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Note

Benzoyl peroxide as a spray reagent for carbazole alkaloids

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There is considerable interest in the chemistry of carbazole alkaloids¹, and thin-layer chromatography has been found to be suitable for their separation and identification. Carbazoles could be detected on the developed chromatogram by their fluorescence or quenching under UV light as well as from the colours developed by spraying with picric acid, DDQ or HCl^{2,3}. However, DDQ has been reported to be toxic³, and acids are not very convenient to use.

We have found that benzoyl peroxide is an effective spray reagent for the detection of carbazoles and has lower detection limits than previously used reagents as found by direct comparison.

Thin-layer glass plates (20 × 10 cm) were prepared using silica gel G as the adsorbent and the chromatograms were developed with benzene-chloroform (1:1) in

TABLE I
COLOURS DEVELOPED AFTER SPRAYING WITH BENZOYL PEROXIDE AND R_F VALUES

Compound	Source	R_F	Colour developed
Carbazole	Fluka (Buchs, Switzerland)	0.9	Yellow
Murrayanine	<i>Murraya Koenigii</i> Spreng.	0.35	Yellow
3-Methylcarbazole	<i>Clausena heptaphylla</i> Wt. & Arn.	0.8	Yellow
Mukonal	<i>Murraya koenigii</i> Spreng.	0.31	Yellow
Mukonine	<i>Murraya koenigii</i> Spreng.	0.36	Yellow
Glycozoline	<i>Glycosmis pentaphylla</i> (Retz)	0.69	Yellowish green
Glycozolidine	<i>Glycosmis pentaphylla</i> (Retz) DC	0.51	Yellowish green
Koenimbine	<i>Clausena heptaphylla</i> Wt. & Arn.	0.65	Violet
Koenidine	<i>Clausena heptaphylla</i> Wt. & Arn.	0.25	Violet
Murrayacine	<i>Murraya koenigii</i> Spreng.	0.35	Violet
Heptazolidine	<i>Clausena heptaphylla</i> Wt. & Arn.	0.74	Violet
Girinimbine	<i>Murraya koenigii</i> Spreng.	0.76	Violet
Murrayacinine	<i>Murraya koenigii</i> Spreng.	0.35	Yellow
Mahanimbine	<i>Murraya koenigii</i> Spreng.	0.93	Yellow
Murryazoline	<i>Murraya koenigii</i> Spreng.	0.95	Yellow

the usual way. After development the chromatograms were dried and sprayed with a 2% solution of benzoyl peroxide in chloroform, and colours formed immediately. The colours and R_F values for various compounds are given in Table I. Carbazoles can be detected at levels down to 0.05 μg with this reagent, whereas the minimum concentration varies from 10 μg to 0.1 μg in the case of previously used reagents.

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