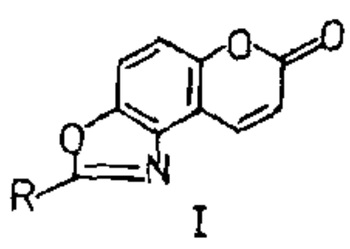
Table 1 *Structures and m.ps. of Pyranobenzoxazoles*

Compd.	R	M.P. (°C)		Compd.	R	M.P. (°C)	
Ia	Phenyl	237	a*	IIIc	1-Naphthyl	235	a
Ib	*p*-Chlorophenyl	274–75	a	IIId	Methyl	163–64	b
Ic	*m*-Toluyl	220–21	a	IVa	Phenyl	238–40	b
Id	Methyl	182	b	IVb	*p*-Chlorophenyl	> 300	b
IIa	Phenyl	230–31	a	IVc	1-Naphthyl	298–300	b
IIb	*p*-Toluyl	267–68	a	IVd	Methyl	253–54	b
IIc	3-Pyridyl	269–70	a	Va	*o*-Chlorophenyl	226–27	b
IId	Methyl	205	a	Vb	*p*-Chlorophenyl	249–50	b
IIIa	Phenyl	235–36	a	Vc	Benzyl	198–200	b
IIIb	*o*-Chlorophenyl	225–26	a	Vd	*p*-Toluyl	260	b

*Crystallised from: a = benzene, b = ethyl acetate.



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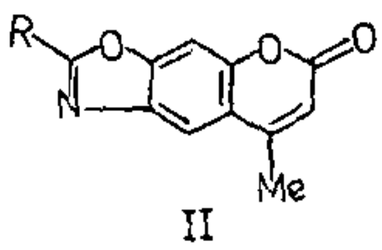

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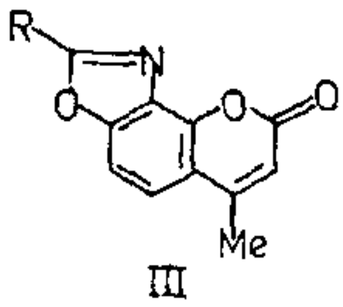

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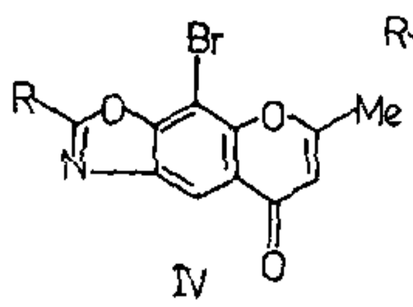

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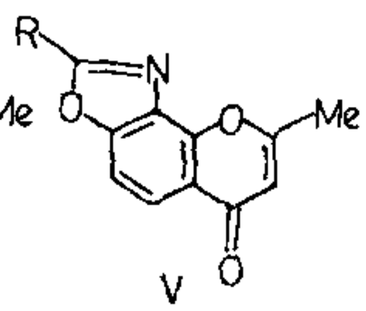

V

tested for antibacterial activity using Staphyllococcus aurus, *E. coli* and Pseudomonas aerogenosa as representative species employing the tube dilution method. However, none of the compounds exhibited any appreciable antibacterial activity.

Melting points are uncorrected. All the compounds gave satisfactory elemental analysis.

Thanks are due to CIBA-GEIGY Research Centre, Bombay, for microanalysis and to HICO Products Limited, Bombay for the spectra recorded.

28 June 1983

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ISOLATION AND ANTIALLERGIC ACTIVITY OF-γ-PYRONES FROM THE FLOWERS OF *CASSIA SPECTABLIS*

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CASSIA spectablis is a tall, well-branched, shaded and ornamental plant with beautiful golden yellow flowers. From the leaves of this plant a few piperidine-3-ol alkaloids were isolated[1–5]. From the aerial parts of the plant piperidine alkaloids, β-sitosterol, stigmasterol and an anthraquinone were isolated[5]. We report here the isolation of two γ-pyrones from the flowers of this plant; the anti-allergic activity of these γ-pyrones are also reported.

The ethanol extract of the freshly collected flowers yielded two γ-pyrones—compound-A and B. Compound A, mp 265° (dec), is analysed for $C_7H_4O_6$, M^+; 184. The compound is acidic and dibasic in nature by volumetric titration against standard barium hydroxide solution. The IR spectrum recorded in KBr revealed ν_{max} (C=O) 1670 cm^{-1} (carboxylic acid carbonyl) and another at 1645 cm^{-1} (γ-pyrone carbonyl)[6]. The UV absorption λ_{max}^{MeOH} 265 nm (log ε 4) is characteristic of γ-pyrones[7]. The NMR of compound-A recoded in D_2O revealed only one sharp signal at δ 7. In the mass spectrum of compound-A prominent ions due to M-CO, M-OH-CO, M-CO-OH-CO and retro Diels-Alder fragments m/e 114 (60%) and m/e 70 (10%) were observed. The mass spectral fragmentation pattern is similar to that of γ-pyrones[8]. Alkaline hydrogen peroxide oxidation of compound-A yielded oxalic acid. Compound-A on esterification with methanol in the presence of few drops of concentrated

sulphuric acid gave a dimethyl ester, mp 114°, $C_9H_8O_6$, M^+ 212. Compound-A and its dimethyl ester were identical in all respects (mp, mmp, superimposable IR) with the authentic samples of chelidonic acid (I)[15] and its dimethyl ester (II) respectively. These samples were prepared by the procedure reported in literature[9]. The compound-B, mp 114°, $C_9H_8O_6$, M^+ 212, UV λ_{max}^{MeOH} 224 nm (log ε 4.12) 271 nm (log ε 3.98) is identical in all respects (mp, mmp, superimposable IR) with dimethyl ester of chelidonic acid (II).

Thus from the flowers of *C. spectablis* chelidonic acid (compound-A, 0.49% yield) and dimethyl chilidonate (compound-B, 0.13% yield) were isolated. This is the first report of dimethyl chelidonate as a natural product as well as the observation that chelidonic acid[10] and dimethyl chelidonate are found in the genus *Cassia*.

Since chromones in general are reported to have anti-allergic activity[11], the activity of chelidonic acid (I) and dimethyl chelidonate (II) were now assessed by passive peritonial anaphylaxis method[12] on male rats. It is interesting that chelidonic acid exhibits remarkable anti-allergic activity comparable to that of disodium cromoglycate (DSCG)[13,14], a sodium salt of a chromone carboxylic acid derivative available in the market for the treatment of asthma of allergic origin. The results are given in table 1.

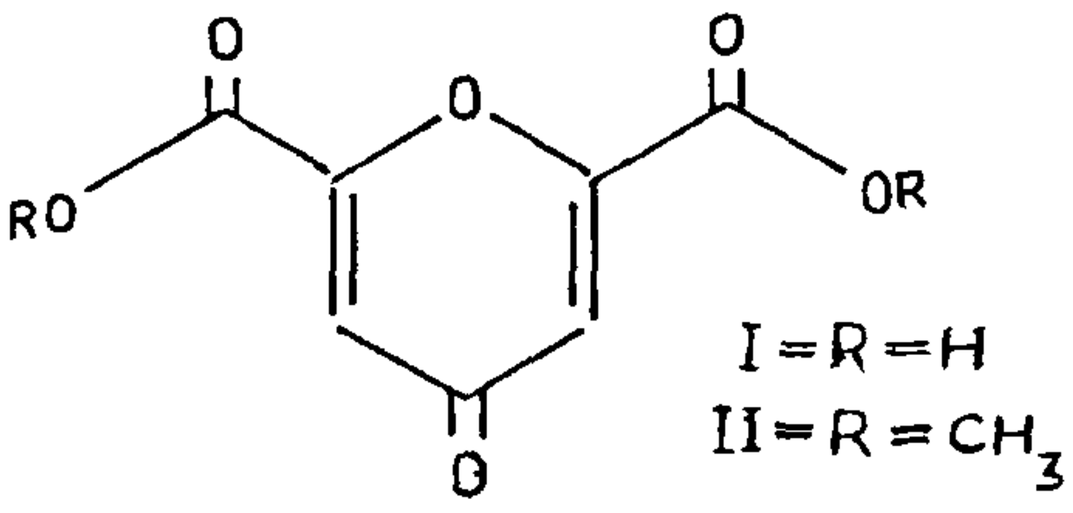

Table 1

Compound	Dose (mg/kg)	% inhibition of histamine released
Disodium cromoglycate	10	89
Chelidonic acid (compound-A)	10	80
Dimethyl chelidonate (compound-B)	10	58

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