storage of prawns at 4 and −18°C agree with that of ice stored shrimps[6,11,13,14]. Dominance and predominance of *Vibrio* sp at a few instances at reduced temperature were similar to the observations made with ice-stored paraben-treated sardines (*Sardinella longiceps*) where *Vibrio* sp dominated among the late spoilers.[7]

Spoilage of fish and prawn commences immediately after rigormorties, progresses rapidly at higher temperatures and perishes within a short period before the harvested commodity goes to the fish processors. The dominant flora at the time of catch have ample chance to invade the flesh, progress rapidly and form a part of dominant flora or fully command spoilage. Reports on ice-stored and frozen prawn and fish, confirm *Pseudomonas* and *Achromobacter* as kings of spoilers. But the present study strongly suggests the possible association of *Vibrio* as spoilage flora of fresh tropical white prawns.

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SYNTHESIS AND PHYSIOLOGICAL ACTIVITY OF SOME NEW PYRANO-BENZOXAZOLES

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PYRANOBENZOXAZOLES have been reported to possess antibacterial activity[1,2]. It was therefore considered interesting to synthesise some new pyranobenzoxazoles from hydroxyaminocoumarins and hydroxyaminochromones.

The starting materials were 5-amino-6-hydroxy-, 6-amino-7-hydroxy-4-methyl-, 8-amino-7-hydroxy-4-methyl- coumarins and 6-amino-7-hydroxy-8-bromo-2-methyl-, and 8-amino-7-hydroxy-2-methyl-chromones. These were prepared by hydrogenation of the known nitro compounds[3–6] in the presence of palladium/charcoal catalyst.

Refluxing the amino hydroxy compounds with acetic anhydride for 1 hr and then decomposing over crushed ice, directly afforded the pyrano-2-methylbenzoxazole derivatives as crystalline solids in 80–85% yield.

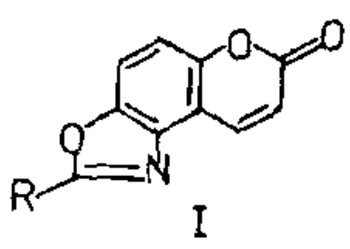
Similarly, when equimolecular quantities of the amino-hydroxy compounds and aromatic or heterocyclic acids were heated with PPA at 150–60° for 1.5 hr and later at 200–205° for a further period of 3 hr the corresponding 2-substituted oxazoles were isolated as crystalline solids in 60–70% yields.

The pyranobenzoxazoles are listed in table 1. A typical pyranobenzoxazole (IIIa) showed λ_{max}^{MeOH} (log ε): 225 (4.57) and 275 (4.11) nm. Its IR (nujol) spectrum showed bands at 1710 (> C=O), 1570, 1350, 1050 (characteristic of oxazole ring system) cm^{-1}. Its NMR spectrum (TFA) showed δ 2.76 (3H, s, $-CH_3$); 6.8 (1H, s, C_7-H); 7.8–8.7 (7H, m, C_4H, C_5H and $C_{2'-6'}H$). The benzoxazole (V–d) showed λ_{max}^{MeOH} (log ε): 224 (4.62) and 273 (4.13) nm. Its IR (nujol) spectrum showed bands at 1655 cm^{-1} (> C=O), 1570 cm^{-1}, 1350 cm^{-1}, 1050 (characteristic of oxazole ring system) cm^{-1}. Its NMR spectrum ($CDCl_3$) showed δ 2.5 (3H, s, $-CH_3$); 2.75 (3H, s, $-CH_3$); 6.15 (1H, s, C_2H); 7.1–8.03 (6H, m, ArH). All the above compounds were

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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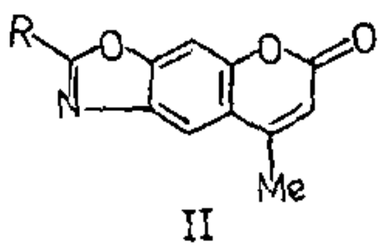

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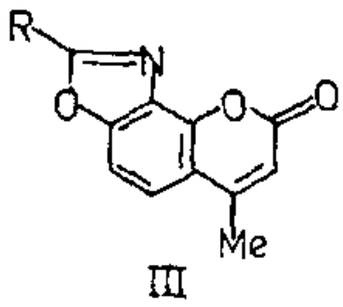

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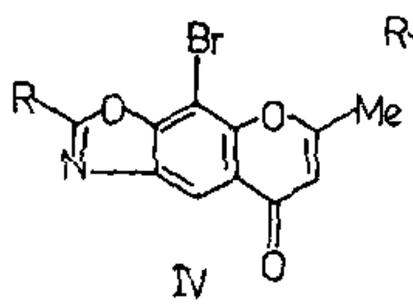

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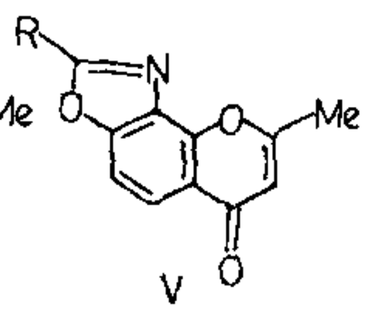

V

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.

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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