

PHYTOCHEMICAL SCREENING OF SOME ORISSA PLANTS FOR TANNINS,
SAPONINS, FLAVONOIDS AND ALKALOIDS

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A B S T R A C T

Eighty three plant samples collected from the forests of erstwhile Kalahandi, Keonjhar, Koraput, Cuttack, Dhenkanal and Khurda districts of Orissa were screened for finding out new sources of therapeutically important active compounds. Tannins were found in 33, saponins in 4, flavonoids in 19 and alkaloids in 7 samples. Out of 83 samples screened, 40 samples belonging to 34 species were found to respond negatively for all the above ingredients. *Garuga pinnata* was found to contain 24.7% of tannins in its bark and the presence of saponins was recorded for the first time in the fruits of *Eriolaena hookeriana*.

INTRODUCTION

Phytochemical screening, one of the prerequisites to identify new sources of therapeutically important and industrially useful compounds like tannins, saponins, flavonoids and alkaloids has been carried out in many parts of the world including India (Bhattacharjee & Das, 1969a, 1969b ; Farnsworth, 1966 ; Fong *et al.* 1972 ; Hungund & Pathak, 1971 ; Kapoor, 1969, 1971, 1972, 1975 ; Maiti, 1968 ; Nautiyal & Semwal, 1984 ; Raffauf, 1970 ; Sharma *et al.* 1982 ; Smolenski *et al.* 1972-1975 ; Willaman *et al.* 1970) in the latter half of the present century. The authors have undertaken the screening programme since 1971 in the state of Orissa while working out the 'Flora of Orissa' and the results were published periodically as and when the data accumulated (Saxena 1975 ; Brahmam & Saxena 1978, 1989 and Prabhakar Rao, Brahmam & Saxena 1985). This paper deals with the screening results of 83 plant samples belonging to 59 genera and 64 species distributed over 35 angiospermic families. Screening samples were collected from the forests of six erstwhile districts of Orissa viz. Cuttack (mangroves), Dhenkanal, Kalahandi, Keonjhar, Koraput, and Puri.

MATERIALS AND METHODS

Plant samples were collected in cloth bags during survey tours. These were shade dried, powdered and passed through a 16 mesh B.S.S. sieve (A.S.T.M.-18 & I.S.S.-100) i.e. approximately 1000 μ sieve. Thereafter, 25 gm of this powder was extracted with 200 ml of ethyl alcohol in a soxhlet for 16-20 hrs. At the end of extraction, about 10 ml of the extract was removed separately to test for the presence of flavonoids and the remaining portion was dried on a water-bath. The residue was then tested for the presence of alkaloids and saponins with different reagents. 5 gm of the original sample powder was separately extracted with about 100 ml of 80% ethyl alcohol in the same way as done above and the residue obtained after drying was tested for the presence of tannins. The reagents used and the methods followed were mainly after Wall. *et al.* (1954), Farnsworth (1966), Smolenski *et al.* (1972-75) and Willaman & Li (1970) which were consolidated and described in detail in earlier papers of this series (Saxena 1975; Brahmam & Saxena 1979, 1989 and Prabhakar Rao *et al.* 1985).

1	2	3	4	5	6	7
<i>Cassia siamea</i> Lam.	Bhubaneswar	lf	+	-	-	-
		st	-	-	-	-
<i>Cynometra iripa</i> Kostel.	Bhitarkanika	fr	-	+	-	-
		lf	-	-	-	-
		st	-	-	-	-
<i>Hymenaea courbaril</i> L.	Bhubaneswar	st	-	2.1	-	-
	(Cult.)	lf	-	7.6	-	-
CAPPARACEAE						
<i>Crataeva adansonii</i> DC.	Bhitarkanika	fl	-	-	-	-
CELASTRACEAE						
<i>Celastrus paniculata</i> Willd.	Malkangiri	fl	-	10.9	-	+
DILLENIACEAE						
<i>Dillenia indica</i> L.	Dhenkanal	fr	-	-	-	-
EBENACEAE						
<i>Diospyros melanoxylon</i> Roxb.	Koraput	st	-	-	-	-
<i>Diospyros montana</i> Roxb.	Kalahandi	bk	-	-	-	-
EHRETIACEAE						
<i>Ehretia laevis</i> Roxb.	Laxmipur	bk	-	7.6	-	-
		rt	-	-	-	-
EUPHORBIACEAE						
<i>Antidesma acidum</i> Retz.	Laxmipur	fr	-	2.4	-	+
<i>Cleistanthus collinus</i> (Roxb.) Benth. ex Hook. f.	Sorisiapada	bk	-	+	-	-
<i>Hevea brasiliensis</i> (Willd. ex Juss.) Muell.-Arg.	Bhubaneswar	st	-	4.9	-	-
	(Cult.)	lf	-	3.5	-	-
FABACEAE						
<i>Butea superba</i> Roxb.	Koraput	fr	-	-	-	-
<i>Derris trifoliata</i> Lour.	Chilka	fr	+	-	-	-
<i>Desmodium triquetrum</i> (L.) DC.	Kalahandi	rt	-	-	-	+
<i>Dalbergia lanceolaria</i> L.f.	Koraput	fr	-	5.5	+	+
FLACOURTIACEAE						
<i>Flacourtia indica</i> (Burm. f.) Merr.	Khandagiri	fl	-	-	-	-
LAMIACEAE						
<i>Pogostemon benghalensis</i> (Burm. f.) Kuntze	Koraput	rt	-	-	-	-
LAURACEAE						
<i>Litsea monopetala</i> (Roxb.) Pers.	Koraput	fr	+	-	-	+

1	2	3	4	5	6	7
LORANTHACEAE						
<i>Viscum articulatum</i> Burm. f.	Koraput	fr	-	4	-	+
<i>Viscum orientale</i> Willd.	Sorisiapada	fr	+	-	-	-
MALVACEAE						
<i>Hibiscus tiliaceus</i> L.	Bhitarkanika	st	-	-	-	-
		rt	-	-	-	-
MELIACEAE						
<i>Xylocarpus granatum</i> Koenig	Bhitarkanika	fr	-	+	-	+
MENISPERMACEAE						
<i>Cissampelos pareira</i> L. var. <i>hirsuta</i> (Buch.-Ham.ex DC.) Forman	Hindol	rt	-	-	-	-
MIMOSACEAE						
<i>Entada rheedii</i> Spreng.	Harishankar	sd	-	6.3	+	+
<i>Calliandra calothyrsus</i> Meissn.	Bhubaneswar	lf	-	6.0	-	-
	(Cult.)	bk	-	2.9	-	-
<i>Enterolobium cyclocarpum</i> (Jacq.) Griseb.	Bhubaneswar	lf	-	-	-	-
	(Cult.)	st	-	-	-	-
<i>Prosopis juliflora</i> (Sw.) DC.	Bhitarkanika	fr	+	-	-	-
<i>Xylia xylocarpa</i> (Roxb.) Taub.	Hindol	fr	-	+	-	+
		st	-	11.0	-	+
		bk	-	+	-	+
MOLLUGINACEAE						
<i>Glinus lotoides</i> L.	Solandi	wp	-	1.8	-	-
MORACEAE						
<i>Ficus heterophylla</i> L.f.	Ansupal lake	st	-	-	-	-
		lf	-	-	-	-
<i>Ficus nervosa</i> Heyne ex Roth	Kalahandi	fr	-	4.7	-	+
ORCHIDACEAE						
<i>Aerides odoratum</i> Lour.	Dhenkanal	fr	-	-	-	-
PANDANACEAE						
<i>Pandanus fascicularis</i> Lam.	Bhitarkanika	fr	-	-	-	-
PLUMBAGINACEAE						
<i>Plumbago zeylanica</i> L.	Sorisiapada	st	-	-	-	-
		lf	-	-	-	-
POACEAE						
<i>Pennisetum pedicellatum</i> Trin.	Khandagiri	wp	-	-	-	-

1	2	3	4	5	6	7
RUBIACEAE						
<i>Benkara malabarica</i> (Lam.) Tirveng.	Khandagiri	rt	-	-	-	-
<i>Pavetta crassicaulis</i> Bremek.	Khandagiri	fr	-	+	-	-
		bk	-	-	-	-
<i>Psychotria adenophylla</i> Wall.	Gonasika	wp	-	+	-	-
<i>Tamilnadia uliginosa</i> (Retz.) Tirveng & Sastre	Koraput	bk	-	-	-	-
SANTALACEAE						
<i>Osyris wightiana</i> Graham.	Malkangiri	bk	-	7.8	-	+
SAPINDACEAE						
<i>Lepisanthes rubiginosa</i> (Roxb.) Leenh.	Bhitarkanika	lf	-	-	-	-
STERCULIACEAE						
<i>Eriolaena hookeriana</i> Wight. & Arn.	Koraput	fr	-	5.2	+	-
	Koraput	lf	-	1.2	-	-
<i>Pterospermum xylocarpum</i> (Gaertn.) Sant. & Wagh	Khandagiri	bk	-	+	-	-
		lf	-	-	-	-
SONNERATIACEAE						
<i>Sonneratia apetala</i> Buch.-Ham.	Bhitarkanika	bk	-	+	-	-
TILIACEAE						
<i>Grewia abutilifolia</i> Vent. ex. A.L. Juss.	Kalahandi	bk	-	3.9	-	-
<i>Grewia disperma</i> Rottl.	Kalahandi	fr	-	-	-	-
		bk	-	10.3	+	+
VERBENACEAE						
<i>Callicarpa tomentosa</i> (L.) Merr.	Koraput	bk	-	-	-	-
<i>Citharexylum suberratum</i> Sw.	Bhubaneswar	bk	-	-	-	-
		st	+	-	-	-
		lf	-	-	-	-
<i>Premna latifolia</i> Roxb.	Koraput	fr	-	-	-	-
VITACEAE						
<i>Cissus vitifolia</i> L.	Khandagiri	fr	-	-	-	-
<i>Cissus repanda</i> Vahl	Bhitarkanika	st	-	-	-	-

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