co.) has been used effectively as the stationary phase in gas-liquid chromatography for the separation of alkaloids (3), sympathomimetic amines (2), barbiturates (1), and steroids (4). The separation applied to small samples uses a low liquid-to-solid packing ratio of the silicone polymer in a column operated at relatively low temperatures.

The gas-liquid chromatographic separation characteristics of 16 antihistamines have been determined using a 6-ft. column packed with 100–120-mesh Gas Chrom-P. A 1% loading factor of SE-30 was employed for the column operated at 173°.

EXPERIMENTAL

A Barber-Colman model 10 gas chromatograph equipped with an argon β-ray ionization detector and a 6-ft. packed glass column was used in this work. The column packing was prepared by the addition of a 1% benzene solution of SE-30 to a known amount of 100–120-mesh Gas Chrom-P contained in a round bottom flask. Benzene was removed under vacuum with a rotary evaporator The column was filled by the slow addition of dry packing with continuous vibration (5). The column was conditioned at a temperature of 200° for 24 hours. An argon flow of 20 ml. per minute was maintained throughout the conditioning period.

Samples of the antihistamines were prepared as 10% solutions of the free bases in chloroform. Chloroform solutions of 0.4 μl. were injected into the chromatograph with a Hamilton microliter syringe.

RESULTS

The retention times for the antihistamines studied in this investigation are presented in Table I. The data indicate that the column and operational parameters are suitable for the identification of most of the compounds listed.

The response curves obtained from the chromatograph showed sharp peaks with sharp leading edges. Tailing was a prevalent feature, becoming more pronounced with increasing retention time. Decomposition of some antihistamines was indicated by the occurrence of double peaks.

Work is in progress to overcome the tailing and decomposition problems. Other gas chromatographic procedures for antihistamines are also being investigated.

TABLE I.—GAS CHROMATOGRAPHIC DATA FOR ANTIHISTAMINES[a]

Compound[b]	*Retention Time, min.*
Antazoline (Antistine—Ciba Pharmaceutical Co.)	3.1
Carbinoxamine (Clistin—McNeil Laboratories, Inc.)	14.2
Chlorcyclizine (Perazil—Burroughs Wellcome and Co., Inc.)	20.0 22.9[c]
Chlorothen (Tagathen—Lederle Laboratories)	14.7
Chlorpheniramine (Chlortrimeton—Schering Research Corp.)	9.0 9.7[c]
Cyclizine (Marezine—Burroughs Wellcome and Co., Inc.)	1.9 8.9[c]
Diphenhydramine (Benadryl—Parke, Davis and Co.)	6.3
Doxylamine (Decadryn—The William S. Merrell Co.)	8.2
Meclizine (Bonine—Charles Pfizer and Co.)	no response
Methapyrilene (Irwin, Neisler and Co.)	8.2
Pheniramine (Dorsey Laboratories)	4.0
Promethazine (Phenergan—Wyeth Institute)	7.2 7.7[c]
Pyrilamine (Dorsey Laboratories)	25.9
Thenyldiamine (Thenfadil—Sterling-Winthrop Research Institute)	8.2
Thonzylamine (Neohetramine—Warner Lambert Research Institute)	20.9
Tripelennamine (Pyribenzamine—Ciba Pharmaceutical Co.)	7.0

[a] Column, 6 ft., 1% SE-30/100–120-mesh Gas Chrom-P; Column temp., 173°C.; detector temp., 228°C.; injection point temp., 256°C.; argon flow 60 ml./min. [b] Trade name and supplier of compound included. [c] Major peak.

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