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Traditional phytotheraphic record of orchids of Odisha and their conservation strategies

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Abstract: Odisha being the coastal state of Indian sub-continent records a rich medicinal plant diversity in general and orchids in particular. Since time immemorial, these important plant resources remains in a neglected state leading to an alarming situation in near future. Virgin forests of Odisha spreading in areas like Gandhamardan Hills, Niyamagiri Hills, Deomali Hills, Mahendragiri Hills and Similipal Biosphere Reserve hoards rich orchid diversity enduring luxuriant growth. Out of 137 species of Orchids recorded so far, Similipal area alone harbours about 94 orchid species possessing high aesthetic and medicinal value. Unfortunately, the medicinal importance of orchids of this region has drawn least attention from both the scientific fraternity as well as general populace compared to their role in horticulture field. Orchid species of Odisha like *Acampe carinata* (Griff.) Panig., *A. praemorsa* (Roxb.) Blatt. & Mc Cann, *Geodorum recurvum* (Roxb.) Alston, *Habenaria marginata* Coleb., *Rhynchostylis retusa* (L.) Bl. and *Vanda testacea* (Lindl.) Rchb.f. are used to cure rheumatism, arthritis, dysentery, asthma and snake bite etc. However, the medicinal potentialities of these orchids are not so well exploited though they possess immense curative values. Further, as the forests of Odisha are experiencing various anthropogenic as well as abiotic pressures, many of the orchid populations are fast shrinking leading to their mass depletion. Realizing this, the current communication highlights the importance of 26 medicinal orchids very often used by the tribal populace of Odisha like Bonda, Dongaria Kondha, Juang, Saora etc. to get relief from various ailments. Concurrently, some major conservational strategies have also been projected.

Key words: Traditional; Phytotherapy; Orchids; Odisha; Conservation

Introduction

Orchids are used in curing several diseases and they play a pivotal role in health care programmes. Many orchids possess antimalarial, antibacterial, antiviral and even anticancerous properties. These therapeutic properties in medicinal orchids are attributed to a variety of phyto-constituents like alkaloids, flavonoids, terpenes etc. (Misra, 2004). Odisha is situated in the east coast of the Indian sub-continent lying in between 17^0 48'-22^0 94'N latitude and $81^0$24' - $87^0$29' E longitude. It is the paradise of healing herbs which are being used in Indian system of medicine viz., Ayurveda, Siddha and Unani. Odisha enhouses around 650 species of plants having high medicinal value owing to varied micro-climatic conditions. The medicinal plants include several group of plants like dicots, ferns, orchids etc. of which orchids of high medicinal value deserve special mention being the rare and special group among the plant kingdom. In the remote past, Odisha had thick forest coverage of about 43.42% as against the total landmass. But during the recent times the forests are fast shrinking due to severe pressure in terms of rapid march of urbanization, clear off of forest lands for paddy cultivation, pisciculture, industrial complexes, human settlement etc. Hence this is the high time to conserve medicinal plant resources especially medicinal orchids for posterity.

The existing forest coverage provides ideal abode for the tribals. In Odisha different tribal groups such as Bonda, Dongaria Kondha, Juang, Saora etc. are living in small pockets in harmony with nature by utilizing different plants and plant products. The study of plants in relation to primitive people constitutes an important branch of botany known as "Ethnobotany" and medicine is one of its facet. The mountainous forests of the Deomali hills, Gandhamardan hill range, Mahendragiri hills, Niyamagiri hill range, Malyagiri hills and Similipal Biosphere Reserve have high degree of biological diversity acting as grand repository of potential medicinal orchids. These forests have been the source of invaluable medicinal plants since the time man realized the preventive and curative properties of plants and started using them for human health care. The tribal people residing near and depending on the forests and their resources are not willing to disclose their knowledge about the uses of the parts except for some highly useful medicinal properties. Realising this, some sporadic works have been done by Jain (1971), Panda *et* Misra (2008), Sahoo (1986), Saxena *et* Dutta (1975), Subudhi *et* Choudhury (1985) on the ethnobotany and ethnomedicine of the state.

Methodology

Extensive seasonal visits have been conducted to the tribal dominated forest rich areas of the state keeping in view the distribution pattern and flowering time of the plants. Interactions have been made with the local tribal people like Bonda, Dongaria Kondha, Juang, Saora etc. for collecting information about the local use of the plants. Concurrently the local Vaidyas (medicine man) have been contacted and interviewed to gather the first hand information pertaining to the ethnomedicinal utility of the orchids. The plants collected, have been identified in consultation with the regional floras like Haines (1921-1925), Sexena *et* Brahmam

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(1994-1996), Misra (2004) and monographs and preserved in the herbarium of the Regional Plant Resource Centre, Bhubaneswar. Photography of the medicinal orchids collected was done in the field itself. The authenticity of the medicinal importance of the species have also been confirmed by following standard literatures of Agarwal *et* Ghosh (1985), Chopra *et* Chopra (1956), Kirtikar *et* Basu (1935), Satyavati *et al.* (1987), Saxena *et* Dutta (l.c) and Warrier *et al.* (1994-1996).

Enumeration

In the present treatment an enumeration of 26 orchids (epiphytes and terrestrials) belonging to 19 genera having broad spectrum of ethnomedicinal value have been given along with their ecology, locality, flowering period and medicinal uses. Some conservational strategies have also been highlighted.

Figs: A: Collection of information on medicinal use of the orchids from the tribals of Koraput district of Odisha. **B:** Collection of orchids and recording of information during the field visit to Kalahandi district along with the local people. **C:** *Acampe carinata* (Griff.) Panig. in blooming. **D:** *Habenaria longicorniculata* Grahamin profuse flowering with long spur. **E:** *Habenaria marginata* Coleb. in flowers. **F:** *Pecteilis gigantea* (J.E. Sm.) Rafin, a beautiful terrestrial orchid.

S.No.	Name of the Species	Habit	Ecology	Locality	Flowering	Use
1	*Acampe carinata* (Griff.) Panig.	E	On open situations in moist deciduous forests	Mayurbhanj, Raygada, Khurdha	Oct.-Jan.	The root paste is used in case of scorpion and snake bites. The leaf paste along with one piece of garlic is taken to get relief from chest pain and stomach disorder caused by hyper acidity. The leaf paste is also employed in rheumatic pain.
2	*Acampe praemorsa* (Roxb.) Blatt. & Mc Cann	E	Common in open forests	Raygada, Angul, Sundargarh	May.-Jul.	Root paste, along with root paste of *Asparagus racemosus* is taken to cure arthritis and rheumatism.
3	*Aerides multiflora* Roxb.	E	In moist deciduous to semi-evergreen montane forests usually in exposed situations	Raygada, Dhenkanal, Sundargarh	Jun.-Jul.	Root paste is used to cure arthritis and rheumatism.
4	*Aerides odorata* Lour.	E	Common in deciduous forests under partly exposed situations	Khurdha, Raygada, Angul, Dhenkanal, Gajapati, Sundargarh	Jun.-Jul.	Root paste is used to reduce joint pain and swellings. The leaf juice is taken against tuberculosis.
5	*Bulbophyllum cariniflorum* Rchb.	E	In tropical semi-evergreen to evergreen montane forests, in moist and shady situations	Gajapati, Koraput, Mayurbhanj	Jul.-Aug.	Root paste is used by women to induce abortion.
6	*Bulbophyllum umbellatum* Lindl.	E	In semi-evergreen forests, in moist and shaded situations	Gajapati	Apr.-May	The herb acts as a longevity enhancer.
7	*Cymbidium aloifolium* (L.) Sw.	E	In moist deciduous open forests.	Khurdha, Raygada, Dhenkanal, Gajapati, Sundargarh	Apr.-Jun.	Root powder is employed in case of paralysis.
8	*Dendrobium herbaceum* Lindl.	E	In moist deciduous to semi-evergreen, montane forests in open situations	Mayurbhanj, Khurdha, Raygada, Dhenkanal, Gajapati	Feb.-Mar.	Leaves paste is used in case of syphilis.
9	*Eria bambusifolia* Lindl.	E	In semi-evergreen or evergreen montane forests, under medium to dense shade	Mayurbhanj, Gajapati	Dec.-Jan.	The whole plant is used to cure hyper acidity and stomach disorder.
10	*Eulophia spectabilis* (Dennst.) Suresh	T	In tropical plain and montane deciduous forests especially in 'Sal' forests	Mayurbhanj, Raygada	May.-Jun.	Dried tuber is taken against aphrodisiac. The leaf decoction is administered in case of vermifuse
11	*Flickingeria macraei* (Lindl.) Seidenf.	E	In semi-evergreen to evergreen forests, under shade	Mayurbhanj	Jun.-Sep.	The herb is aphrodisiac, astringent as a tonic, stimulant. Root paste is administered to cure diseases including skin allergy and eczema.
12	*Geodorum densiflorum* (Lam.) Schltr.	T	In dry, montane scrub forest with well drained loamy soil	Koraput	Jul.-Aug.	The plant acts as anti-diarrhoeal. Root paste is used in irregular menstrual cycle in women.
13	*Geodorum recurvum* (Roxb.) Alston	T	As an under growth in tropical moist deciduous open forests with well drained, clayey loamy soil	Cuttack, Koraput	May.-Jun.	A decoction of dried tuber is used to cure malarial fever. The root paste is used to suppress tumors
14	*Habenaria commelinifolia* (Roxb.) Wall. ex Lindl.	T	In the meadows, under light shade with loamy or sandy soil	Mayurbhanj, Sundargarh	Aug.-Oct.	Roots are medicinally important and used in case of urinary troubles. Dried root is also administered in spermatorrhea
16	*Habenaria longicorniculata* Graham	T	In open hill slopes with humus loamy, well drained soil	Gajapati, Kalahandi, Keonjhar, Koraput	Aug.	Paste of tuber is used to cure leucoderma
15	*Habenaria marginata* Coleb.	T	In meadows or moist deciduous forests, with boulder mixed loamy soil	Koraput	Sep.-Oct.	Tubers are used in treatment of malignant ulcer
17	*Luisia trichorhiza* (Hook.) Bl.	E	In tropical moist deciduous forests	Mayurbhanj, Raygada, Gajapati, Sundargarh	Mar.-Jul.	Plant paste is employed in jaundice. The root extract is used in diarrhoea (for cattle) and to reduce muscular pains in humans.
18	*Nervilia aragoana* (Hook.) Bl.	T	In moist deciduous forests, on forest floors or hill slopes with loose and moist soil	Mayurbhanj, Sundargarh	May.-Jul.	The plant acts as thirst abeter and used in case of sickness due to delivery
19	*Pecteilis gigantea* (J.E. Sm.) Rafin	T	In moist deciduous forest, slopy ground, as undergrowth, with humus rich soil	Kalahandi, Kandhamal, Mayurbhanj, Nuapada	Aug.-Sep.	The plant is used as an ingredient of Ridhi and Vridhi and also used in case of boils on palm
20	*Polystachya concreta* (Jacq.) Garay & Sweet.	E	In moist deciduous or semi-evergreen forests	Gajapati	Jul.	Tuber is used in case of arthritis.
21	*Rhynchostylis retusa* (L.) Bl.	E	In moist deciduous or semi-evergreen forests	Mayurbhanj, Raygada, Dhenkanal	May.-Jun.	The plant acts as an emollient. Pastes of leaf buds are used to cure blood dysentery. The leaf paste is applied externally to cure wounds.
22	*Seidenfia rheedii* (Sw.) Szlach.	T	In evergreen to semi-evergreen montane forests, in moist localities, under heavy shade, with light humus rich soil; or lithophytic on moss covered rocks or crevices	Mayurbhanj, Dhenkanal, Gajapati	Jul.-Aug.	Root is used to cure cholera
23	*Spiranthes sinensis* (Pers.) Ames	T	In open countries, on edge of marshy land	Cuttach, Khurdha, Mayurbhanj	Jan.-Mar.	The herb is employed in healing sores
24	*Tropidia angulosa* (Lindl.) Bl.	T	In semi-evergreen to evergreen primary forests, preferring near water courses, with light, humus rich soil, under dense shade	Kalahandi, Mayurbhanj	Aug.-Sep..	The plant is used in case of diarrhea and malarial fever.
25	*Vanda tessellata* (Roxb.) Hook. ex G.Don.	E	In deciduous forests and in open vegetation	Gajapati, Dhenkanal, Angul, Raygada	Mar.-May. & Sep.-Dec.	Root is used for the treatment of sexually transmitted diseases. The root paste is also used to cure rheumatism and nervous disorders. The herb is used in case of fever, otitis media. The leaf pounded and given to ear for curing pus formation
26	*Vanda testacea* (Lindl.) Rchb.f.	E	In deciduous mixed forests usually in open situations	Gajapati, Angul, Raygada, Mayurbhanj, Sundargarh	Apr.	Leaf paste is employed in case of bone fractures of cattle. The plant is also used in ear ache. The root decoction is administered to cure asthma. The plant is also used in case of hysteria.

Note: 'E' and 'T' represent Epiphytes and Terrestrials respectively.

Conservation

Conservation of orchids is a global concern and for an effective conservation programme, a systematic field study assume greater importance as all species are to be surveyed before drawing a definite status action plan programme. In the remote past, Odisha was endowed with potential medicinal plants including orchids which are in use since ancient times by the indigenous communities. Recently, due to over-exploitation of orchids and other host plants to cater the ever increasing greed of the local inhabitants there is huge depletion of plants of medicinal importance in general and orchids in particular. Habitat destruction due to shifting cultivation, establishment of industries, clearing of forests for human settlement and illegal cutting of tree species is a major threat for the very survival of the orchids. It has been recorded that about 10% of orchid species are threatened due to various biotic factors and human interferences (Nayar and Sashtry, 1987).

Although quite a good number of medicinal orchids have been wiped away from the state due to the aforementioned causes, still Odisha is a grand repository of many indigenous medicinal orchids. Hence, this is the high time to initiate effective protection and conservational measure for the sustainable use of the resources as well as conservation of the orchids. To conserve the medicinal and aromatic orchids, at first step it would be useful to prepare an inventory and status report on different aspects related to medicinal plant resources development in Odisha. Later, species can be conserved by developing appropriate medicinal gardens in educational and research institutions in general and Ayurvedic Hospitals in particular. The orchid

dwelling areas should be declared as orchid reservoirs so that due protective measures will be taken up there by conserving the species *in-situ*. Many indigenous as well as exotic species that were procured from various regions should be conserved in the herbal gardens and regularly monitored for their effective subsistence. In order to promote the cultivation and judicious utilization of medicinal orchids, farmers as well as the tribalfolk are to be trained and educated.

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