

## LETTER TO THE EDITOR

### The Paper Chromatographic Separation of Hyoscyamine and Norhyoscyamine

SIR,—Numerous combinations of paper and developing solvent have been proposed for the separation of tropane alkaloids by paper chromatography<sup>1,2</sup>, but no system has been described so far for the separation of hyoscyamine and norhyoscyamine, which occur together in *Duboisia myoporoides*<sup>3</sup>, *Duboisia leichhardtii*<sup>4,5</sup>, and certain other species<sup>6</sup>. It has now been found that these alkaloids may be separated on Whatman's No. 1 paper which has been treated with an aqueous solution of oxalic acid and blotted between sheets of filter paper. Suitable developing solvents are water-saturated *n*-butanol and *iso*-butanol; the alkaloids are run as salts. After development the chromatograms are dried at room temperature for not less than four hours and the spots revealed by immersion in an aqueous tartaric acid solution of potassium iodobismuthate<sup>7</sup>, or by spraying with solution of potassium iodoplatinate<sup>8</sup>.

The best results were obtained with paper impregnated with M/40 oxalic acid solution. Representative  $R_f$  values by the descending technique for a number of tropane alkaloids are as follows.

	<i>n</i> -Butanol	<i>iso</i> Butanol
Oscine .. ..	0.11	0.10
Hyoscyne.. ..	0.48	0.39
Meteloidine .. ..	0.57	0.52
Hyoscyamine .. ..	0.63	0.60
Valeroidine .. ..	0.69	0.68
Norhyoscyamine .. ..	0.70	0.69
Tigloidine .. ..	0.78	0.75
<i>apo</i> -Atropine .. ..	0.86	0.83

By this means it is possible to detect the presence of 5 per cent of norhyoscyamine in hyoscyamine.

The above combinations of paper and developing solvent also afford a separation of meteloidine from other alkaloids, a separation which has not been reported previously.

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Dartford, Kent.  
November 7, 1958.

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