

Review on Ethnomedicines for Diarrhoea Diseases from Orissa: Prevalence Versus Culture

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ABSTRACT The saying goes as “Necessity is the mother of invention” reflects on the exploration of ethno-medicaments for diarrhoea diseases in Orissa against the prevalence of the disease in this state since history. The paper presents a list of traditionally used plants against diarrhoea diseases in India out of which about 48% are recorded from Orissa itself. The history and culture of Orissa and its present scientific exploration as well, supports the state as the most diarrhoea prevalent.

INTRODUCTION

The credit for the systematic use of plants as medicaments ever goes to Indians as recorded in Atharva Veda and is subsequently compiled in the form of Aayurveda. A prelude to the context, the great Aayurvedic sage physician Charaka after completion of his tutelage, was asked by his Guru to fetch a plant without any medicinal value; probably the task entrusted insignia of final evaluation of his studentship. Charaka commenced his search and after a great gap of many years returned to his Guru empty handed. He was conferred the then elite status by his Guru's school of thought equivalent to modern days of so called convocation. This transaction transmits message to the world that no plant is ever existent on the earth without any medicinal value. However, the human endeavour in world over today, is constantly in search of medicinal efficacy of plants, since the reported data so far available on plants are comparatively meagre before the vast number of plant population.

In India, about 3000 plants are used in the form of Ethno- or folk-medicines based on oral information from generation to generation. About 1500 plants are systematically used in indigenous system of medicine, like Aayurveda, Unani and Siddha. It is obvious that folk medicines are the original source to point out the plants as the source of medicine in the primary level (Ved Prakash, 1998). If we still go back, the search of a plant for medicinal use

by a common man is complementary to the saying, “Necessity is the mother of invention”. Even, Aayurveda recognises the prime importance of the common man's view, being used as tool to search out the medicaments and their identification, as evident from *Charaka Samhitaa* (120-123 / *Sutrasthaana*) and *Susruta Samhitaa* (7/*Sutrasthaana*).

Out of the six distinct zones of tribals (Danda, 1996), Orissa state comes under middle Indian zones along with other states like Bihar and West Bengal, which includes about 65 tribes and constitutes major tribal population for India. As per 1981 census, Orissa has about 62 scheduled tribes and sub-tribes. As a matter of fact, ethno-medicines are not only of tribal origin; rather, civilised people distinctly contribute to this too. The latest review by the authors on ethno-medicines of Orissa state (Das et al., 2003), accounted some 421 plants reported from 11 undivided districts used by 24 tribal communities and inhabitants of village folks of plane areas. This encompasses the use of plants against 166 diseases out of 27 plant parts. Interestingly, the record for plants used for diarrhoea diseases (clinically defined as a gastric disorder due to cholera, acute watery diarrhoea, dysentery or persistent diarrhoea and gastroenteritis) accounting to 73 numbers which again shares 48% of the total record on all India basis; reviewed by the authors earlier (Mohanty et al., 1998). This huge recording of plants for diarrhoea raises a question regarding such significant recurrence confined to a particular state i.e. Orissa.

Coincidentally, Orissa is represented as the

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most diarrhoea prevalent area, as accounted in the Indian therapeutic scenario (Fig. 1) (Bhasin, 1994; Bhasin and Bhasin, 2000). In their report, Orissa tops the record of diarrhoea statistics compared to other surrounding states. In the year 1995 the recorded number of patients in the Orissa state was 12,80,000 out of which number of patients of diarrhoea disorders 11,88,000; with the recorded death toll of 803 against the total death toll of 2016 numbers (Dash, 1995). This remarkable coincidence of maximum ethno-botanical exploration for a disease, which is prevalent in a specific region again reminds that, necessity, indeed, in the mother of invention. It will not be out of place to pledge here the whole record of plants used against diarrhoea in Indian scenario highlighting on species especially reported from Orissa state (Table 1).

It is difficult to pinpoint on any specific cause for diarrhoea prevalence in Orissa. But, however, few speculations can be forwarded. These speculations pertain to the human ecological, economic, historical and political conditions of a particular region, which has been existing more than hundreds of years amidst the growth of the ethno-medicines and their knowledge which might have incurred in the time course of the than people.

➤ The people of Orissa have rich food habits. This is claimed because; the habit of a society is reflected in their temple culture. In the world famous Jagannath temple about 56 varieties of food combinations / recipes are prepared every day and served more or less for 10,000 number of devotees. However, during the festive occasions the number gets many folded.

Out of the total number of temple recorded in India, 50% approximately are in Orissa state alone and their rich heritage of plant conservation is reported earlier (Mohanty et al., 2000). In each and every temple in Orissa, there is a traditional culture of kitchen preparation of variety of food recipes sacrificed initially to Gods, which later consumed by human with a commercial brand name 'prasaada'. Another such big centre of commercial prasaada preparation next to Jagannath temple (Shree Mandira) exists in Bhubaneswar entitled 'Ananta Vaasudeva Mandira'. Likewise, different small centres in all other places of Orissa state associated with temple culture are outstanding features as on today.

Table 1: Medico-ethnobotanicals for diarrhoea diseases of India - Bold captions indicates Orissa reports (Das et al., 2003)

S. No.	Botanical Names
1.	Acacia nilotica (L.) Del.
2.	Achyranthes aspera L.
3.	<i>A. bidentata</i> Bl.
4.	Acrocalymma L.
5.	Aegle marmelos (L.) Correa.
6.	Aerva lanata (L.) Juss.
7.	Ailanthus excelsa Desf.
8.	Allium cepa L.
9.	<i>Alnus nepalensis</i> D. Don.
10.	Amaranthus spinosus L.
11.	Alstonia scholaris (L.) R. Br.
12.	<i>Andrographis macrobotrys</i> Nees.
13.	A. paniculata Nees.
14.	<i>Annona squamosa</i> L.
15.	Anogeissus latifolia Wall.
16.	<i>Aporosa dioica</i> Muell.
17.	<i>Artocarpus lacucha</i> Ham.
18.	Asparagus racemosus Will.
19.	<i>Atyalosa scarabaeoids</i> Benth.
20.	Azadirachta indica A. Juss
21.	Basella rubra L.
22.	<i>Bauhinia purpurea</i> L.
23.	<i>B. variegata</i> L.
24.	<i>Berberis wallichiana</i> D.C.
25.	<i>Blepharisperma subsessile</i> D.C.
26.	<i>Blumea balsamifera</i> (L.) D.C.
27.	<i>Boerhaavia diffusa</i> Poi.
28.	Breynia retusa Alston.
29.	<i>Buchanania lanzan</i> Spr.
30.	Butea monosperma (Lamk.) Taub.
31.	<i>Caesulia axillaris</i> Roxb.
32.	<i>Calotropis gigantea</i> R. Br.
33.	<i>C. procera</i> W. Aiton.
34.	<i>Canthium glabrum</i> Bl.
35.	<i>Cardiospermum helicacabum</i> L.
36.	Careya arborea Roxb.
37.	Cassia occidentalis L.
38.	<i>Cassia glauca</i> (Rottb.) O. Kuntz.
39.	<i>Cinnamomum pauciflorum</i> Nees.
40.	Citrus medica L.
41.	<i>Clerodendrum colebrookianum</i> Walp.
42.	Coleus amboinicus Lour.
43.	<i>Cordyline fruticosa</i> L.
44.	<i>Curculigo orchoides</i> Gaertn.
45.	Curcuma angustifolia Roxb.
46.	<i>C. longa</i> L.
47.	<i>C. zedoaria</i> Rosc.
48.	<i>Cyclea bicristata</i> Grif.
49.	Cyperus rotundus L.
50.	<i>Dalbergia paniculata</i> Roxb.
51.	<i>D. stipulacea</i> Roxb.
52.	<i>D. volubilis</i> Roxb.
53.	Datura metel L.
54.	Derris trifoliata Lour.
55.	<i>Desmodium gangeticum</i> L.
56.	D. velutinum D.C.
57.	Diospyros melanoxylon Roxb.
58.	<i>Dracaena elliptica</i> Thu.
59.	<i>Drymaria cordata</i> L.

Table 1: Contd...

S. No.	Botanical Names
60.	<i>Echinops echinatus</i> Roxb.
61.	<i>Elaeagnus parvifolia</i> Wall.
62.	Elephantopus scaber L.
63.	<i>Elsholtzia fruticosa</i> D. Don
64.	Embllica officinalis Gaertn.
65.	Entada rheedii Spr.
66.	Erythrina variegata L.
67.	<i>Euphorbia acaulis</i> Roxb.
68.	<i>E. thymifolia</i> L.
69.	<i>Euraya acuminata</i> D.C.
70.	Feronia limonica Nic.
71.	<i>Ficus auriculata</i> Laur.
72.	F. benghalensis L.
73.	F. hispida L.f.
74.	<i>F. nervosa</i> Heyne.
75.	F. racemosa L.
76.	<i>Flacourtia indica</i> Merr.
77.	Flemingia strobilifera L.
78.	<i>Geranium wallichianum</i> D. Don.
79.	<i>Glochidion oblatum</i> Hook. f.
80.	Gmelina arborea Roxb.
81.	<i>Grewia tiliaefolia</i> Vahl.
82.	<i>Hedychium acuminatum</i> Rosc.
83.	<i>Hedyotis scandens</i> Roxb.
84.	<i>Helicteres isora</i> L.
85.	Hemidesmus indicus L.
86.	<i>Hymenodictyon excelsum</i> Wall.
87.	Jatropha curcas L.
88.	J. gossypifolia L.
89.	Kalanchoe pinnata Pers.
90.	Lawsonia enermis L.
91.	<i>Leea macrophylla</i> Roxb.
92.	Ludwigia perennis L.
93.	Mangifera indica L.
94.	Manilkara zapota (L.) P. Royen
95.	<i>Melia composita</i> Willd.
96.	Mesua nagassarium Burm. f.
97.	Mimosa pudica L.
98.	Mimusops elengi L.
99.	Mucuna pruriens (L.) D.C. (= <i>M. porurita</i> Hook.)
100.	Murraya koenigii L.
101.	Musa paradisiacal L.
102.	<i>Ochna integririma</i> Lour.
103.	<i>O. obtusa</i> D.C.
104.	<i>O. pumila</i> D. Don.
105.	Oroxylum indicum L.
106.	<i>Ougeinia oogernessis</i> Roxb.

Table 1: Contd...

S. No.	Botanical Names
107.	Oxalis corniculata L.
108.	<i>Oxyris digyna</i> L.
109.	<i>Paedaria foetida</i> L.
110.	Pavonia odorata Will.
111.	Phoenix asperulatus Hutch.
112.	<i>Phyllanthus amara</i> Schum.
113.	P. emblica L.
114.	<i>P. fraternus</i> Webster
115.	<i>Picorrhiza scrophulariflora</i> Pen.
116.	<i>Plantago erosa</i> Wall.
117.	<i>Polygonum chinensis</i> L.
118.	Psidium guajava L.
119.	Punica granatum L.
120.	<i>Pyrus lanata</i> D. Don.
121.	<i>Rhus semialata</i> Murr.
122.	<i>Ribes himalense</i> Royel.
123.	<i>Scleria levis</i> Retz.
124.	<i>Sida cordata</i> Borss.
125.	<i>S. cordifolia</i> L.
126.	<i>Solanum surattense</i> Burm. f.
127.	<i>S. viarum</i> Dun.
128.	<i>Sonchus brachyotus</i> D.C
129.	Sphaeranthus indicus L.
130.	Spondias pinnata Kurz.
131.	<i>Stephania japonica</i> Miers.
132.	Sterculia urens Roxb.
133.	<i>S. villosa</i> Roxb.
134.	Strychnos nux-vomica L.
135.	Symplocos racemosa Wt.
136.	<i>Syzygium cumini</i> L.
137.	Tamarindus indica L.
138.	<i>Tanacetum dolichophyllum</i> Kitam.
139.	Tectaria cicutaria L.
140.	Terminalia bellirica Roxb.
141.	T. chebula Retz.
142.	<i>Trichodesma indicum</i> L.
143.	Tridax procumbens L.
144.	Valeriana jatamansi Jones
145.	Vernonia squarrosa Lesas.
146.	Viscum orientalis Willd.
147.	<i>Woodfordia fruticosa</i> L.
148.	<i>Xeromphis spinosa</i> Keay
149.	<i>Zanthoxylum nitridum</i> D.C.
150.	Zingiber officinale Rosc.
151.	Z. purpureum Rosc.
152.	Ziziphus mauritiana Lamk.
153.	<i>Z. xylopyrus</i> Willd.

Even, the food (*prasaada*) is also indented from temples for the thousands during various social functions like marriages, holy thread ceremonies and other rituals too. Of course, in temple culture related food preparation, there is no possibility of contamination as it is served hot. But, it certainly makes a concern of the rich food habit of Oriya society and may be such habit is the key features for stomach disorders.

➤ Besides such rich food configuration, another important habit, mostly tagged with

Oriya culture is the habit of taking stale food. The unconsumed remnants of cooked rice are admixed with water along with a little stale extract (*morana* - the yeast extract) of previous stock and allowed to be fermented even more than over nights. This rice is named as '*pakhaala*' taken as such which is enriched with fermented by-products like ethanol. Even though such rice is consumed by poor to sub-middle class families, the dinning table of rich people is also not free

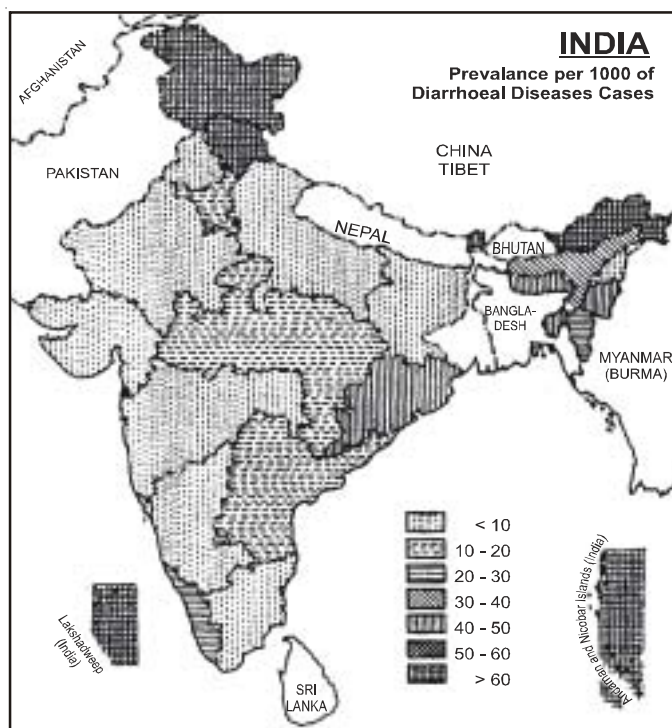


Fig. 1. Comparative prevalence of diarrhoea diseases in various states of India (Adopted from Bhasin & Bhasin, 2001, © Kamla-Raj Enterprises, Delhi)

from that at times. This too, has reflected in the temple culture. The stale rice water (*pakhaala*) is also used to prepare another recipe along with many vegetables, known as '*kaanjee*' (gruel), another favourite Oriya dish. At times the *kaanjee* is preferred to be eaten on the next day of its preparation for a better palatable shower taste. It must be admitted that such stale food like *pakhaala* and *kaanjee* constitute a medium of growth conducive from microbial point of view and their role in initiating stomach disorders, can not be ruled out.

- The poverty-stricken, inadequate rather poor educational status of Orissa people in the past is of remarkable significance. During occurrence of stomach disorders and diarrhoea diseases of any kind, people run after quacks looking for ethno-medicines. This may be the indirect reason for exploration / exploitation of botanicals. Interestingly, a single plant *Kalanchoe pinnata* (Lamk.) Pers. (Fig. 2), locally known as *Paattipatra* / *Hemakaakara* /

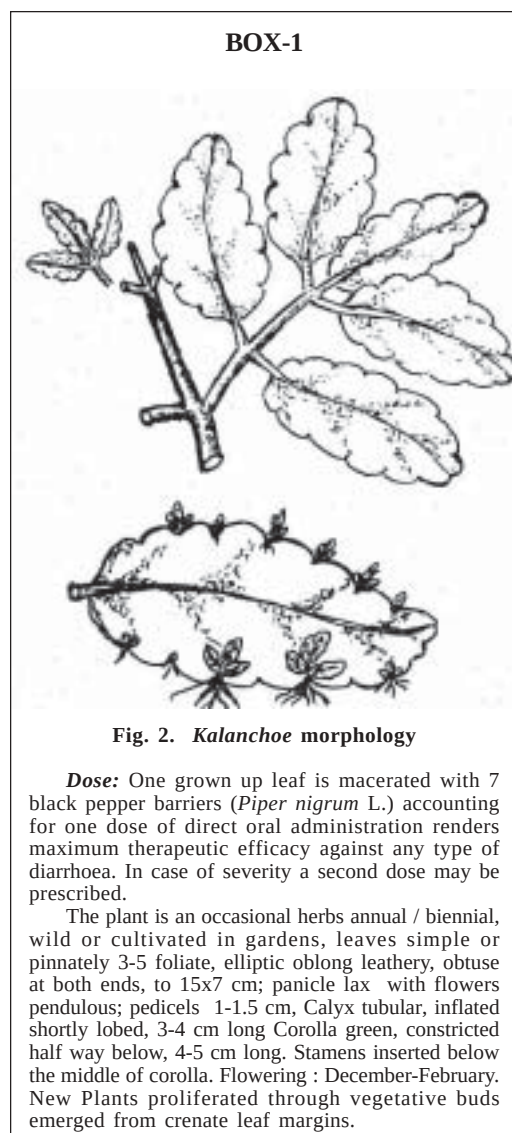
Amarapoi, is known even to a child of Orissa as the top most remedy against diarrhoea (Box-1) being not reported from any other state of India as per our earlier review (Mohanty et al., 1998).

It will not be out of place to mention another effective home remedy pertains to the use of *Citrus medica* (Lemon) hesperidium. The total fruit along with the pericarp and seeds are pounded and given for internal use along with water.

Similarly, the latex exudates from the trunk through bark cuttings of *Ficus racemosa* in places like Patnagarh and other parts of Bolangir districts of Orissa, is being used as remedy for diarrhoea diseases.

Also the use of *Allium cepa* L. (Onion) bulbs, after processing for 24 hours with lime [$\text{Ca}(\text{OH})_2$] applied on cut surfaces, acts as an invaluable remedy for diarrhoea diseases including amoebic-blood-dysentery, is commonly followed in various rural areas of the state.

Another macerated leaf preparation given for



internal use of the botanical *Coleus amboinicus* Lour. locally known as *Kurumuli* is a much accepted therapeutic remedy widely followed by most rural inhabitants. Hence, there is a tendency of conserving the plant in the courtyard of most of the dwellings. The use of soaked seeds of *Ocimum tenuiflorum* (= *Ocimum sanctum* L.) - *Tulsi* and *Ocimum basilicum* L. locally called *Durlavaa* as constituent in cold drinks adds to the therapeutic effect against diarrhoea diseases.

- The *Jagannath Dhaam* temple at Puri and its heritage is the heart of culture, history,

politics, literature, worship and day to day rituals of Orissa. The temple heritage and culture is so vast and deep seated that no subject of Orissa is free from its influence including even the so-called non-Hindus. The temple celebrates 13 festive occasions in 12 months of the year. Thus the Oriya proverb says : *Baara* (12) *maasare* (month) *tera* (13) *parva* (festivals). Out of these 13, the *Ratha Yaatraa* (car festival) is prime among these which occurs in the month of *Aashaadha*, coincides to the month of July in English calendar. During all the festive occasions, there are huge gatherings at Puri Dhaam and it reaches the top during the car festival. Presently, an assemblage of more than 10 lakh of subjects world over congregated in one day at Puri on a single cause. When we look back to the history, it speaks even during the past where there was lacking of suitable communication and transport, the gathering was never less than 2 Lakhs. In those periods, there were no preventive measures for diarrhoea or against any other epidemics. People used to come by walk from every nook and corner of India initiated months before. All these situations such as high congregation, lack of preventive measures, lack of hygienic condition, lack of proper medicaments and facilities there in and above all the irregular life style in an incrementing materiological conditions like rainy season (July) maybe the most effective cause of on set of diarrhoea diseases. We have referred the news history of Orissa during the British period, which is more elaborative and evident of the causes. The English transverse of exemplary news is presented in the Box-2 (Sahu, 1998).

Moreover, the Jagannath temple has its own historical records of the day to day events scribed on palm leaves, popularly known as "*Maadala Paanji*" which also supports these pre-going statements.

Ratha Yaatraa is not only concentrated to Puri; rather, it is an occasion throughout Orissa. In every privileged rural unit, there is existence of a Jagannath temple and the people of that area congregated in huge number to celebrate the occasion on that day. May be, such congregation were smaller units of the conditions compared to that prevail at Puri. Under such conditions, once

BOX-2

**Cholera Broke out during Dola Yaatraa
(Transverse from Oriya)**

Despite the promulgation of an ordinance during February 1886, by the British Regime, directing the public not to arrive at Puri for the *Dola Yaatraa* celebrity, it had no impact on people and the epidemic. Cholera penetrated to Puri being flown through pilgrims from the effected regions like Rambha, Parikuda and Maluda etc. of Ganjam belt. Pilgrims by and large abundantly congregated at Puri. Eye witness says, every morning was found with dead bodies of ten to fifteen people dieing of the epidemic. Barlo Saheb, the then Collector and District Magistrate of Puri district, had deployed six scavengers to cremate the corpses in the grave yards. Also four carts (carriages) were engaged for the purpose. Later, in view of the grievously increasing number of corpses, it became, rather impossible to cremate everyday. Instead, the mortal remain were thrown which was dumped as heaps of hundreds in the burial grounds.

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There was instruction even to the scavengers to transfer the severely affected patients from roads to the hospital. But, with the fear of being outcaste due to contact with the socially untouchable scavengers or even by taking English medicines from hospitals, the patients were preferring to die on the roads, rather than availing the facilities, so provided by the administration (Sahu, 1995).

the diarrhoea disease like Cholera gets initiated, it disseminated all over by infiltration through vectors in form of movement web of network.

Significantly, out of 421 ethno-medicinal botanical, we have reviewed 8 plants such as *Andrographis paniculata* Nees, *Asparagus racemosus* Willd., *Hemidesmus indicus* (L.) R. Br., *Achyranthes aspara* L., *Alstonia scholaris* (L.) R. Br., *Calotropis gigantia* (L.) R. Br. ex Ait, *Oroxylum indicum* (L.) Vent., and *Tridax procumbens* L. are reported more than 7 times from different communities by different authors

(Das *et al.*, 2003). Interestingly, even though these 8 plants have various utility, they have a common cause for diarrhoea. This again reinforces the human inquisitiveness to search for a drug molecule under various induced stress condition.

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