

Therapeutic uses of some seeds among the tribals of Gandhamardan hill range, Orissa

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Received 5 May 2003

The traditional use of seeds in different forms, viz. raw, seed-paste, powder, decoction, infusion or oil as medicines for ameliorating diseases is still prevalent among the tribal communities inhabiting the forest areas of western Orissa. This investigation highlights manifold uses of 33 species whose seeds are used on a minor scale by the tribal inhabitants of Gandhamardan hill range for the treatment of various ailments.

Keywords: Medicinal seeds, Tribal inhabitants, Gandhamardan hill range, Orissa.

Majority of the people living in the countryside, the rural backward classes and the tribals inhabiting the forest areas depend on crude drugs of plants or plant products as effective remedies for ameliorating various diseases. Among the different parts of the plant being used by them, the seeds provide valuable drugs in various forms either as raw, seed-paste, powder, infusion, decoction or the oil extracted from seeds for use as serviceable medicines. On the one hand, the seeds of various species are employed in medicines as antiseptic, laxative, cathartic and also for various treatments, yet on the other, some of them are poisonous and may cause health problems. Many seed drug species occur wild and very few are cultivated on a commercial scale.

The medicinal uses of plants of Orissa have been studied by several workers¹⁻¹³, but there is no such exclusive report on

the medicinal uses of seeds. The study has been conducted in Gandhamardan hill ranges, a tribal dominated region close to the trijunction of Bolangir, Bargarh and Kalahandi districts. The hill range is a unique forest ecosystem and it has been seen as a store-house of a rich variety of indigenous, medicinal and aromatic plants^{5,7,14-16}. The present report is an account on 33 species of indigenous plants, the seeds of which are used as medicines for curing various diseases by the tribal inhabitants of Gandhamardan hills of Orissa.

Area of study

Lying between 20°42' to 21°00' N latitude and 82°41' to 83°05' E longitude, the Gandhamardan hill range stands at the border of Bolangir and Bargarh districts in western Orissa (Fig. 1). The hill range extends over several kilometers in NE-

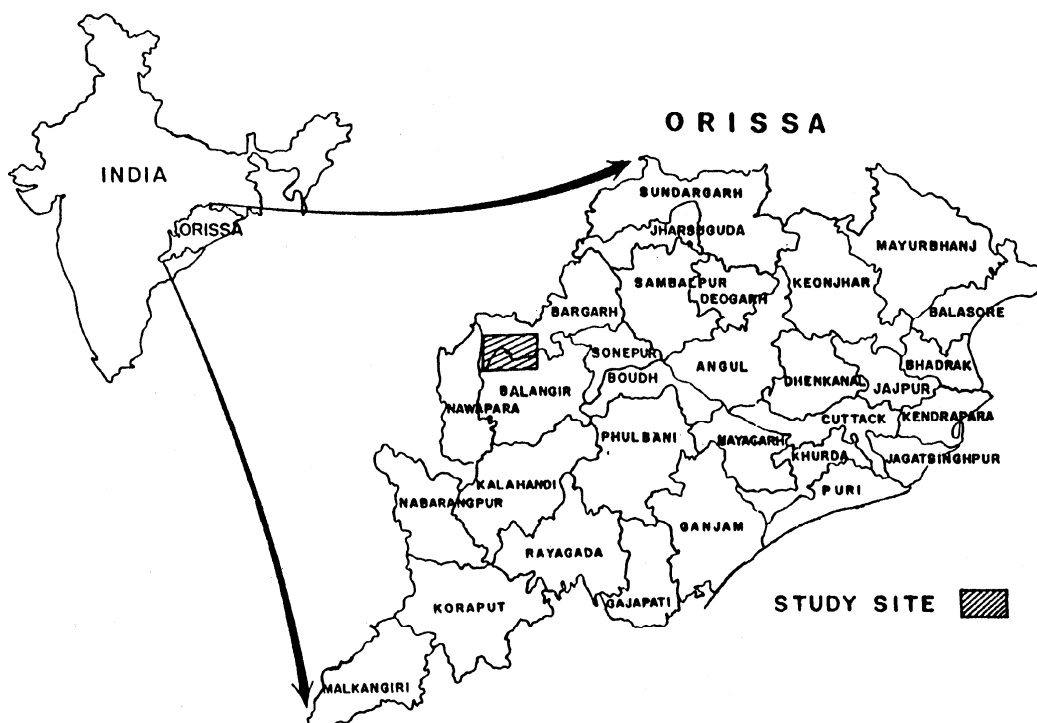


Fig. 1 — Location map of Gandhamardan hill range

SW direction which flanks Bargarh district in the north and Bolangir district in the south. The mountain system is delimited by Borasambar – Paikamal – Manbhang in the north and Amarkol – Batipathar – Brahmani - Harishankar in the south stretching almost parallel to the Nawapara - Padampur road. There are four blocks in the region, viz. Khaprakhol and Patnagarh under Patnagarh subdivision of Bolangir district and Paikamal and Padmapur under Padmapur subdivision of Bargarh district. The study site covers an area of 970 sq km out of which the Gandhamardan hills occupy 251 sq km.

The hill range is inhabited by a large number of tribal races of which Munda,

Kandha, Gondo, Binjal, Mirdha, Bhumia and Saura are predominant and they constitute the majority of the population of the region. The Patnagarh and Khaprakhol blocks have the highest scheduled tribe population i.e. 60,490 and constitute 22.17 per cent of the total tribal population of the district. In Bargarh district, Paikamal and Padmapur have tribal population of 32,613 and 22,141, respectively, which are two successive most tribal dominated blocks in the subdivision constituting 45 per cent of the total tribal population¹⁷.

The tribal people inhabit the hilly tracts, slopes, foothills and plains such as

Satyama, Brahmani, Batipathar, Bora-sambar, Harishankar, Brahmantal, Malda, Khaprakhol, Patrapali, Nrusinghanath, Nandupala, Dhandamunda, Paikamal and other areas. Few of them have adopted Oriya language partially. On the whole, the tribals are poor and lead a hard life. Many of them are landless labourers, small and marginal farmers, farm servants, forest workers, earth diggers, woodcutters and hunters. These people have either no assets or assets of very low productivity, few relevant skills and no regular full time jobs or very low-paid jobs. Those who have settled in plains have adopted improved methods of rice cultivation. The staple food of the majority of the interior tribals consists of cereals, minor millets, roots, tubers/rhizomes, bamboo shoots, leafy vegetables, date palm, wild banana, mahua flowers and wild fruits.

Methods of Survey

During the field investigation, special efforts were made for collection of first hand information on folklore knowledge of plants whose seeds are used as medicines. Eight intensive field exploration trips were conducted in different areas of Gandhamardan hill range covering different seasons of the year during 1986-89, 92-93 and again in December 2000, each trip being of one to two weeks duration. Frequent visits were made to various remote localities including tribal settlements of different ethnic groups to establish a friendly contact and rapport with the inhabitants. These tribal communities have very intimate relationship with the plants of their surroundings. By the

method of trial and error, over centuries-old experience, they possess fairly good knowledge about various uses of plants. The folklore knowledge was gathered through subsequent conversations with six local herbal practitioners. Many of them used to carry on this profession as their family creed. Some tribals were very suspicious and not readily prepared to divulge their secret knowledge while others appear to have a sense of fear among themselves because they claim that they do not have any proper authorization to practice herbal medicines. To elicit ethnobotanical information from them, two methods were adopted such as (i) open ended and semi-structured interviews for qualitative data collection regarding their social status, cultural amenities and to learn about traditional practices and (ii) structured interviews using a series of pre-determined questions on plants whose seeds are used as drugs. Four of them accompanied as local guide at different times during the field investigation and were interviewed by showing them a fresh plant material either *in situ* or freshly collected plants/plant parts. Complete information was obtained on the local name of the plant, medicinal uses of seeds, specific quantities of ingredients or additives if any, dosage, frequency and duration of treatment, food restrictions before or after diet, etc. The uses were cross-checked and confirmed through repeated queries. At few places more than one informant of different ethnic groups were persuaded and similar comments were obtained about the use of plant. The claims as reported by the tribals were compared with important published litera-

ture on medicinal plants of India¹⁸⁻²³. The collected plant specimens were preserved as herbarium materials and the seeds were sent for propagation in the garden of Regional Plant Resource Centre, Bhubaneswar. Proper identification of the plants has been done with the help of regional floras and correct botanical names were ascertained for each of them in accordance with the rules of International Code of Botanical Nomenclature.

Results and discussion

The results of the investigation are presented in Table 1, which provides the list of 33 plant species whose seeds are used as medicines. The species are arranged alphabetically with corresponding family within parenthesis. For each taxon, local name, locality of collection, frequency/habitat and medicinal uses of seeds with modes of administration have been provided. The abbreviations K, G, B, Mi, S, Mu and O within brackets with local name represent different tribal dialects such as Kandha, Gondo, Binjal, Mirdha, Saura, Munda and Oriya, respectively.

In many cases fresh seeds are used. In some species like *Argyreia nervosa*, *Buchanania lanzan*, *Butea monosperma*, *Clitorea ternatea*, *Diplocyclos palmatus*, *Gardenia turgida*, *Ricinus communis* and *Vernonia anthelmintica*, the drugs are prepared from the seeds in suitable combinations with other plant parts for improving the efficacy.

The seeds are used only on a minor scale by the tribal inhabitants and none of

the medicinal plants of the region is exploited commercially at present.

The rapid destruction of forests in the hill range owing to indiscriminate felling of trees, forest-fire, *jhum* cultivation and over-exploitation of drug plants causes severe damage to natural habitats²⁴, thus threatening the very survival of several indigenous taxa. Therefore, many plants of this hill range have been reduced in number from their wild habitats and often represented by occasional/rare/vulnerable/endangered species²⁵. Few seed drug species like *Embelia basal*, *Garcinia xanthochymus*, *Radermachera xylocarpa*, *Symphorema polyandrum*, *Vernonia anthelmintica* and *Zanthoxylum rhetsa*, etc. are very scarcely distributed.

Though the practice of traditional health-care system is effective, safe and with few side effects, the application of such wisdom on herbal drugs is declining at a faster rate due to developed urban culture, negligence of tribal/rural community, forest habitat destruction and the tendency to use allopathy. The information given in this report on therapeutic uses/practices of plant seeds may provide new sources of herbal drugs and promote awareness among the people to use them as remedy for health security. Thus there is an imperative need to explore such valuable taxa not only for documentation of precious traditional knowledge of the tribals but also for conservation of plant genetic resources. These claims may also offer scope for potential herbal drug species for their intensive phytochemical screening and

Table 1—Therapeutic uses/practices of plant seeds among the tribals of Gandhamardan hill range

Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Argyreia nervosa</i> (Burm.f.) Boj. (Convolvulaceae)	Munda-nai (G)	Manbhang, Amarkhol	Occasional in deciduous forests	Equal proportion of the seeds of this plant and <i>Withania somnifera</i> (O — Aswagandha) are made into a paste with water and taken internally on empty stomach for the treatment of debility; it improves the quality of semen.
<i>Azadirachta indica</i> A. Juss. (Meliaceae)	Nimba (O), Nim (B)	Paikmal, Dhwarjgarh	Very frequent in vil- lages, occurs wild on foot hills	The oil extracted from the ripe seeds is used for dressing foul ulcers; it is efficacious as anthelmintic and in parasitic skin diseases. The seed powder with cup of warm water is gargled for gum treatment and to remove bad smell from mouth. The seed oil and coconut oil in equal proportion is applied on body and hair for removing lice and dandruff, respectively.
<i>Barringtonia acutangula</i> (Linn.) Gaertn. (Lecythidaceae)	Hinjala (O) Hingla(K)	Khuripani, Beheranani	Common along stream course in semi-evergreen forests	The powdered seeds with little water are taken internally on empty stomach at 3 hours interval for severe colic pain caused due to liver trouble.
<i>Bauhinia vahlii</i> Wt. & Arn. (Caesalpiniaceae)	Siali (G)	Chaldhar, Bhitarkhol	Gregarious climber in deciduous forest	The decoction of seeds is given twice daily as tonic to children; taken at night as an aphrodisiac.
<i>Buchanania lanzan</i> Spreng. (Anacardiaceae)	Chara (G), Tarop (S)	Kapildhar, Chaldhar	A common associate of sal in deciduous forests	The oil obtained from the kernels mixed with the fruit paste of <i>Terminalia alata</i> (O — Sahaj) is applied externally to get relief from muscular pains, rheumatism and glandular swellings of the neck.

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Table 1—Therapeutic uses/practices of plant seeds among the tribals of Gandhamardan hill range—Contd

Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Butea monosperma</i> (Lamk.) Kuntze (Fabaceae)	Palasa (O)	Harishankar, Nandupala	Common on hill slopes, in dry deciduous forests	Intake of seed extract with equal proportion of flower extract of <i>Madhuca longifolia</i> (O — Mahula) on morning and evening on empty stomach acts as abortifacient at early stages of pregnancy.
<i>Caesalpinia pulcherrima</i> (Linn.) Sw. (Caesalpinaceae)	Radhachuda, Tora (O) Bakam(B)	Nrusinghanath	Grown in temple premises and along road sides	The decoction of fresh seeds is used as mouthwash, which also relieves pain in gums due to inflammation.
<i>Cassia fistula</i> Linn. (Caesalpinaceae)	Sunari (O)	Turla, Chaldhar	Quite gregarious in deciduous forests	The seed powder is laxative; the seed paste is applied on the swollen gums to relieve toothache and pain.
<i>Cassia occidentalis</i> Linn. (Caesalpinaceae)	Kasindri (G), Chhota chakunda (O)	Durgapalli	Quite common in waste places and fallow lands during monsoon	The decoction of the seeds is much efficacious for whooping cough. The seeds with equal quantity of black pepper are powdered and prescribed with little water twice daily for one month to reduce fat from the body.
<i>Celastrus paniculatus</i> Willd. (Celastraceae)	Peng (G), Kujri (Mi)	Harishankar, Manbhang	Abundant, in open scrubs and hedges	Intake of 2-3 raw seeds in morning for 15 days is a good remedy for rheumatism and chronic lumbago. The oil extracted from the seeds is rubbed on the body to get relief from swellings and muscular pains.

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Table 1—Therapeutic uses/practices of plant seeds among the tribals of Gandhamardan hill range—Contd

Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Clitoria ternatea</i> Linn. (Fabaceae)	Aparajita (O, G)	Borasambar, Harishankar	Common in hedges and in dense scrubs	The seeds pounded with the root of <i>Cle- rodendron indicum</i> (G — Bhaunarimal) are made into a paste and taken thrice daily for curing tuberculosis and leprosy. Seeds are also used in Tantrika.
<i>Diplocyclos palmatus</i> (Linn.) C. Jeff (Cucurbitaceae)	Shivalinga (O) Kirla (Mi)	Batipathar	Common in thickets	Decoction of 10 seeds of this plant, the root of such a plant of this species which never fruits, roots of <i>Croton roxburghii</i> (O—Devanasan) and 3 seeds of Dhala gunja(white seeded <i>Abrus precatorius</i>) are given once a day for 3 days to induce menses in girls and for fertility in women. The seed powder with a spoon of honey is taken twice daily to ensure con- ception and prevent miscarriage.
<i>Embelia basal</i> (Roem. & Schult.) DC. (Myrsinaceae)	Nununia(O) Bidang (G)	Khandijharan	Occasional in semi- evergreen forests	The dried seeds are chewed on empty stomach in morning for expelling tape- worms and also to cure dyspepsia and skin diseases.
<i>Entada rheedii</i> Spreng. (Mimosaceae)	Gila (O), Hanuman maur (Mi), Sarini (G)	Harishankar	Occasional, a robust climber on trees along streams in damp forests	The decoction of the seeds and bark mixed with coconut oil is smeared on the scrotum to cure hydrocele. The seed powder is taken by tribal women for allaying pains and preventing excessive blood discharge during delivery.
<i>Flemingia chappar</i> Buch.- Ham. ex Benth. (Fabaceae)	Rasna (K)	Satyama	Common as an under- growth in moist decidu- ous forests	1-2 drops of juice extracted from fresh seeds are applied on eyes to get relief from cataract and related eye troubles.

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Table 1—Therapeutic uses/practices of plant seeds among the tribals of Gandhamardan hill range—*Contd*

Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Garcinia xanthochymus</i> Hook. f. (Clusiaceae)	Cheoro (M), Sitambu (O)	Amarkhol	Occasional along the stream course in semi- evergreen forests.	A spoon of oil obtained from the seeds stirred in a half cup of cold milk is taken internally 4 times a day before food to cure mucous diarrhoea and dysentery.
<i>Gardenia turgida</i> Roxb. var. <i>montana</i> (Roxb.) Hook. f. (Rubiaceae)	Ghurudu (Mu)	Durgapalli	Occasional on foot hill region	One spoonful seed paste with 7 black peppers and ajowan (<i>Trachyspermum ammi</i>) is given 3 times at 1-hour interval to treat food poisoning.
<i>Helecteres isora</i> Linn. (Sterculiaceae)	Murmuri (G), Petmuri (B)	Gupta Ma- hadev	Very common in valleys and on hill slopes	The paste made from the fruit is applied externally on the stomach to get relief from flatulence.
<i>Martynia annua</i> Linn. (Martyniaceae)	Baghanakhi (O)	Paikmal	Very common on foot hills in waste places	The oil extracted from the seeds is ap- plied locally on itches, scabies and ec- zematous wounds.
<i>Millettia pinnata</i> (Linn.) Panig. (Fabaceae)	Karanja (O)	Harishankar	Common along stream courses in semi- evergreen forests	The oil extracted from the seeds is smeared on the affected parts to relieve scabies, itches and allied skin diseases.
<i>Mucuna nigricans</i> (Lour.) Steudel (Fabaceae)	Atkir (K), Etka (S), Baidhanka(O)	Panchupandav Chat	Occasional in moist damp forests	The seed paste is used as a local applica- tion for the treatment of ulcers of genital organ of both sexes.
<i>Nyctanthes arborescens</i> Linn. (Oleaceae)	Saporam (Mu) Gangasuli(O) Kharkhas(G)	Nrusing- hanath, Haris- hankar	Abundant on hill slopes at low altitudes	The seed powder is rubbed on the teeth to cure bleeding gums.

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Table 1—Therapeutic uses/practices of plant seeds among the tribals of Gandhamardan hill range—*Contd*

Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Phyllanthus emblica</i> Linn. (Euphorbiaceae)	Miral (Mi), Anla (O)	Nrusing- hanath, Hanu- palli	Quite abundant on foot hills	The infusion of the seeds is used for al- laying inflammation of the eyes. The dried fruits with seeds are crushed and taken internally to cure diarrhoea and dysentery.
<i>Radermachera xylocarpa</i> (Roxb.) K. Schum (Bignoniaceae)	Akash Garuda (O), Pampani (Mu)	Harishankar	Rare, on moist slopes near stream	Paste of the seeds and root with water is administered orally or through nose, to neutralize snake-venom and also applied externally on the wounds caused by snake or scorpion-bite.
<i>Ricinus communis</i> Linn. (Euphorbiaceae)	Jada, Gaba (O)	Bhubaneswar- pur	Common in the villages, very often self-sown	The oil extracted from the seeds with leaf juice of <i>Calotropis procera</i> (O — Ara- kha) is used as a local application at bed- time for a week to cure bleeding piles and fissures.
<i>Schleichera oleosa</i> (Lour.) Oken (Sapindaceae)	Kusum (G), (O)	Harishankar Nrusinghanath	Quite abundant in dry deciduous forests	The seed oil is smeared on the body for the treatment of itches, scabies, ring- worm and other skin diseases.
<i>Semecarpus anacardium</i> Linn. f. (Anacardiaceae)	Soso (S) Bhalia (O)	Bhimkund, Chaldhar	Quite abundant in dry deciduous forests	The ripe drupes including seeds are used internally in piles, skin diseases and nervous debility.
<i>Strychnos potatorum</i> Linn. f. (Loganiaceae)	Kattak (O)	Panchupandav Ghat	Occasional on foot hills near stream	Seed-paste is applied 3 times daily on the eyes infected with conjunctivitis and the paste mixed with honey may be applied on the affected eyes for 7 days to get relief from cataract.

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Plant name with family	Local name	Locality	Frequency & habitat	Mode of administration
<i>Strychnos nux-vomica</i> Linn. (Loganiaceae)	Kochila (O)	Harishankar	Occasional on foot hills in deciduous forests	1-2 seeds of the plant with 1-2 cloves are made into a paste and applied over the gums 3 times daily for allaying pains of pyorrthoea.
<i>Symphorema polyandrum</i> Wt. (Verbenaceae)	Badichand (O)	Borasambar	Occasional, on hill slopes at low altitude.	7 seeds and root of this plant with 7 black peppers are made into a paste which may be given as single dose 3 hourly for 4 times a day to act as an antidote for snake-bite, mad dog-bite and scorpion- stings.
<i>Vernonia anthelmintica</i> (Linn.) Willd. (Asteraceae)	Som-raj (O)	Kapildhar	Occasional along streams under shade	The powdered seeds added in the fruit- paste of <i>Radernachera xylocarpa</i> (O — Akash Garud) is smeared on the body to cure leprous wounds and leucoderma.
<i>Vernonia cineria</i> (Linn.) Less. (Asteraceae)	Badi Pokasunga (O)	Hardatal	Very common in waste places and scrub forests	The powdered seeds diluted in a cup of water are swallowed to expel intestinal worms.
<i>Zanthoxylum rhetsa</i> (Roxb.) DC. (Rutaceae)	Morai (Mi)	Kapildhar, Batipathar	Occasional along the stream banks in dense forests	The decoction of the seeds and bark with little milk is used as a tonic in weakness just after the recovery from typhoid fe- ver.

pharmacological actions to ensure their sustainable utilization.

Acknowledgement

The author is grateful to the Department of Science, Technology & Environment, Government of Orissa for financial assistance.

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