5%), 250 (52%), 217 (100%), 190 (34%) and 104 (20%).

p-[(2,4-Dioxo-5-thiazolidinyl)azo]benzene sulphonamide 2-azine containing 11*H*-indeno[1,2-b]quinoxalin-11-one (IVa):

Sulphanilamide (0.025 mol) dissolved in aqueous acetic acid (8%, 25 ml) was diazotised with $NaNO_2$ (0.25 g in 30 ml) in an ice bath. The resulting diazosolution was added gradually with stirring to a previously cooled thiazolidine dione (0.025 mol) in aqueous NaOH (2%, 25 ml), kept in an ice bath. After the addition, the mixture was stirred mechanically for 1 hr during which the azo compound separated out. It was filtered and crystallised from acetone, m.p. 270°C, yield 60%. (Found: C, 53.98; H, 2.98; N, 21.20; $C_{24}H_{16}N_8O_3S_2$ requires C, 54.55; H, 3.03; N, 21.21%); IR: 3410 (–NH–), 1700 (amide C=O), 1460 (–N=N–), 1380 (ν_{sy} SO_2); PMR (δ, DMSO-d_6); 7.50–8.00 (12H, m, aromatic), 8.40 (s, 1H, –CONH–), and 9.00 (s, 2H, SO_2NH_2).

The characterization data of azoderivatives (IVa-f) are listed in table 1. All the compounds synthesised were screened for their antifungal activity against *Curvularia lunata* and *Dreschlera halodes* by following glass slide humid chamber method[10]. Compounds III and IVc were effective against both the fungi at a dose level of 120 μg/ml and 360 μg/ml. Compounds IVa and IVb have no fungicidal activity, while the remaining compounds were intermediate in their activity.

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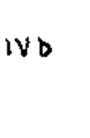
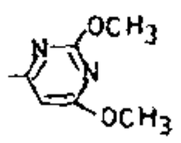
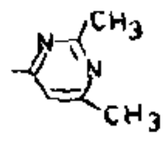
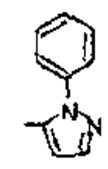
Table 1 *Characterization Data of IV*

Compound*	R	m.p. (°C)	Yield %	Mol formula (Cryst from)
IVb		238	70	$C_{25}H_{18}N_{10}O_3S_2$ (methanol)
IVc		230	62	$C_{28}H_{18}N_{10}O_3S_2$ (Aq DMF)
IVd		280	78	$C_{30}H_{22}N_{10}O_3S_2$ (AcOH)
IVe		260	72	$C_{30}H_{22}N_{10}O_3S_2$ (AcOH)
IVf		>320	66	$C_{33}H_{22}N_{10}O_3S_2$ (Aq alcohol)

* All the compounds gave satisfactory analysis for C,H & N.

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A SIMPLE COLORIMETRIC METHOD FOR DETERMINATION OF CARBOFURAN AND BENDIOCARB IN FORMULATIONS

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CARBOFURAN (Furadan, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methyl carbamate) and bendiocarb (1,3-benzodioxaol-4ol, 2,2-dimethyl-methyl carbamate) are extensively used as insecticides and the former is highly toxic to mammals[1]. Carbofuran is also used as a nematocide. The residues of these insecticides cause air and water pollution. Hence there is a demand for simple and rapid analytical procedure for the detection and determination of levels of residues in air and water environments. Colorimetric procedures for the determination of carbofuran in water have been reported[2–5]. In these methods carbofuran had been hydrolysed under alkaline conditions and the resulting

phenol was made to react with nitric acid, vanillin, aniline and sulphanilic acid respectively to get coloured compounds. We report here a new colorimetric procedure for the determination of carbofuran and bendiocarb using *p*-nitroaniline as a coupling reagent in place of sulphanilic acid.

Reagents

(a) (i) Carbofuran and bendiocarb: Analytical and technical grade samples, supplied by Rallis India Ltd., Bangalore, were employed.
(ii) Standard carbofuran and bendiocarb solution: 100 μg/ml each in methanol
(b) Sodium nitrate, 0.3% (w/v) aqueous
(c) Sodium hydroxide, 2% (w/v) aqueous
(d) *p*-Nitroaniline solution, 0.2% (w/v) freshly prepared in 1 N HCl.

Procedure

Aliquots of carbofuran solution (0, 1, 2, 3, 4, 5, 6, 7 and 8 ml) were introduced in 50 ml standard flasks. To each one of these 10 ml of sodium hydroxide, 5 ml of sodium nitrite and 5 ml of *p*-nitroaniline were added. The solutions were made up to the mark with distilled methanol. The red-coloured compound had a maximum absorption at 520 nm and remained stable for nearly 24 hr. Absorbance values were recorded using an Elico spectrocolorimeter. The plot between concentration *vs* absorbance was linear over the composition studied.

Carbofuran in technical grade samples was determined with the aid of caliberation plot using the aforesaid procedure. Bendiocarb was also determined by employing this method. The red-coloured compound formed here had a maximum absorption at 520 nm and remained stable for about 6 hr.

The data relating to the analysis of technical grade samples of carbofuran and bendiocarb are presented in tables 1 and 2. The results point out that the carbamates can be determined with a relative error of 1%. The minimum amount determined by this method is 2 ppm. The results suggest that the method can be extended for the analysis of the pesticides in field water samples.

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Table 1 *Analysis of 75% technical grade sample of carbofuran*

Sample	Conc. of the sample in ppm	Carbofuran found (in ppm)	Carbofuran %
1	2.3	2.3	75.0
2	4.6	4.7	74.5
3	6.9	7.0	75.0
4	9.2	9.3	75.3
5	11.5	11.7	74.8
		Av. 74.9	
		Std. dev. 0.3	

Table 2 *Analysis of 96% technical grade sample of bendiocarb*

Sample	Conc. of the sample in ppm	Bendiocarb found (in ppm)	Bendiocarb %
1	2.9	2.9	95.3
2	5.8	5.8	96.0
3	8.7	8.7	95.8
4	11.6	11.6	96.0
5	14.5	14.5	95.3
			Av. 95.7
			Std. dev. 0.4

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MECHANISM OF THE INHIBITION OF THE BINDING OF DEOXYADENYLIC ACID TO DEOXYADENYLATE ANTIBODIES BY PYRIDINE

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PURIFICATION of proteins by affinity chromatography[1] utilizes their interaction with specific ligands. The methods generally used for the dissociation of the