



7. COLUMN STUDIES OF QUINIDINE AND CINCHONINE  
WITH CARBOXYLIC ACID CATION EXCHANGE RESIN.

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7. COLUMN STUDIES OF QUINIDINE AND CINCHONINE  
WITH CARBOXYLIC ACID CATION EXCHANGE RESIN : (1,2)

Runs were carried out with quinidine and cinchonine in a column of carboxylic acid cation exchange resin Amberlite IRC-50 (Rohm and Haas Co.) of relative degree of crosslinking as 2.5 (further referred to as resin IRC-50). Resin IRC-50 was taken in a beaker, made into a slurry with 50 % aqueous ethyl alcohol (by volume), transferred into a pyrex glass column with a zero porosity sintered glass disc fused near the bottom, backwashed, allowed to settle under gravity and regenerated with excess of N hydrochloric acid in 50 % aqueous ethyl alcohol. The resin was washed free of acid with 50 % ethyl alcohol, filtered and airdried. Moisture content was determined by heating weighed samples ( $\sim$  0.5 gm.) of airdry resin in clean, dry bottles, in an oven (100-103 C) to constant weight.

For the estimation of the capacity of the resin, weighed samples ( $\sim$  0.5 gm.) of airdry resin were contacted with N/10 sodium hydroxide solution (100 cc.) in well stoppered flasks with frequent shaking. After two to three days, aliquots were titrated with standard hydrochloric acid and then the airdry capacity was calculated. Preliminary work had indicated that increase in contact time did not increase the value of the capacity calculated. The moisture content and the airdry capacity of the resin were 20.4 % and 8.30 meq./gm ; with this resin a column was set up. The column data were : bed length = 65 cms.; bed volume = 174.5 cc.; the capacity of the resin in the column = 415 meq.

Run one :

Quinidine solution (100 cc.) of concentration 1 meq./liter in 50 % aqueous ethyl alcohol was passed in the column in 96 hours. The column was then washed with 50 % aqueous ethyl alcohol (100 cc.) and eluted with N ammonical alcohol at the rate of 50 cc. per hour. The effluent was collected in 15 cc. samples and the optical density for ultraviolet absorption of each sample was measured at 296.5 mμ (Table 7.1 and Figure 7.1).

Run two :

This was the repetition of run one except that cinchonine was used instead of quinidine. The optical density for ultraviolet absorption of each sample, in this case, was measured at 294.5 mμ (Table 7.1 and Figure 7.1).

The runs indicate that the elution behavior of cinchonine is not significantly different from that of quinidine and that the two elution curves almost overlap.

Figure 7.1.

Elution of (A) quinine (B) cinchonine from  
a column of resin IRC-50.

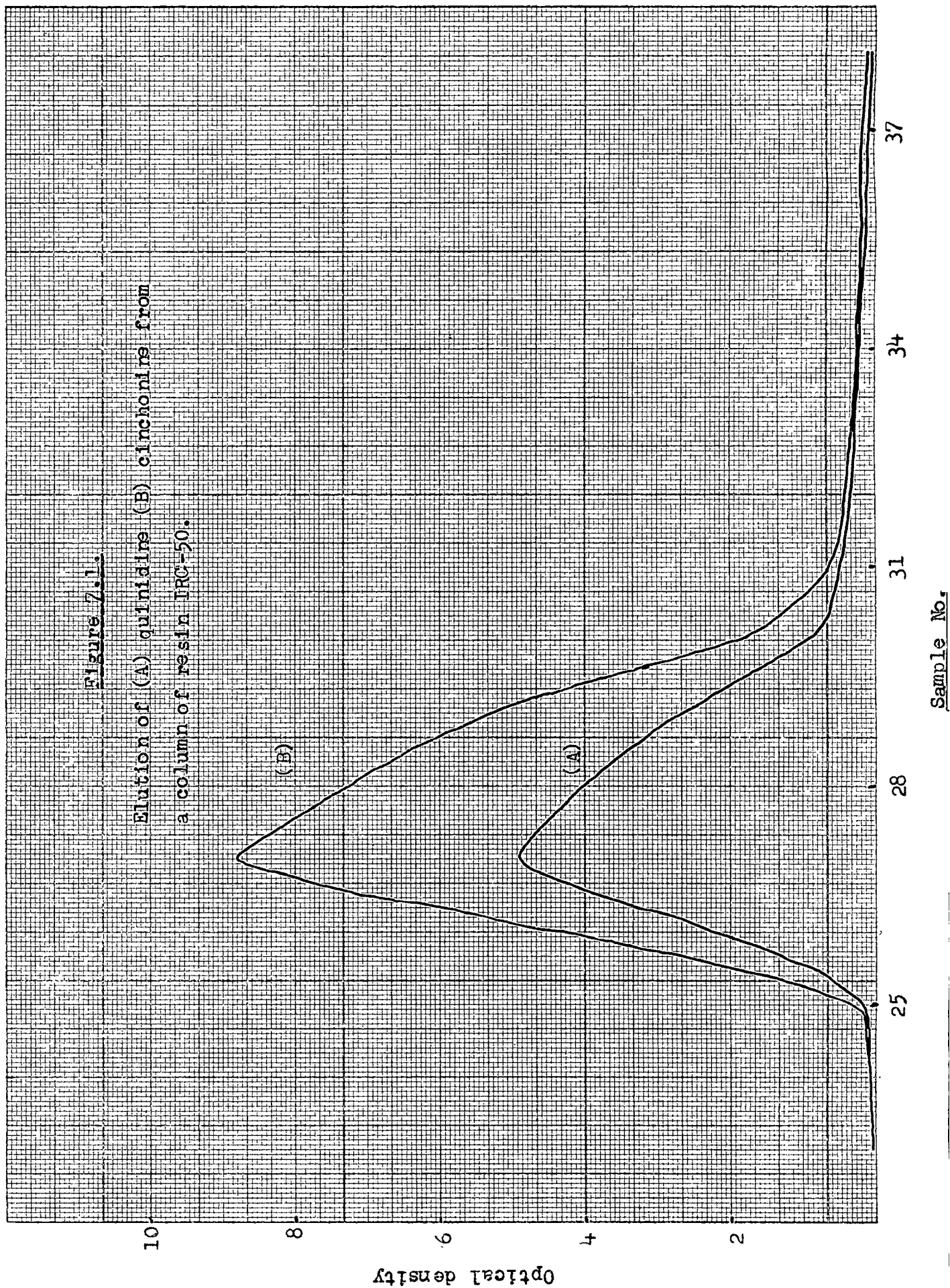


Table 7.1

Elution of quinidine and cinchonine from a column  
of resin IRC-50 (  $\bar{X}$  = 2.5) in hydrogen form.

Sample No.	<u>Optical density of the effluent sample for</u>	
	run one (quinidine)	run two (cinchonine)
1 - 23	0.00	0.00
24	0.04	0.07
25	0.14	0.15
26	2.10	4.18
27	4.90	8.80
28	4.00	7.30
29	2.90	5.30
30	0.90	1.55
31	0.51	0.68
32	0.35	0.40
33	0.30	0.31
34	0.26	0.27
35	0.22	0.23
36	0.16	0.21
37	0.08	0.18
38	0.03	0.10

References :

1. Saunders, L. and Srivastava, R., J.Chem.Soc., 2915(1950).
2. Saunders, L. and Srivastava, R.S., J.Chem.Soc.,  
2111 (1952).