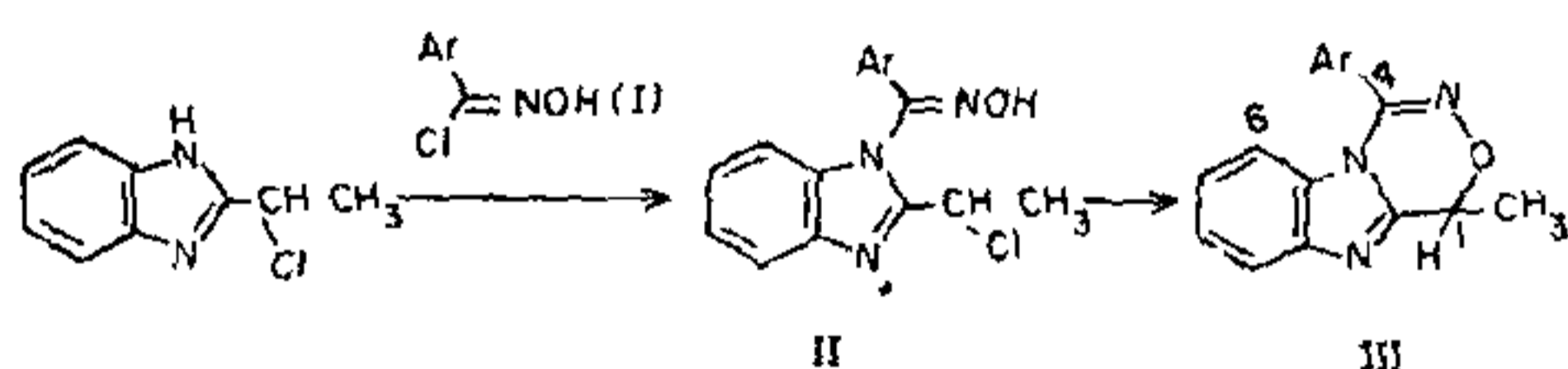


TABLE I
2-[1'-Chloroethyl]-1-[(hydroximino) arylmethyl]-1H-benzimidazoles(II) and 1-methyl-4-aryl-1H-[1,2,4]-oxadiazino [4,5-a] benzimidazoles(III)

II ⁱ	M.P. ⁱⁱ (° C)	Yield (%)	Molecular ⁱⁱⁱ formula	III ⁱ	M.P. ⁱⁱ (° C)	Yield (%)	Molecular ⁱⁱⁱ formula	PMR (CDCl ₃), δ ^{iv}			
								C ¹ -CH ₃ ^v	C ¹ -H ^{vi}	C ⁶ -H ^{vii}	Other aromatic H's
a	185	45	C ₁₆ H ₁₄ ClN ₃ O	a	158	95	C ₁₆ H ₁₃ N ₃ O	1.75	4.92	6.33	7.22 (m, 8H)
b	193	39	C ₁₇ H ₁₆ ClN ₃ O	b	179	97	C ₁₇ H ₁₅ N ₃ O	1.90	5.15	6.50	7.40 (m, 7H)
c	175	42	C ₁₆ H ₁₃ Cl ₂ N ₃ O	c	130	98	C ₁₆ H ₁₂ ClN ₃ O	1.87(m)	5.31 (m)	6.07	7.35 (m, 7H)
d	180	42	C ₁₆ H ₁₃ Cl ₂ N ₃ O	d	195	98	C ₁₆ H ₁₂ ClN ₃ O	1.87	5.12	6.48	7.37 (m, 7H)
e	135	41	C ₁₆ H ₁₃ ClN ₄ O ₃	e	221	98	C ₁₆ H ₁₂ N ₄ O ₃	1.82	5.12	6.38	7.65 (m, 7H)

i = Recrystallised from methanol; *ii* = Melting points are uncorrected; *iii* = Gave satisfactory analytical values for carbon, hydrogen and nitrogen; *iv* = PMR spectra were recorded on a Varian A-60D instrument using tetramethylsilane as internal standard; *v* = doublet, J=7 Hz; *vi* = quartet, J=7 Hz; *vii* = double doublet, J=7, 2 Hz.

2-[1'-Chloroethyl] benzimidazole was similarly reacted with four more benzhydroxamic acid chlorides (IIb-e) and in all the cases the corresponding oximes (IIb-e) were isolated in moderate yields. They were subsequently cyclised with aqueous sodium hydroxide (5%) to the corresponding oxadiazinobenzimidazoles (III b-e) in almost quantitative yields (Table I).



a, Ar = C₆H₅; b, Ar = C₆H₄.CH₃ - *p*;
c, Ar = C₆H₄.Cl - *o*; d, Ar = C₆H₄.Cl - *p*;
e, Ar = C₆H₄.NO₂ - *p*.

A methyl group in the 2-[1']-position seems to facilitate the cyclisation step since the yields of III in the present investigation are higher compared to their analogs obtained from 2-chloromethyl-1-[(hydroximino) arylmethyl]-1H-benzimidazoles¹.

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ISOLATION AND CHARACTERISATION OF DIFFERENT CONSTITUENTS OF EUPHORBIA HIRTA LINN.

Euphorbia hirta Linn. (N.O. Euphorbiaceae) is used in worms, bowel complaints, cough, dysentery, colic, bronchial infection, asthma, warts¹ and possesses hypoglycaemic and anticancer activity on different laboratory animals². Earlier workers have isolated myricyl alcohol, friedelan, β-sitosterol, β-amyrin, hentriacontane, ellagic acid³, leucocyanidol, quercitol, comphol, quercetrin and quercetol derivative containing rhamnose and chlorophenolic acid⁴. Blanc *et al.*⁵ have also reported the presence of alkaloids, carbohydrates, aminoacids and flavonoids in the plant. The anticancer activity of *E. hirta* has led us to the present detailed chemical examination of the plant.

Air dried powdered aerial parts of the plant (2 kg) was extracted with petroleum ether (60-80°) in cold. Light yellow green extract (5 l) was concentrated under reduced pressure to get a resinous mass (40 gm). This semi-solid mass was separated into two fractions as ethanol soluble (Fraction I, 22 gm) and ethanol insoluble (Fraction II, 18 gm).

Fraction I gave six spots of different colours at Rf 0.08, 0.19, 0.31, 0.47, 0.74 and 0.86 (Benzene-*n*-heptane-ethanol, 50 : 50 : 20), which were separated by silica column. All the six fractions corresponding to thin layer chromatogram were identified as 24-methylene cycloartenol [C₃₁H₅₂O, m.p. 122, [α]_D²⁵ + 122, Rf 0.19, *n*-heptane-benzene ethanol, 50 : 50 : 20,

monoacetate 116–7°, yield, 0.25%]; cycloartenol [C₃₀H₅₀O, m.p. 85°, [α]_D²⁴ + 48, Rf 0.23, benzene-ether, 19 : 1, yield 0.00%]; β-sitosterol [C₂₉H₅₀O₂, crystallised from methanol as colourless needles, m.p. 139°, (α)_D²⁴ - 36°, Rf 0.08, n-heptane-benzene-ethanol, 50 : 50 : 20, yield 0.02%]; euphorbol hexacozonate [C₅₇H₁₀₂O₂, crystallised from methanol, m.p. 110–11°, (α)_D²⁴ 0°, Rf 0.69, benzene-methanol, 19 : 1, on hydrolysis euphanol 126° and hexacozonic acid 94–5° were obtained, yield 0.02%]; β-amyirin acetate [C₃₂H₅₂O₂, crystallised from chloroform-methanol as colourless needles, m.p. 234–6°, (α)_D²⁴ + 78, Rf 0.36, n-heptane-benzene-ethanol, 50 : 50 : 20, on hydrolysis β-amyirin m.p. 196° and acetic acid were obtained, yield 0.020%]¹¹ and 1-hexacosanol [C₂₆H₅₄O, crystallised from ethanol, m.p. 79–80°, (α)_D²⁴ 0°, Rf 0.55, n-hexane-ethylacetate, 75 : 25, yield 0.5%]¹¹ by their m.m.p., co-TLC, IR, NMR and mass spectra measurements with their authentic references.

Fraction II gave five spots of different colours at Rf 0.07, 0.23, 0.55, 0.77 and 0.89 (n-hexane-EtOAc, 75 : 25) which were separated by silica column. All the five pure fractions corresponding to thin layer chromatogram were identified as β-amyirin acetate [as above, yield 0.30%]¹⁰; tinyatoxin [C₃₈H₅₈O₈, a diterpene ester, Rf 0.31, EtO-Ac-cyclohexane, 20 : 80 yield 0.5%]¹²; 12-deoxy-4β-hydroxyphorbol 13-dodecanoate 20-acetate [C₃₄H₅₂O₇, Rf 0.79, benzene-ether-chloroform 3 : 3 : 1, yield 0.020%]¹³; 12-deoxy-4β-hydroxyphorbol 13-phenylacetate-20-acetate [C₃₀H₃₆O₇, Rf 0.54, EtOAc-cyclohexane, 20 : 80, yield 0.025%]¹² and ingenol triacetate [C₂₆H₃₄O₈, m.p. 195–7° Rf 0.87, chloroform-ether, 95 : 5, yield 0.0155%]¹⁴ by their m.m.p., co-TLC, IR, NMR and mass measurements with their authentic references.

The authors are thankful to UGC, New Delhi, for financial assistance.

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ON THE REPLACEMENT OF BIOTITE BY K-FELSPAR

STUDY of literature reveals that a detailed petrographical study of the granitic rocks exposed in the Hampi area (topsheet No. 57 A/7) has not been carried out by the earlier workers. The area studied measures roughly 40 sq. kilometres and lies between the longitudes 76° 27' and 76° 30' East, and latitudes 15° 18' and 15° 21' 30" North.

The granitic rocks are coarse to medium grained, gray in colour possessing a variety of texture such as faintly foliated, porphyroblastic and aplitic. At places segregations of biotite in the form of bands, streaks or irregular patches are noticed.

Mode of 38 representative samples (see Table I) reveals that the granitic rocks consist of K-feldspars, quartz and plagioclases in the order of abundance and these minerals together constitute 95% of the rock by volume, biotite forming the ferromagnesian mineral.

From Table I it is evident that K-feldspars are very much in excess of plagioclase, and the rocks therefore get classified as granites. The K-feldspars consist of orthoclase and microcline, the latter showing typical grating structure. The plagioclases belong to two generations. Quartz is generally anhedral and exhibits undulatory extinction. Biotite is subhedral to anhedral, and it shows pleochroism in the shades of yellow, light yellow and dirty green colours. Pleochroic halos are common. Epidote,