be used to assist identification being so markedly associated with the structure of the drug.

It should be noted that the strong test given by other members of the series permits reduction (to 20 μg) in the amount used.

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Thin-layer chromatography of some phenothiazine derivatives

Thin-layer chromatography (TLC) is increasingly being used to identify pharmaceutical mixtures[1] and also to determine quantitatively their composition. This technique has been used successfully in the separation of many phenothiazine derivatives. The separation of hydroxy derivatives, chlorophenothiazine and bromopromazine has, nevertheless, remained a problem. Their separation with the aid of TLC is reported below.

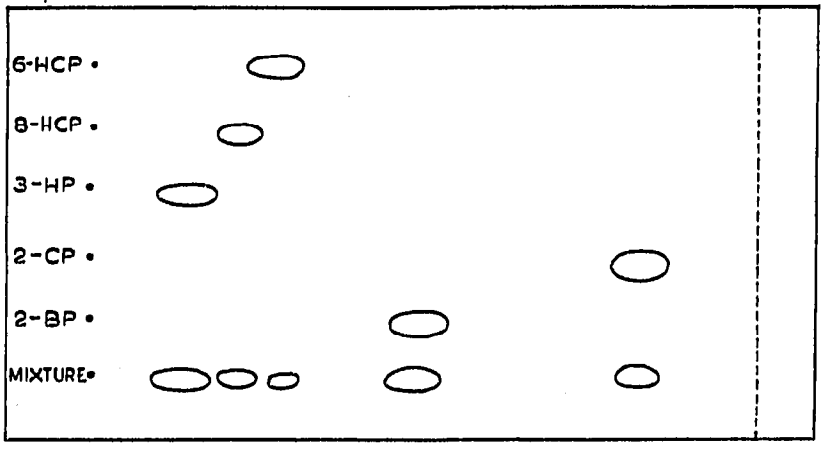

Fig. 1. Separation of 6-hydroxychloropromazine (6-HCP), 8-hydroxychloropromazine (8-HCP), 3-hydroxypromazine (3-HP), 2-chlorophenothiazine (2-CP) and 2-bromopromazine (2-BP).

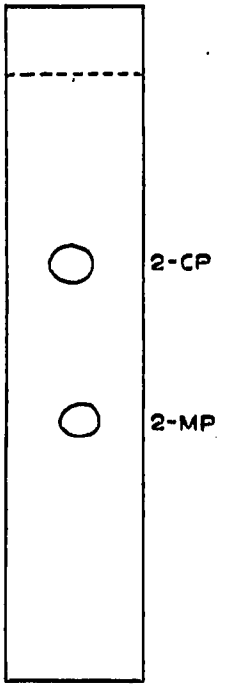

Fig. 2. Separation of 2-chlorophenothiazine (2-CP) and 2-methoxyphenothiazine (2-MP).

TABLE I

R_F AND COLOUR OF THE SPOTS WITH DRAGENDORFF'S REAGENT OF SOME PHENOTHIAZINE DERIVATIVES

Solvent systems: $CHCl_3$–C_2H_5OH (70:30) for compounds 1–5, benzene for compounds 6 and 7.

No.	*Name of chemical*	$R_F \times 100$	*Colour of spot*
1	6-Hydroxychloropromazine	27	Orange
2	8-Hydroxychloropromazine	23	Orange
3	3-Hydroxypromazine	17	Orange change to brick red
4	2-Chlorophenothiazine	73	Green
5	2-Bromopromazine	46	Orange
6	2-Methoxyphenothiazine	38	Violet
7	2-Chlorophenothiazine	66	Green

A mixture in $CHCl_3$ of 6-hydroxychloropromazine, 8-hydroxychloropromazine, 3-hydroxypromazine, 2-chlorophenothiazine and 2-bromopromazine was separated on a glass plate (15 cm × 10 cm) coated with silica gel G, thickness 250 μ (activated at 110° for half an hour). The resolution of the mixture was best afforded by a solvent system chloroform–ethanol (70:30) (Fig. 1). 2-Methoxyphenothiazine could not be separated from the mixture of the above-mentioned compounds with chloroform–ethanol (70:30) because of its very close proximity with the R_F value of 2-chlorophenothiazine. However, 2-methoxyphenothiazine and 2-chlorophenothiazine can be separated on silica gel G with benzene (Fig. 2). The R_F values and the colour of the spots with Dragendorff's reagent are given in Table I.

During the TLC study of these phenothiazine derivatives it was observed that hydroxy derivatives of phenothiazine are highly absorbed on silica gel, their migration being very small with nonpolar solvents as compared with the halo derivatives and 2-methoxyphenothiazine. R_F values in C_6H_6 and $CHCl_3$, respectively, are: 2-methoxyphenothiazine, 0.43, 0.59; 2-chlorophenothiazine, 0.63, 0.68; 2-bromopromazine 0, 0.023. Hydroxy derivatives did not move from the starting line.

The limit of detection of the Dragendorff reagent on a TLC plate is 0.2 μg for chloropromazine.

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