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EDITORIAL

Adivasi - the oldest anthropological research journal of Odisha has entered into its 56th year of publication during the year 2016. Being a bi-annual publication its first issue has been dedicated to ethno-medicine of Odisha. Ethno-medicine has opened new frontiers in multidisciplinary research worldwide having roots in anthropology. In the contemporary scenario, western medicine or bio medicine has been spread over worldwide but still it has remained beyond the reach and access of many sections of the society, especially the rural and tribal communities in Odisha and elsewhere. Western medicine has its own merits and demerits and the practice requires professionally qualified health providers. It has been well realized that although the curative aspects of western medicine has been well appropriated, yet it has many toxic side effects, not accessible and affordable to all sections and economically backward communities, and above all it is incomprehensible to the disadvantaged sections of the society. On the other hand, the traditional medicine or ethno-medicine based on organic and mineral ingredients that are easily available in natural surroundings has established its credentials as a time tested, versatile, authentic, cheap, accessible, affordable, comprehensive, holistic and culturally attuned systems of healthcare in an evolutionary perspective, and hence has wide acceptance.

In the current context, when the new world is searching for alternative medicine and healthcare traditions vis a vis the harmful effects of modern medicine, the relevance of ethno-medicine has assumed larger significance. As matter of fact, outcomes of ethno-medical research has not only contributed immensely to new drug developments through pharmacological validation but also has contributed to conservation of unique healthcare traditions and embedded indigenous knowledge that are unique with ethnic and rural communities. The examination of ethno-medicine includes articulating an indigenous knowledge approach to understand what it is and why it historically existed outside dominant institutions, biomedical models and other scientific paradigms. In the context of progressively vanishing age old traditions and institutions due to onslaught of modernity and globalization there emerges a need for studies and documentation towards conservation of time tested knowledge, beliefs and practices related to traditional healthcare system, and for that matter the ethno-medicine across different cultures.

With this background, though we have published several empirical study based articles on the ethno-medicine of Odishan tribes in our past issues of Adivasi, we are bringing out this special issue on ethno-medicine because we received seven standard research articles on this subject.

The introductory article entitled 'What is ethno-medicine and why does it matter today' by M.K. Jena, P. Pathi, S.C. Mohanty and A.B. Ota comprehends the overall understanding of ethno-medicine as a discipline and why it is so relevant today. The paper has examined various definitions of ethno-medicine in a historical and theoretical perspective and has set the dimensions of ethno-medical studies taking reference from earlier published literatures of merit and value. The authors in the paper has attempted

to initiate the argument that current references on ethno-medical research has been losing sight of the cognitive and cultural context of the subject which is at the core of an ethno-medical study design. Drawing from earlier references the authors have provided many insights setting directions of future research in ethno-medicine suggesting that ethno-medicine has to be studied in the proper cultural framework.

The second article – 'An assessment of folk medicinal use of plants by tribes in Similipal' by B. Mohapatra, R. Parida and M.K. Jena is an empirical observation on Kolha and Santal tribe residing in and around Similipal Biosphere Reserve in Mayurbhanj district. The authors, in their anthology have presented ethno-medicinal observation on 29 tree species, 14 shrubs and climbers and 17 herbs applied for prevention and cure of many common ailments and diseases. The authors have concluded that the knowledge systems would contribute immensely in the integration and synthesis with any other recognized systems of medicine as well as help preservation and conservation of a great diversity of important flora.

Third in the sequence, S.K. Palita, Kalpana Patra and Debabrata Panda in their 'Plants used in Ethno-medicine by Paraja Tribe of Koraput District' have presented their findings from explorations on ethno-medicine of the tribe covering 16 Paraja dominated villages. The study revealed the use of 70 species of plants distributed in 68 genera belonging to 39 families that are administered by Paroja traditional healers for the treatment of 48 ailments. The authors view the collection and analysis of ethno-medicinal knowledge of this type as an important step towards conservation and utilization of biological resources.

The fourth article entitled 'Ethno medicinal uses of plants: A study among the Munda community in Jajpur district of Odisha', by K.N. Dash and C. S. Satpathy is based on an investigation carried out in 10 Munda villages. They have enumerated 59 species belonging to 56 genera and 41 families, collected from the wild and used for treatment of common ailments in the Munda society. The authors also viewed that the Munda concept of disease and treatment revolves around their religious beliefs and practices and they depend upon traditional medicines to a larger extent. The authors have also observed that some of the medicinal plants, held important by the Munda healers, have become scarce in the area due to industrialization and anthropogenic activities that call for conservation.

In the fifth article, Gopinath Pradhan has presented a comprehensive account of traditional healthcare practices of the Kondh and Paroja tribes in Dasamantapur block of Koraput district in his 'Traditional Healthcare Practices among the Kondh and Paroja tribes of Koraput'. The paper reveals the understanding of the tribe on diseases and ailments, their contextual choice of healthcare systems and have documented the applications of 50 plant species variously used as remedy and cure for certain diseases. The author recommends that the modern healthcare system should suitably integrate the traditional healthcare systems in order to be better accepted by communities as well as for providing more informed choices for communities.

S. Pradhan, B. Mohapatra, M.K. Jena and R. Mohapatra in the Sixth article on 'Plants used in Ethno-medicine against Breast Cancer and their Pharmacological Review', have attempted to scientifically validate local information on medicinal plants, diseases and treatment by traditional healers, experts and professionals on the basis of an ethno-botanical field survey in Western Odisha. The paper has laid focus on anticancer herbs, particularly on 12 important plants, used by locals against the breast cancer symptoms, which the authors have attempted to scientifically, validated with reference to earlier studies in ethno-medicine and ethno-pharmacology.

The seventh and last paper entitled 'Ethno-medicines used for treatment of Gynaecological Disorders of Tribal Women in Mayurbhanj District of Odisha' by Gulsan Khatoon reports about 16 plant species belonging to 8 families, mostly used for treating various gynaecological disorders by the tribal women in the said district. The author observed that use of plants as medicine against certain gynaecological problems, especially by tribal women, is a discrete knowledge confined to the healers and the women who used it. The author recommends further studies on chemical pharmacological actions on the said plants remedies.

I express my sincere thanks to the paper contributors for their painstaking efforts in preparing and presenting their articles. I am also grateful to Shri S.C.Mohanty, Associate Editor of Adivasi and Consultant, SCSTRTI and Dr. M.K. Jena, Consultant for giving a lot of time for a thorough reading and editing of all the articles and giving substantial time and effort for bringing out this volume.

It is hoped that these articles will be of much help to the researchers, development practitioners, academicians and general readers interested in conducting research and acquiring knowledge in tribal society and culture.

Dated, the 10th January, 2017 **A.B. Ota**
Bhubaneswar EDITOR

WHAT IS ETHNO-MEDICINE AND WHY DOES IT MATTER TODAY

M.K. Jena[1], P. Pathi[2], S.C. Mohanty[3], A.B. Ota[4]

Ethno-medicine emerged as a sub discipline of medical anthropology. Many ethnologists and anthropologists have engaged themselves in exploring the dimensions of Ethno-medicine and many accounts of great scientific value have been published ever since through the decades. Despite the growth and expansion of western medical system everywhere, in present context, people in the Third World still take recourse to their indigenous medical system developed on the basis of spiritualization, traditional healing practices and some modern notions.

According to the data released by the World Health Organization (WHO), Ethno-medicine has maintained its popularity in all regions of the developing world and its use is rapidly expanding in the industrialized countries (WHO, 2003). Today, ethno-medical practices and beliefs are part of a total belief system that transcends class, ethnicity and religious belief in such a manner that the terms 'folk or traditional' can be used to describe practices that are truly universal (Lowe, *et.al*. 2003).

Ethno-medicine helps us to understand the developments in healthcare systems and stresses the importance of alternative systems that may be beneficial to the modern world too. Thus Ethno-medicine has become an interdisciplinary subject studied in a cross-cultural approach. The systematic study of Ethno-medicine by anthropologists began since about four decades, although ethnographers always reported about the traditional healthcare and the treatment of illnesses in the indigenous groups they are investigating. However, in recent days there has been an increasing interest in ethno-medical research because the healthcare traditions have been fast changing and many indigenous systems have been threatened by modernization. In the context of research on Ethno-medicine it is therefore important to review and revisit the concepts and dimensions of the subject in order to assess the trend of present day researches and the dimensions that are by and large covered and the gaps or the areas that have remained least addressed.

Understanding Ethno-medicine

In general understanding, Ethno-medicine is a study or comparison of the traditional medicine practiced by ethnic groups or indigenous people. The derivatives of this word are the root words i.e., *ethno* which comes from the Greek *ethnos* meaning people and *medicine* has its roots from the Middle English, Old French and Latin word *medicīna*. It is a comparative study of the ways in which traditional medical practices of indigenous people are utilized to identify and prevent disease (Dictionary.com). It is considered a subfield of medical anthropology and generally takes more of an anthropological approach than it does with bio-medical. It studies not only written documentation of traditional medicine, but oral

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traditional accounts of traditional medicine as well. It is also known as a type of folk medicine specific to various ethnic groups. The term is used as synonym of traditional medicine and is frequently confused with ethno-pharmacology.

Merriam-Webster dictionary defines Ethno-medicine as the comparative study of how different cultures view disease and how they treat or prevent it. According to Collin's English dictionary, it is the study of different cultural approaches to health, disease and illness, and of nature of local healing systems.

In anthropological connotation, 'Ethno-medicine is concerned with the study of medical systems from the native's point of view. Native categories and explanatory models of illness, including etiologies, symptoms, courses of sickness and treatment are investigated' (Kleinman, 1978; Kleinman, 1980). Ethno-medical research is interdisciplinary and it applies the methods of ethnobotany and medical anthropology. Often, the medicine traditions it studies are preserved only by oral tradition (Acharya & Shrivastava, 2008:440). The ethno-medical approach proves particularly useful for the study of indigenous therapeutic agents because it allows the researcher to understand treatment patterns according to native explanatory models instead of only through the lens of biomedicine. In the study of ethno-medicine, while the medical part studies the drug dimensions, the anthropological inquiries examine the cultural context and perception of a traditional medicine.

In 1968, the term ethno-medicine was applied to 'those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine' (Ackerknecht, 1971:11). Subsequently, the term was applied more broadly to refer to 'culturally oriented studies of illness' (Fabrega, 1974), 'beliefs and practices of indigenous cultural development' (Hughes, 1978), 'medical beliefs and practices of members of traditional societies' (Foster and Anderson, 1978:51). It was argued that the concern of ethno-medical investigator was to explain 'an illness – its genesis, mechanism, descriptive features, treatment and resolution – as an event having cultural significance' (Fabrega, 1974). Ethno-medicine was later defined (Fabrega, 1977:969) as 'the study of how members of different cultures think about disease and organize themselves towards medical treatment and the social organization of treatment itself'. Another definition that was suggested by (Foster and Anderson, 1978:36) holds that 'Ethno-medicine embraces all of the health promoting beliefs, actions and scientific or pseudo-scientific knowledge and skills of a group. The social and cultural dimensions of a disease and the biological phenomena of the illness have to be taken into account, as an ailment or disease may threaten the social and economic well-being of the group and therefore concerns everybody'.

Comprehensively, 'Ethno-medicine refers to the study of traditional medical practice which is concerned with the cultural interpretation of health, diseases and illness and also addresses the healthcare seeking process and healing practices' (Krippner, 2003). The practice of Ethno-medicine is a complex multi-disciplinary system constituting the use of plants, spirituality and the natural environment and has been the source of healing for people for millennia (Lowe, *et.al.* 2003: 170).

Although the terms Ethno-medicine and traditional medicine are used synonymously and interchangeably, yet traditional medicine seems to be inclusive and well defined. WHO (2000) has defined traditional medicine as 'the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses'. Traditional medicine, in

this context, covers a broad range of healthcare systems going beyond specific cultures and traditions and covering conventional and nonconventional systems of healthcare. However, anthropological research assumes to have been more connected with the term ethno-medicine as compared to traditional medicine.

Early studies emphasized cultural context in Ethno-medicine research

Early studies of ethno-medicine or indigenous medical systems were mostly limited in focus on witchcraft and illness caused by supernatural forces and on specialists like folk healers, and shamans (Fortune, 1932; Evans-Pritchard, 1937; Turner, 1967; Fabrega and Silver, 1973). By the 1930s, research on the origin and provenance of the cultural components of medical systems was a prominent dimension of American cultural anthropology (Clements, 1932). Since, ideas and behaviours related to sickness and healing were considered a significant part of culture, efforts to reconstruct the process of culture building included close study of the tools and other paraphernalia of healers. The distribution of cultural traits related to health and the control of sickness were mapped and analysed by Forrest E. Clements, resulting in identification of five major causes of diseases in the non-industrial world: sorcery; soul loss; breach of a taboo; intrusion by a disease object; and intrusion by a spirit (Kroeber, 1947).

During this period the emphasis was laid on meaning of illness and on the symbolism of the curing rituals performed by the folk healers with the result that scholars mostly overlooked empirical aspects of indigenous medical cultures (Waldstein and Adams, 2006). However, in the last few decades focus of research on indigenous medical culture has broadened and suggested that in many cases the naturalistic elements of medical cultures had been underestimated and that strong evidence exists for empirical knowledge in many indigenous cultures (Brett, 1994; Berlin and Berlin, 1996; Waldstein and Adams, 2006).

Rubel and Hass (1990) have provided a comprehensive account on cultural context of Ethno-medicine by comparing salient approaches taken by anthropologists in their analysis of illness, healing, and those who provide assistance when sickness strikes. The early classics reported the causes of illness and described diagnostic procedures that invoked supernatural spirits, machinating spouses or neighbours with accounts of the recruitment of diviners and counter-witchcraft specialists to discover the causes of illness.

The argument by Ackerknecht (1971:31) paved a radical shift from a historical approach to health phenomena to a theoretical orientation. According to him 'what counts are not the forms but the place medicine occupies in the life of a tribe or people, the spirit which pervades its practice, the way in which it merges with other traits from different fields of experience'. The emerging functional theory viewed society as comprising interrelated parts, with concepts of disease and its cause(s) and the characteristics of healers being interdependent (Ackerknecht, 1971:31, 54, 55; Wellin, 1977:50, 51; Beals, 1980:289-291). Ethno-medicine contributed to the development of theory and method in socio-cultural anthropology by showing the functional integration of the components of healthcare institutions within society's cultural matrix, its social organization, or political system (Rivers, 1942). The functional integration approach, together with what have become known as the cognitive and the symbolic approaches have become the dominant theoretical approaches to institutions of healthcare. As anthropology became more systematic and research more sophisticated, ethno-medicine became one of the essential dimensions of culture to be investigated (Rubel and Hass, 1990:116).

The spiritual aspects of health and sickness have been an integral component of the Ethno-medicinal practice for centuries. Foster (1976) classified the ethno-medical systems (primitive medicinal systems or traditional medicine) into two universal categories of disease etiology –

natural and un-natural (supernatural) causes. Natural illness explains illness in impersonal systemic terms. Thus, disease is thought to stem from natural forces or conditions such as cold, heat and possibly by an imbalance in the basic body elements. On the other hand, unnatural illnesses are caused by two major types of supernatural forces: occult causes which are the result of evil spirits or human agents using sorcery and spiritual causes which are the results of penalties incurred for sins, breaking taboos or caused by God (Foster, 1976). However, Rivers (1924) pioneered in establishing the close relationship between magic and religion in primitive societies in their ethno-medicine and Ackerknecht (1971) also emphasized that primitive medicine is primarily magico-religious in nature, but utilizes a few rational elements.

Importance of studying Ethno-medicine

A fundamental question that often arise is that why is ethno-medicine or traditional medicine so important today? Is it because of the fact that people taking recourse to traditional medicine do not have access to modern medicine? If modern medicine is available at their doorsteps why have the communities retained these traditions? If one looks closer at the interweaving of cultures, plants and healing practices, it would be clear that a lot of such traditional knowledge and biodiversity is at stake with the decline of traditional medical knowledge, both locally and globally. The important purpose of studying ethno-medicine is to preserve the traditional knowledge of healthcare which not only is a repository of knowledge about plants but also helps drug development for pharmaceutical science. Field based observations of traditional medicine have the potential to contribute to integrative medicine.

Over last couple of decades there has been a heightened interest in the study of Ethno-medicine. The lack of attention paid to this area of study has resulted in a significant decrease in biodiversity and culture in various indigenous regions of the world. Despite the apparent benefits of modern medicine, there are many limitations to its overall approach as regards to healing those who are ill. The costs of modern health care can prevent numerous individuals from receiving its benefits except those who can afford it. The study of ethno-medicine provides a bridge to the gap between western medicine and cultural healing practices of indigenous people. It also helps to address the apparent disconnection that modern societies have with the nature and natural systems.

In the research context on ethno-medicine, the understanding on conceptualization of illness, its cause and cures by the communities, the role of healers and the relationship between concepts of disease and cosmology are very important areas of study. The concepts and processes developed and adapted by the communities are scientific on its own accord. However, the notion of illness varies from community to community. There are certain cultural attributes that are commonly found among most, if not all, of the tribal communities. They are:

- Notion of illness attributed to sorcery/witchcraft
- Transgression of social norms
- Associations drawn between social norms and governing behavior
- Attribution of sickness to supernatural forces

Information on the above points recognizes the cultural diversity amongst indigenous and rural peoples who practice age-old traditions of interacting with the natural environment that surrounds them. Subject to evolution, such knowledge still remains loyal to the practices established across generations. Traditional ways of utilizing regional flora and fauna, other living organisms, as well as the use of other energetic forces such as mantras, psalms and chants, for healing and cleansing purposes, are vital proponents to this form of knowledge.

Practiced by shamans and families of local rural communities, this multifaceted and holistic approach to medicine provides an inexpensive and efficient way for economically disadvantaged communities to heal each other. Such knowledge is passed on to new generations through oral traditions, apprenticeship programs and other culturally specific traditions and insinuates the fact that practitioners of these methods and models are stewards of not only the land and environment they cultivate but also of the technologies themselves. This form of knowledge is often misinterpreted by many western societies, who characterize shamanic practices and other indigenous ways of healing as strange and mysterious methods of witchcraft. While the interplay of spirituality, respect for nature and a keen understanding of their natural environments help to shape the traditions of such people, it is important to recognize that they often view their daily practices simply as a way of life.

Many recent research literatures on ethno-medicine draw upon the impression that the culture element in ethno-medical studies has been by and large ignored or very inadequately addressed. The cultural elements or the cognitive aspects in ethno-medical studies specify the knowledge systems in specific cultural context, geographical context and political context. As an observation it may be stated that many researchers have focused their studies on the medicine and their administration in relation to certain diseases and sickness. Each medicine, tools for administration of medicine, the processes followed, the patient psychology, notion of healthcare and such are culturally attuned in various ethnic communities. Hence, in the absence of specific cultural interpretations in the context of ethno-medical research the descriptions appear as disconnects between the people, their practice, their notion of healthcare and notion of well-being.

Many ethnobotanical accounts are being presented as accounts of ethno-medicine. In both the cases culture is an integral part to be studied, although, however, in the case of ethno-medicine one has to go deep into the cultural attributes, symbolism, magic and religion, ethno-psychiatry in relation to their healthcare systems. Hence, ethno-medicine and ethno-botany are not the same; their context and concept contrasts in certain major dimensions. Ethnobotany is a study of botany in relation to a particular race, culture or people. It deals with study among tribals and rural people for recording their unique knowledge about plant-wealth and search of new resources of herbal drugs, edible plants and other aspects of plants including conservation. Since, plant based drugs are mainly used in traditional healthcare systems, the ethnobotanical studies can contribute a lot to ethno-medical studies. Thus certain dimensions in ethno-botany and ethno-medicine are mutually inclusive and certain dimensions are mutually exclusive. Ethno-botany and ethno-medicine go hand in hand while studying the magico-religious beliefs of people associated with plants in performing magic, witchcraft and sorcery for healing sicknesses and diseases and preserve well-beingness.

The purpose here is not to draw upon the differences between ethno botany, ethno-medicine, ethno pharmacology or such closely related subjects. Rather the larger interest is to open up the relatively ignored aspects and dimensions in ethno-medicine studies. No doubt, literatures available in ethno-medicine have brought into light many aspects of the subject. However, there are still certain frontiers in ethno-medical research which has been least explored or inadequately described. Rubel and Hass (1990) on the basis of their analysis have urged the importance of looking into certain major areas, as presented here under, that also sets the agenda for future research in ethno-medicine.

1. The incidence and distribution of particular illnesses within a population is an important area for research. It questions if a stipulated illness is widespread or confined to one or several segments of the population. If women and men suffer it in

equal measure. If it affects persons without respect to their social and political status. If it is confined to a particular ethnic group or social class.

2. The effects of healing procedures: It is vitally important to discover the extent to which a healing procedure is directed have been attained, whether these goals are improved social relationships, improved social well-being, or improvement in an individual's biological or mental health status (Browner, Ortiz and Rubel, 1988) where individual healing is a metaphor for the alleviation of social difficulties that threaten rupture of structural ties or social solidarity (Lindenbaum, 1979)

3. Healing implications of patient support group: Although it is conventionally accepted that healing procedures that includes patient support group have better outcomes, the importance of this assumption demands empirical assessments. Does social support in a healing ceremony ensure better results and, if so, in what kind of social system?

4. The choice of nonprofessional care when cosmopolitan physicians are available: Speculation that people prefer non-physician healers because they share with them a paradigm of health and healing or because lay healers take more time in treatment of patients than biomedical physicians is unproductive.

5. The differences between healers locally identified by distinctive labels should be specified: Whether they are recruited from the same segment of society, gain healing power in the same manner, and undergo similar training. Studies of this kind may eventually permit cross-cultural generalization about categories of healers.

6. Symptoms and sicknesses: It is only through tabulation and description of the symptoms reported by all patients suffering from a particular sickness that we can hope to discover a consistent assemblage of indicators and identify the relationship among them (Fabrega, 1977).

7. The range of applicability of ethno-medical hypothesis.

It is not only ideal rather logical too to give due importance to the above as important ingredients of ethno-medicine research outputs in order to properly specify the source of knowledge in relation to specific cultures. That would substantiate the ethno-medicine of an ethnic group or population, the relationship between the health seekers and health providers within domain of culture, magic, mysticism, customs and traditions.

The theories and concepts of prevention, diagnosis, improvement and treatment of illness in ethno-medicine historically rely on a holistic approach towards the sick individual, and disturbances are treated on the physical, emotional, mental, spiritual and environmental levels simultaneously. As a result, most systems of traditional medicine may use herbal medicines or traditional procedure-based therapies along with certain behavioural rules promoting healthy diets and habits. Holism is a key element of all systems of traditional medicine. Therefore, when reviewing the literature on traditional medicine (both herbal medicines and traditional procedure-based therapies), the theories and concepts of the individual practice of traditional medicine, as well as the cultural background of those involved, must be taken into account.

Use of traditional medicine has expanded globally and has gained popularity. It has not only continued to be used for primary health care of the poor in developing countries, but has also been used in countries where conventional medicine is predominant in the national

health care system. Practices of traditional medicine vary greatly from country to country, and from region to region, as they are influenced by factors such as culture, history, personal attitudes and philosophy. In many cases, their theory and application are quite different from those of conventional medicine. Long historical use of many practices of traditional medicine, including experience passed on from generation to generation, has demonstrated the safety and efficacy of traditional medicine.

In April 2000, WHO published General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine. The guidelines focus on the current major debates on safety and efficacy of traditional medicine and are intended to raise and answer some challenging questions concerning the evidence base. They also clarify certain commonly used but unclear definitions. Various practices of traditional medicine have been developed in different cultures in different regions without a parallel development of international standards and appropriate methods for evaluating it. The challenge now is to ensure that traditional medicine is used properly and to determine how research and evaluation of traditional medicine should be carried out. However, these guidelines are still not sufficient to cover many challenging issues in the research and evaluation of traditional medicine.

Despite its existence and continued use over many centuries and its popularity and extensive use during the last decade, traditional medicine has not been officially recognized in most countries. Consequently, education, training and research in this area have not been accorded due attention and support. The quantity and quality of the safety and efficacy data on traditional medicine are far from sufficient to meet the criteria needed to support its use worldwide. The reasons for the lack of research data are due not only to health care policies, but also to lack of adequate or accepted research methodology for evaluating traditional medicine. It should also be noted that there are published and unpublished data on research in traditional medicine in various countries, but further research in safety and efficacy should be promoted, and the quality of the research should be improved.

Conclusion

Ethno-medicine does not explicitly derive from the conceptual framework of modern medicine. The term refers to etiologies, methods of diagnosis and treatment of illness in the context of a native or folk culture. Folk medicine incorporated medical knowledge of past centuries and also traditional practices of indigenous populations. The practitioners of ethno-medicine or folk medicine are considered to be highly competent professionals. Therefore, ethno-medicine has to be studied in the proper cultural framework.

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AN ASSESSMENT OF FOLK MEDICINAL USE OF PLANTS BY TRIBES IN SIMILIPAL

B. Mohapatra[1], R. Parida[2], M. K. Jena[3]

Abstract

The tribal and non-tribal forest dwelling communities derive manifold benefits out of the flora in their environment. They have been using plants and their parts as medicine and in welfare purposes. In remote areas where the communities have least reach and access to modern and established systems of medicine there they continue to survive from diseases and ailments by using plant medicines in their folk methods. Magico-religious beliefs are often associated with their method of administering medicine.

The present paper makes an assessment of certain medicinal plants used as medicine; both preventive and curative; for several diseases and ailments by Kolha and Santal tribes residing in and around Similipal Biosphere Reserve in Mayurbhanj district. The detailed process of administering the plant medicines by the said communities is beyond the scope of this paper. In this anthology, ethno-medicinal observations have been made on 29 trees, 14 shrubs and climbers and 17 herbs.

Key words: Traditional medicine, tribal medicine, Kolha, Santal, Biodiversity

Introduction

Traditional healthcare systems are time tested, popular, effective, legitimate, acknowledged, authentic, comprehensive, cheap, affordable and universally accepted system of treatment. Though traditional healthcare systems principally depend on plant and animal material based medicines, yet they justify to be assured treatment methods in non-surgical mode and it cures ailments by roots and branches. The origin of several systems of traditional healthcare may be traced back to folk practices which are practiced and passed down from generation to generation. Above all, traditional systems are valuable human heritage up for universal human welfare, particularly for major rural and tribal population. They are best suited to local conditions, economy, culture and social practice.

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Its objective is about to be regained as there has been a growing interest in traditional medicine worldwide. Medicinal plants and their parts have assumed to be one of the fastest expanding foreign exchange sectors. In India, there have been initiatives for creating a Traditional Knowledge Digital Library (TKDL) on traditional medicinal plants and there has been also good lead on a Traditional Knowledge Resource Classification. TKDL is expected to serve a purpose by integrating widely scattered and distributed references on traditional knowledge systems in India in a retrievable form. The ethno-botanical information on medicinal use of plants by local communities would contribute to the knowledge base in the public domain.

Traditional medicine is defined as 'that whole, which includes holistic knowledge and practices, oral and written, functioned in diagnosis, prevention and curative aspects of illness and disease to promote total well-being, confide explicitly or implicitly on practical experiences and observations or know-how techniques with or without regional cultures having overtone of religion or not (Reddy, 1986). Further, Dunn (1977) defined a medical system as 'the patterns of social institutions that evolve from deliberate behavior to enhance health, with regards to its traditional medical system is a collection of know how phenomena of diagnosis and cure'.

Traditional medicine Vs Tribal medicine

In their traditional medicare system, the tribal communities in Odisha use products out of plants, animals and other naturally available materials. In tribal societies the treatment is often assisted by magic and mysticism. Through the evolutionary stages traditional medical systems have seen many propagation of myths and superstitions such as the *doctrine of signature,* advocated by Parcelsus (1493-1541) according to which all plants possessed certain signs given by God, which indicated their usefulness in treating diseases of similarly shaped organs in human body.

Traditional medicine and tribal medicine varies contextually but they have similarities in many respects. Pal (1986) classified the traditional medicine into three heads:

1. Written traditional systems of medicine (Ayurveda, Unani, Sidha, etc)
2. Oral traditional system of medicine (tribal medicine, family medicine, household remedies, professional and semi-professional medicine)
3. Some components of western medicine

The oral and written traditional systems of medicine are based on transmission of knowledge, whether oral or written transmission. Empirical knowledge of tribals, in general, is transmitted through verbal means and folklore from generation to generation. Like other systems of medicine, tribal medicines have curative and preventive aspects with the application of herbs, animal products and minerals. Their use of medicine is sometimes rudimentary, sometimes very specialized, in certain cases they believe in astrological herbalism and in several cases they take to magic, mysticism, religious performances with or without execution of a sacrifice. The concept of disease and treatment in a tribal society is unique, sometimes simple to understand and sometimes too complex to interpret.

The study area and people

The present paper is an outcome of a field study in Jashipur area in the periphery and outskirts of Similipal Biosphere Reserve and National Park. Similipal is very famous for the enormous biodiversity it fosters and according to Bombay Natural History Society it is the

merger ground of Northern and Southern flora of the country. Similipal is located at the Northern tip of Eastern Ghats covering eight undivided districts of Odisha lying between $21^{0}36'$ to $22^{0}00'$ N and $36^{0}05'$ to $36^{0}32'$ E in Mayurbhanj district comprising an area of 2750 sq km of forests. The Similipal National Park was established in 1956 with the objective of conserving the natural biodiversity and flagship wildlife, by preventing the wanton destruction of wildlife and to provide recreation to the tourists (Jena, 2003). The ecological and economic prosperity of Odisha depends largely upon the preservation and conservation of Similipal Biosphere Reserve. Similipal is an oval shaped highland and a watershed with perennial rivers like Budhabalanga, Sone, Gangadhar, Kharkhai, Bandhavi and Salandi and spectacular waterfalls. It is an area of transition between the northern and southern flora of the country. There are animals from the Himalayas as well as from the plains of South.

Although the Similipal Hills is widely known as a compact dense forest, it bears about a century old history of ethnic settlement and migration. There are ethnic groups like Hill Khadia, Mankidia, Bathudi, Ho, Santal, Munda, Bhumij, Kolha, Juang and Lodha who are forest-based people living in and around the Similipal hills.

The Similipal hill range is stocked with northern tropical semi-evergreen forest, mixed deciduous forest, northern tropical semi-evergreen forest, high level *Sal* forest and grass lands. *Sal* is the most dominant tree species and makes up the climax vegetation. There are 1076 species of land plants and 92 species of orchids. Amongst the plants, there are 8 extinct species, 8 endangered species, and 34 rare species. Amongst the animals, there are 42 species of mammals, 242 species of reptiles, and 12 species of amphibians.

Enumeration of Folk Medicinal Use of Plants by Santal and Kolha communities

The following tables (1, 2&3) presents an account of the folk medicinal use of plants used by the Santal and Kolha tribal communities. The trees, shrubs and climbers, and the herbs have been placed separately with vernacular names. The detailed process of preparation and administration could not be described for limitations in the scope of the paper.

Table:1 Trees

Sl. No	Name of the Tree	Family	Vernacular Names			Parts Used	Tribal Medicinal Use
			Oriya	Santal	Kolha		
1	*Aegle marmelos (L.) Corr.*	Rutaceae	Bela	Bel	Bel	Leaves & fruit pulp	Blood purifier and digestive, conception, deafness, deworming
2	*Albizia lebbeck (L.) Benth.*	Mimosaceae	Siris	-	Siris	Latex	Viral infection in cattle, constipation in human
3	*Anogeissus latifolia (Roxb. Ex DC.)*	Combret-aceae	Dhau	Daucha	Dau		Boils
4	*Bombax*	Bomba-	Simuli	-	Edle	Thorn	Potent,

	ceibaL.	caceae					cholera, constipation, rheumatism
5	*Buchanania lanzanRoxb.*	Anacardi-aceae	Chara	Tarab	Tarab	Latex	Swelling
6	*Butea monosperma (Lam)Taub.*	Fabaceae	Palas	Mutut	Murut	Seeds	Sexual debility, contraceptive, diarrhoea & dysentery, de-worming
7	*Caerya arborea Roxb.*	Lecythi-daceae	Kumbhi	-		Bark	Acidity
8	*Cassia fistulaL.*	Caesalpini-aceae	Sunari	-	Hari	Bark	Constipation, tranquilizer, epilepsy, acidity
9	*Dalbergia sisooRoxb.*	Fabaceae	Sisoo	-	Sisi	Oil	Skin disease, yaws
10	*Diospyros malbarica (Desr.) Kostel*	Ebenaceae	Mankada kendu	-	Sarhatirim	Fruit	Loose motion
11	*Diospyros melanoxylon Roxb.*	Ebenaceae	Kendu	Tirim	Tirim	Fruit	Loose motion
12	*Emblica officinalis (L.) DC*	Euphorbi-aceae	Amla	Merel	Merel	Fruit	Indigestion, acidity, skin allergy, vocal cord congestion
13	*Feronia limonia (L.) Sw.*	Rutaceae	Kaintha	-	Kainta		Appetizer
14	*Ficus bengha-lensis L.*	Moraceae	Bara	Bade	Bai	Leave petiole/ latex	Scalp infection/ diarrhoea
15	*Gardenia latifolia Aiton*	Cluciaceae	Damburu	Loa	Loa		Sexual debility, stimulant
16	*Gmelina arborea Roxb.*	Verben -aceae	Gamhari	-	Gainyer		Leucoderma, blood bile, tuberculosis
17	*Lannea coromondo-*	Vitaceae	Mahi	-	Jia(k)	Bark	Abdominal

	lica (Hout) Merr.						pain
18	*Madhuca indica Gmel.*	Sapotaceae	Mahula	Matkam	Matkam	Latex	Contraceptive, foot crack, leprosy, de-worming, tiger-bitten wound healing
19	*Pongamia pinnata (L.) Pierre*	Fabaceae	Karanj	-		Seed oil	Scabies, swelling on eyes
20	*Pterocarpus marsupium Roxb.*	Fabaceae	Piasal	-	Hit	Bark latex	Skin disease
21	*Semecarpus anacardium L.f.*	Anacardi-aceae	Bhalia	Bhelie	Sasa	Fruit	Boils and wound
22	*Shorea robusta Gaertn.f*	Diptero-carpaceae	Sal	Sarjam	Sarjam	Bark	Diarrhoea, Cholera
23	*Syzygium cumini (L.) Skeels*	Myrtaceae	Jamu	Kud	Kude	Bark	Diarrhoea, breast milk deterrent, blood dysentry
24	*Tectona grandis L.f.*	Verben-aceae	Saguan	Saguan	Ramdaru	Dried leaves	Wound healer
25	*Terminalia alata Heyne Ex Roth*	Combret-aceae	Asana	Hatna	Hatna	Bark	Heart tonic
26	*Terminalia arjuna (Roxb. Ex DC) W. and A.*	Combret-aceae	Arjuna	-	Arhatna		Vita and vigor, cardiac ailments, semen in urine
27	*Terminalia belerica (Gaertn.) Roxb.*	Combret-aceae	Bahada	Lupung		Fruit	Indigestion, vocal cord infection, small pox preventive, syphilis, potent, snake bite, swelling eyes, diarhea, rheumatism

28	*Terminalia chebula Retz.*	Combret-aceae	Harida	-	Rala	Fruit	Ringworm infection, common cold, antidote to nux-vomica poison, itching, hallucigenic, puberty, jaundice, skin allergy
29	*Ziziphus jujube Lam.*	Rhamnaceae	Barakoli	Kudi	Bakra	Leaves, Latex	Loose motion, dandruff, scabies

Table:2 Shrubs and Climbers

Sl. No.	Name of the plant	Family	Vernacular Names			Parts Used	Tribal Medicinal Use
			Oriya	Santal	Kolha		
1	*Asparagus racemosus Wild.*	Liliaceae	Satavari	-	Atrang	Root	Gynecological Disorders, Dental Infection, Jaundice, epilepsy, rheumatic pain
2	*Bauhinia vahlii Wt. and Arn.*	Caesal-piniaceae	Siali	-	Lama	Fruit	Indigestion, malaria preventive
3	*Butea superb Roxb.*	Fabaceae	Lata palas	-	Hatilutu rmurut	Latex	Diarrhoea
4	*Cryptolepis buchananii Roem and Sch.*	Periplo-caceae	Gopa kanu	-	Gad-dah	Root	Lactation
5	*Curcuma angustifolia Roxb.*	Zinziber-aceae	Palua	-	Pala	Rhizome	Diarrhoea, desentry, Acidity
6	*Dioscorea wallichi Hook.f*	Dioscore-aceae	Pita alu	-	Petalu	Rhizome	Gynecological disorder
7	*Holarrhena pubescence (Buch.-ham.) Wall.ex G.Don.*	Apocyan-ceae	Kutaj	Kudu-chi	Kueint	Bark	Abdominal pain
8	*Jasminum angustifolium (L) Wild.*	Oleaceae	Bana-malli	-		Root	Fever, blood in urine, eye infection and inflammation
9	*Nyctanthes arbor-tristis L.*	Oleaceae	Ganga-siuli	Sapa-run	Sapa-run	Leaves	Malaria
10	*Smilax zeylanica L.*	Smilac-aceae	Muturi	-	Artikar	Root	Gynecological disorder

11	*Solena amplexicaulis (Lam.) Gandhi in Sal. And Nicol.*	Cucurbit-aceae	Bana kunduri	-	Kundu-ru	Rhizome	Epilepsy & Abdominal Pain
12	*Tinospora cordifolia (Wild.)Hook.f. and Thoms.*	Menisperm-aceae	Guluchi	-	Had-gali	Stem	Malaria & Other fevers
13	*Vitex nigundo L.*	Verben-aceae	Begunia	-	Begna	Leaves	Pesticides, insect repellant
14	*Woodfordia fruticosa (L.)Kurz.*	Lathyr-aceae	Dhataki	-	Echea	Flowers	Gynecological disorder

Table:3 Herbs

Sl. No.	Name of the plant	Family	Vernacular names			Parts Used	Tribal Medicinal Use
			Oriya Name	Santal	Kolha		
1	*Abutilon indicum (L.) Sweet.*	Malvaceae	Pedipedi-ca	-	Pituja	Root	Piles
2	*Acorus calamus L.*		Ghoda bacha	-		Rhizome	Throat Infection, Vomiting, Poisonous bite
3	*Andrographis paniculata (Burm.f.) Wall.ex Nees.*	Acanth-aceae	Bhuin nimba	-	Kali Bohu	Whole Plant	Malaria, Skin or worm infection
4	*Atylosia scarabaeoides(L.)Benth.*	Fabaceae	Bana kolatha	Kulthi	Buru Kolthi	Root	Abdominal Pain
5	*Cissampelos pareiraL.var hirsuta (DC.)Forman.*	Menisperm-aceae	Akana-bindhi	Bakhu-ru	Ranured	Root	Contra Septic
6	*Clausena excavate Burm f.*	Rutaceae	Agnijhal	-	Agnijal	Root	Bone Facture
7	*Clitoria ternatea L.*	Fabaceae	Aparajita	-	Jipi Kolthi	Root, seeds	Gynecological Disorder
8	*Costus speciosus (Koeni)Sm*	Zinziber-aceae	Keu	-	Keuna	Rhizome	Joint Swelling
9	*Curculigo orchiodes Gaertn.*	Amaryllid-aceae	Talamuli	-	Tel kanda	Root	Loss of Semen
10	*Curcuma aromatic Salisb.*	Zinziber-aceae	Bana haladi	-	Buru Sasang	Rhizome	Loose motion of Goat, Skin Disease
11	*Hemidesmus indicus L.*	Asclepiad-aceae	Ananta mool	Tay	Dudi	Root	Loss of Semen,Fever
12	*Hibiscus mutabilis L.*	Malvaceae	Sthala padma	-	Buru Kadsam	Root	Gynecological Disorder

13	*Ocimum canum L.*	Lamiaceae	Gaya tulasi	-	Seta Tulasi	Flower	Anti Mosquito
14	*Scurrula parasitica L.*	Loranth-aceae	Malanga	-	Sum	Tender stem	Epilepsy
15	*Tridax procumbens L.*	Asteraceae	Bisalya karani	-	Tantaj	Whole Plant	Cut & Wound Infection
16	*Tylophora indica (Burm.f) Merr.*	Asclepiad-aceae	Antamool	-	Maran-dudi	Root	Loss of Semen, Fever
17	*Uraria rufescens(DC) Sch .in Feddle*	Fabaceae	Salaparni	-	Sarjam-sere	Root	Gynecological Disorder

Conclusion

Traditional medicine is value based, no matter how diverse it is in differential social setting and cultural contexts. There are growth-positive, growth-negative and growth-neutral values in every society associated with traditional healthcare. Such knowledge systems would contribute immensely in the integration and synthesis with any other recognized system of medicine as well help preservation and conservation of a great diversity of important flora. As long as folk uses of the plants continue to be there, be it for medicine or food or for material and religious culture people would continue to care and conserve such species from extinction.

The survival of a culture requires integrity and creativity. The survival of ethno-medicinal culture requires that the dynamics that kept it alive over centuries be protected and cherished. This is the dynamic of the commons – the dynamic where the community sustains resources through use and conservation, the dynamic where the knowledge is free to grow and freely available to all.

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PLANTS USED IN ETHNOMEDICINE BY PARAJA TRIBE OF KORAPUT DISTRICT, ODISHA, INDIA

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Abstract

The present study documented the ethno-medicinal use of plants by Paraja tribe of Koraput. The study was conducted in 16 tribal villages, predominantly dominated by Paraja tribe, coming under six Community Development Blocks of the district. A semi structured questionnaire was developed and administered to gather relevant information on folk-medicinal use of plants and plant parts by the tribal medicinemen in the locality. The study revealed the use of 70 species of plants distributed in 68 genera belonging to 39 families for the treatment of 48 ailments by the healers of Paraja tribe of Koraput. Ethno-medicinal information about these plants has been given in detail with their botanical name, family, local name, locality and medicinal uses. This exploration and documentation may be a small step towards unraveling the treasure of information and traditional knowledge of the Paraja community on folk medicine and use of plants yet it is highly relevant in the current context of conservation and sustainable use of plants diversity. Further, it is worthwhile to document the folk traditional medicine before they are lost forever in the process of modernization.

Keywords: *Traditional Knowledge, Ethno-medicine, Paraja tribe, Medicinal Plants, Koraput, Odisha.*

Introduction

Ethno-medicine refers to the study of traditional medical practice, which is concerned with the cultural interpretation of health, diseases and illness and also addresses the healthcare seeking process and healing practices (Lowe et al. 2000). Medicinal plants constitute the base of health care system in many societies. Globally, about 85% of the traditional medicines used for primary healthcare are derived from plants (Farnsworth, 1988). Today about 80% of the world's population rely predominantly on plants and plant extracts for healthcare (Setzer et al., 2006). According to data released by the World Health Organization (WHO), ethno-medicine has maintained its popularity in all regions of the

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developing world and its use is rapidly expanding in the industrialised countries (Lowe et al., 2000). Observations of medicinal plant treatments by tribal peoples worldwide have contributed to the development of some of the most important and widely utilized pharmaceutical agents in our medical system (Balick and Cox, 1997).

Ethno-botanical studies have been reported in several parts of India to protect the traditional knowledge from disappearing. Documenting the indigenous knowledge through ethno-botanical studies is important for the conservation of biological resources as well as their sustainable utilization. The Paraja one of the well-known tribal groups of Odisha, predominantly found in Koraput region, have good knowledge of utilization of local biodiversity in their healthcare practices. Since ages, they have been depending on plant based folk medicine which is still prevalent in remote pockets despite outreach of western medicine. Over the years, various scholars have attempted to document the ethno-medicinal knowledge of the tribe like Das (1995); Franco and Narsimhan (2012); Patnaik and Mohapatra (2012). However, most of these reports are incomplete and inadequate. In view of this an ethno-medicinal exploration of Paraja tribe was conducted by the authors during 2013-2015. The objective of this study was to assess the traditional medical practices of the Paraja tribes and the medicinal use of plants by them in Koraput district.

Material and Methods

Observation and documentation of Ethno-medicinal plants

For the purpose of the study sixteen Paraja dominated villages coming under six Community Development Blocks (Koraput, Semiliguda, Potangi, Nandapur, Baipariguda and Kundra) of Koraput district were selected on the basis of local information on prevalence of traditional healthcare systems and ethno-medicinal practices in said villages. Ethno-medicinal data were collected by administering a semi-structured questionnaire along with interviews and discussions with the Traditional Healthcare Practitioners, locally known as Disari. During the study interview was conducted with twenty Traditional Healthcare Practitioners (age varying from 35 yrs to 70 yrs) presented in **Table-1** with the help of local translators. The gathered information was cross-checked with practitioners in nearby villages and the patients who had got treatment. Further, the data was cross-examined with available secondary literature. The plants were identified following 'Flora of Orissa' by Saxena and Brahmam (1996).

Results and Discussion

The present study enumerated the use of 70 species of plants distributed in 68 genera belonging to 39 families in medicine by the Paraja traditional healers of Koraput for the treatment of 48 types of ailments. Out of the total 70 plants identified 6 species come under the family Fabaceae, 5 species under family Lamiaceae, 4 species each belonging to family Asteraceae and Moraceae, 3 species each belonging to family Apocyanaceae, Caesalpineaceae and Verbenaceae, 2 species each belonging to family Acanthaceae, Amaranthaceae, Brassicaceae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, Liliaceae, Piperaceae Rubiacaeae and Zingiberaceae. Rest twenty families were represented by 01 species each **(Table. 2).** In terms of habit of the plants as enumerated it was found that 42% species are herbs, 32% species are trees, 18% species are shrubs while 8% species are climbers.

The data has been presented in the following pattern: Scientific name, Family, Odia name/Local name, Life forms, Plant parts used, and ailment category/ailment treated. Traditional healers of the Paraja tribe used these plants to cure diseases related to

diarrhoea, dysentery, jaundice, diabetes, asthma, migraine, menstrual disorder, stomach pain, headache, joint pain, eye pain, vomiting, wound healing, skin disease, eczema, scabies, lactation, paralysis, fits, chicken pox, measles, cough and cold, bleeding of nose, snake bite, bear bite, dog bite, boils, vomiting, fever, cold and cough, toothache, stomach ache, wounds, burns, constipation, gastric problems, malaria, mosquito bites, night blindness, indigestion, falling of hair and hearing loss.

By analyzing the ethno-botanical data, it was observed that the Paraja use the plants available in their environment for variety of purposes out of which medicinal use of plants is a very important aspect. The findings indicate that there are certain species which are available in forests only, whereas some are commonly found in their surrounding and wastelands. There are also certain species that are edible, domesticated and cultivated types. For the purpose of medicine, the whole plant is used or parts of the plants are used. Observations indicated that among the plant parts leaf is mostly used followed by roots, tubers, barks, fruits, seeds, oil, latex, ash, cloves, flowers and petioles for the preparation of herbal medicine. The Paraja, in this context are scientific because it has been validated that 'leaves' in many species may store high concentration of bioactive compounds' (Martin, 1992). Further, by using the plant parts the Paraja ensure that the whole plant is not harmed rather they are conserved and sustainably utilized. The Paraja practice of exploiting plant materials is non-destructive and hence do not pose any threat to the population and community of the species in their environment.

The Traditional Healthcare Practitioners use certain plants for more than one disease. They are *Zingiber officinale, Rauvolfia serpentina, Acorus calamus, Achyranthes aspera, Ricinus communis, Millettia pinnata, Ocimum tenuiflorium, Lawsonia inermis, Hibiscus rosa-sinensis, Artocarpus integrifolia, Musa paradisiac and Nicotiana tabacum* **(Table-2).** During the study it was revealed that some common diseases have more than one medicine and their method of preparation and source are different.

The depletion of biodiversity has been considered as one of the most conspicuous effects of ecosystem perturbation. Disappearance of species due to habitat alteration, over exploitation, pollution, global climate change and invasion of exotic species is so fast that many valuable taxa may vanish even before they are identified and their scientific value is discovered (Mishra and Chaudhury, 2012). In the present study, out of 70 species of plants used as ethno-medicines, *Rauvolfia serpentina* is critically endangered (CE), *Acorus calamus* is endangered (EN), *Piper nigrum* and *Aegle marmelos* are vulnerable (V), *Piper longum* is low risk-near threatened (LR-NT), *Pterospermum xylocarpum* is low risk –least concern (LR-LC) and 4 plants*, Shorea robusta, Pongamia pinnata, Mimosa pudica and Nymphaea pubescens*, comes under IUCN least concern (LC) category. It is high time we take necessary steps to conserve the valuable resources in their natural habitat and to validate their uses scientifically. Documentation of the traditional knowledge through ethno-botanical studies is important for the conservation and utilization of biological resources. The information presented here, in this context, is not complete, but could be helpful for further studies in this direction. Collection and analysis of the ethno-medicinal knowledge of this type could be viewed as an important effort as the knowledge gained may help identify important medicinal plant resources that can be used in healthcare around the world. Further, steps may be initiated for extraction of possible bioactive compounds from the plants and can lead to drug development from them in future.

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Table-1 Details of Traditional Healthcare Practitioners (Disaris), who participated in the interview for collection of Ethno-medicinal information.

Sl. No.	Name of the Disari	Age	Gender	Village	Block
01	Jagbanndhu Chapadi	50 yrs	Male	Chapadiguda	Pattangi
02	Sisa Samo	55 yrs	Male	Sisaguda	Pattangi
03	Khora Parma	60 yrs	Female	Bodogaon	Pattangi
04	Bhima Khora	60 yrs	Male	Pattangi	Pattangi
05	Rama	45 yrs	Male	Badadeula	Koraput
06	Ahari Jani	50 yrs	Male	Kudumul	Koraput
07	Ballab Guruna	35 yrs	Male	Kudumul	Koraput
08	Shyamsundar Dalai	40 yrs	Male	Marichmal	Koraput
09	Rama Pangi	70 yrs	Male	Badel	Nandapur
10	Madan Hantal	48 yrs	Male	Badel	Nandapur
11	Mangu Pangi	55 yrs	Male	Badel	Nandapur
12	Raghu Jani	50 yrs	Male	Panashput	Semiliguda
13	Anant Bisoi	60 yrs	Male	Subai	Semiliguda
14	Budhu Gunta	45 yrs	Male	Challanput	Semiliguda
15	Sada Paraja	45yrs	Male	Baraguda	Kundra
16	Madan Khilo	50yrs	Male	Jholaguda	Kundra
17	Dablu Paraja	60yrs	Male	Gutaguda	Kundra
18	Rupadhara Tolia	70yrs	Male	Khoraguda	Boipariguda
19	Laxman Khilo	50yrs	Male	Khoraguda	Boipariguda
20	Khogobati Paraja	40yrs	Male	Basiniguda	Boipariguda

Table 2: List of Ethno-medicinal plants and their uses by Paraja Tribe of Koraput District, Odisha, India

Sl. No.	Botanical name (Family)	Common name (Local name)	Life Forms	Parts used	Ailment Category (Ailment treated)
1	*Achyranthes aspera* L. (Amaranthaceae)	Prickly Chaff Flower (Apamaranga)	Herb	Rt	LP (Jaundice)
2	*Acorus calamus* L. (Araceae)	Sweet Flag (Bachakondha)	Herb	Rt	ENT (Hearing Loss)
3	*Ageratum conyzoides* L. (Compositae)	White weed (Pokasungha)	Herb	Lf	DI (Scabies)
4	*Allium sativum* L. (Liliaceae)	Garlic (Rasuna)	Herb	Clv	ENT (Eye pain)
5	*Amaranathus spinosus* L. (Amaranthaceae)	Prickly Amaranth (Konta/ Konta sago)	Herb	Rt	SMSD (Swellings)
6	*Artocarpus integrifolia* Linn. f.tt (Moraceae)	Jack fruit (Panasha)	Tree	Rt	GUA (Lactation in expectant mothers)
7	*Asparagus racemosus* Wild. (Liliaceae)	Indian Asparagus (Satabari / Deubadni)	Shrub	Tb	GUA (Menstrual problems)
8	*Blumea lacera* (Burn.f.) DC (Asteraceae)	Kakronda (Pokasunga/ Firifira)	Herb	Sd	SMSD (Paralysis)
9	*Brassica junceae* (L.) Czern. (Brassicaceae)	Mustard (Sorisa)	Shrub	Sd	DI (Skin disease)
10	*Cajanus cajan* (L.) Millsp. (Fabaceae)	Pigeon Pea (Kandulo)	He	Sd	SMSD (Sprain)
11	*Calotropis gigantea* (L.) W.T.Aiton (Asclepidiaceae)	Crown Flower (Arakha)	Shrub	St and Lx	1.SMSD (Headache) 2.DI (Boils)
12	*Carcia papaya* L. (Caesalpiniaceae)	Papaya (Amrutabhanda)	Tree	Fr	GUA (Lactation)
13	*Casia fistula* L.(Fabaceae)	Golden Shower Tree (Sunari)	Tree	Sb	PB (Bear bite wounds)
14	*Centella asiatica* (Linn.) Urb. (Apiaceae)	Indian Pennywort (Thalkudi/ Dua Sag)	Herb	Lf	GIA (Dysentery)
15	*Cissampelos pareira* L. (Menispermaceae)	Velvet-Leaf Pareira (Akalbindu/ Akanabindi/ Abuta)	Shrub	Rt	GIA (Dysentery)
16	*Clerodendrum viscosum* Vent. (Verbenaceae)	Bleeding heart (Bhandari)	Shrub	Sb	DI (Burning wounds)

17	*Coccina grandis* (L.) Voigt (Cucurbitaceae)	Little Gourd (Kunduri)	Climber	Lf	ENT (Ear pain)
18	*Commiphora wightii* (Arn.) Bhandari. (Burseraceae)	Indian bdellium-tree (Guggul)	Tree	Rt	PB (Dog bite)
19	*Curcuma longa* L. (Zingiberaceae)	Turmeric (Haladi)	Herb	Tb	DI (Measles)
20	*Euphorbia hirta* L. (Euphorbiaceae)	Asthma plant (Chitakuti)	Herb	Lf	GIA (Dysentery)
21	*Ficus benghalensis L.* (Moraceae)	Banyan Tree (Bara)	Tree	Lf	DI (Eczema)
22	*Ficus hipsida* L.f. (Moraceae)	Common Fig (Dimiri)	Tree	Rt	GIA (Gastric problems)
23	*Gmelina arborea* Roxb. (Lamiaceae)	Beechwood (Gamhar)	Tree	Ash	GIA (Stomach pain)
24	*Hemigraphis latebrosa* (Roth.) Nees. (Acanthaceae)	Red Ivy (Berenga)	Herb	Sb	GIA (Diarrhoea)
25	*Hibiscus rosa-sinensis* L. (Malvaceae)	China Rose (Mandara)	Shrub	Lf and Fl	i) SMSD (Sprains) ii) HC (Falling of hair)
26	*Ipomoea mauritiana* Jacq. (Convolvulaceae)	Giant Potato (Bhuinikakharu/ Merdamalo)	Climber	Tb	SMSD (Headache)
27	*Justicia adhatoda* L. (Acanthaceae)	Malabar Nut (Basanga)	Shrub	Lf	i) GIA (Dysentery) ii) RS (Asthma)
28	*Kalanchoe lanceolata* (Forssk) Pers. (Crassulaceae)	Kalanchoe (Hemosagara)	Shrub	Lf	GIA (Diarrhoea)
29	*Lawsonia inermis* L. (Lythraceae)	Henna (Manjuati)	Shrub	Rt	LP (Jaundice)
30	*Leonotis nepetifolia* (Linn.) R. Br. (Lamiaceae)	Lion's Ear (Kanta Sidha/ Sidha/ Kanta Siju)	Herb	St	SMSD (Migraine)
31	*Leea indica* (Burm. F. Merr. (Vitaceae)	Bandicoot Berry (Kukurjibha)	Shrub	Rt	LP (Jaundice)
32	*Leucas aspera* Spreng. (Lamiaceae)	Thummi (Gayasa)	Herb	Lf	FVR (Malaria)
33	*Litsea glutinosa* (Lour) C.B. Rob. (Lauraceae)	Soft Bollygum (Bagha Tala / Tangia achina)	Tree	Sb	SMSD (Bone fracture)
34	*Macrotyloma uniflorum* L. (Fabaceae)	Horse Gram (Kolotha)	Herb	Sd	SMSD (Swelling)
35	*Mangifera indica* L. (Anacardiaceae)	Mango (Amba)	Tree	Pt	GIA (Stomach pain during Urination)
36	*Martynia annua* L. (Martyniaceae)	Tiger's Claw (Baghmari)	Herb	Tb	SMSD (Face swelling)

37	*Mentha viridis* L. (Lamiaceae)	Spearmint (Podina)	Herb	Lf	GIA (Digestion)
38	*Millettia pinnata* (L.) Panigrahi (Fabaceae)	Indian Beech (Karanja)	Tree	Sb and Sd	i) GIA (Excess urination) ii) PB (Mosquito bite)
39	*Mimosa pudica* L.(Fabaceae)	Touch-me-not (Lajokuli Lata)	Herb	Rt	PB (Snake bite wounds)
40	*Mollugo pentaphyla* Linn. (Molluginaceae)	Five leaved carpet weed (Pita saga/Chatu saga)	Herb	Lf	SMSD (Migraine)
41	*Momordica charantia* L. (Cucurbitaceae)	Bitter gourd (Kalara)	Climber	Lf	SMSD (Joint pain)
42	*Morus alba L.*(Moraceae)	Mulberry (Tutukoli)	Tree	Fr	ENT (Night blindness)
43	*Musa paradisiaca* L. (Musaceae)	Banana (Kadali)	Shrub	Tb	DC (Tooth ache)
44	*Myrica esculenta Buch-Ham* (Myricaceae)	Bayberry Box Myrtle (Kaphada / Kata phala)	Tree	Rt	Sprit release
45	*Nyctanthes arbour-tristis* L. (Oleaceae)	Night Jasmine (Gangasiuli)	Tree	Lf	FVR (Malaria)
46	*Nymphaea pubescens* Wild. (Nymphaeaceae)	Red water Lily (Lal Kain)	Herb	Tb	GIA (Stomach pain during menstruation)
47	*Ocimum tenuiflorum* L.(Lamiaceae)	Holy Basil or Tulsi (Tulasi)	Herb	Lf	DI (Measles)
48	*Operculina turpethum* (L.) Silva Manso (Convolvulaceae)	Turpeth (Tihudi)	Climber	Rt	GIA (Diarrhoea and vomiting)
49	*Paederia foetida* L. (Rubiaceae)	Skunkvine/ Stinkvine (Gandarimalo)	Herb	Rt	MD (Feats)
50	*Pergularia daemia (Forssk.) Chiov.* (Apocynaceae)	Trelis-vine (Uturudi)	Herb	Rt	FVR (Fever)
51	*Phaseolus aureus* Roxb. (Leguminosae)	Green gram (Muga Dali)	Herb	Sd	SMSD (Joint pain)
52	*Phyllanthus fraternus* G.L.Webster (Ephorbiaceae)	Leaf flower (Bhuin aonla)	Herb	Rt	DI (Burning)
53	*Piper longum* L. (Piperaceae)	Long pepper (Pipala)	Tree	Rt	FVR (Malaria)
54	*Piper nigrum* L. (Piperaceae)	Black Pepper (Golmoricho)	Climber	Sd	RS (Cough and cold)
55	*Plumeria rubra* L.	Red Jasmine	Tree	Lx	DI (Boils)

	(Apocynaceae)	(Kathachampa)			
56	*Raphanus sativus* L. (Brassicaceae)	Radish (Mula)	Herb	Fr	GIA (Stone)
57	*Rauvolfia serpentina* (L.) Benth. ex Kurz (Apocynaceae)	Sarpagandha (Patalagarudo)	Shrub	Tb and Lf	1.ED (Diabetes) 2.GIA (Stomach pain) 3.PB (Snake bite)
58	*Ricinus communis* L. (Euphorbiaceae)	Castor (Jada)	Tree	Sd	1.DI (Measles) 2.SMSD (Pain relief)
59	*Rubia cordifolia* L. (Rubiaceae)	India Maddar (Mojesta)	Herb	Rt	SMSD (Joint pain)
60	*Senna occidentalis* (L.) Link (Caesalpiniaceae)	Coffee senna (Kalachakunda)	Tree	Lf	DI (Wound healing)
61	*Shorea robusta* Roth. (Dipterocarpaceae)	Sal (Sala / Sargi)	Tree	Sb	DI (Wound healing)
62	*Smilax macrophylla* C.H. Wright (Smilacaceae)	Smilax (Mutrimalo)	Shrub	Tb	FVR (Malaria)
63	*Stachytarpheta urticifolia* Siams (Verbenaceae)	Blue Snake weed (Ondra bathra)	Shrub	Tb	GUA (Excess bleeding during menstruation)
64	*Tagets patula* L. (Asteraceae)	Marigold (Gendu)	Herb	Lf	GIA (Vomiting)
65	*Tamarindus indica* L. (Caesalpiniaceae)	Tamarind (Tentuli)	Tree	Fr	GIA (Constipation)
66	*Tephrosia purpurea* (L.) Pers. (Fabaceae)	Wild indigo (Duma Kolotho)	Herb	Rt	GIA (Diarrhoea)
67	*Tridax procumbens* L. (Asteraceae)	Coat Buttons (Bisalyakarani)	Shrub	Lf & Rt	DI (Wound healing)
68	*Vernonia cinerea* Schreb. (Asteraceae)	Little Iron weed (Pokosungha)	Herb	Lf	PB (Bear bites)
69	*Vitex negundo* L. (Verbenaceae)	Five-leaved chaste tree (Nirgundi)	Shrub	Lf	DC (Tooth ache)
70	*Zingiber officinale* Roscoe (Zingiberaceae)	Ginger (Sunthi)	Herb	Tb	ENT (Eye problems)

Parts used: Lf – leaf, Pt-Petiole, Sb – stem bark, Fr – fruit, Sd – seed and seed oil, Clv-clove, Lx – latex, Fl – flower, St – stem, Rt – root, Ailment Categories- DC –Dental care, ENT –Ear-Nose-Throat Problems, FVR- Fever, GIA -Gastro-intestinal ailments, GUA-Genito-urinary ailments, HC - Hair care, LP -Liver problem, MD-Mental disorder, PB-Poisonous bite, RS-Respiratory systems, SMSD-Skeleto-muscular system disorder

ETHNO MEDICINAL USES OF PLANTS; A STUDY AMONG THE MUNDA COMMUNITY IN JAJPUR DISTRICT OF ODISHA

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Abstract

An ethno medicinal survey was carried out in some villages of Munda community in Jajpur district of Odisha to evaluate the plants used for medicine by them. The investigation was carried out in ten Munda villages in the district with participant observation and administration of survey schedules. The study enumerated 59 species belonging to 56 genera and 41 families that are used by them for treatment of common ailments and health care. The plants used for traditional medicines are mostly collected from the wild. It has been revealed that although the Munda concept of disease and treatment revolves around their religious beliefs and practices, they depend on plant medicine to a larger extent, although they are using modern medicine in the current scenario. It has been understood that some of the medicinal plants have become scarce in the area due to industrialization and anthropogenic activity. Documentation of traditional knowledge on the ethno medicinal uses of these plants may contribute to the germplasm conservation efforts as well as for new drug development.

Key words: - Ethno medicine, herbal, conservation, ailments, documentation.

INTRODUCTION

The history of evolution of medicine is a long story stretching from prehistoric to modern times. Many plants used in traditional systems of medicine, usually studied under the purview of ethno medicine, are now recognized to have specific beneficial pharmacological effects. Indeed much of the basic armamentarium of modern pharmacology has been based upon the investigations of the properties of traditional herbal resources. The elements of ethno medicine are still popular in many societies, both in under developed and developing countries, in one form or the other. The term 'ethno medicine' is used to refer to those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine. Tribal communities have a rich knowledge on the folklore of their locality for which they depend upon the herbal resources to address their healthcare needs.

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Odisha is one of the well known states in the subcontinent of India having a rich heritage of ethno botanical and ethno medicinal importance. The tribes and rural people in many regions of the state still depend upon ethno medicinal practices for their day-to-day primary healthcare. This kind of traditional healthcare practices is mostly marked in the regions where modern medical health facilities are either not available or not easily accessible.

The present study is based on the Munda tribe of Jajpur district of Odisha with reference to the use of plants in common human ailments and primary healthcare practices. These tribal people depend upon the forest resources for their basic livelihood earning pursuits and healthcare needs. They thus possess appreciable knowledge about medicinal uses of the plants. They have adopted their own methods and techniques in healthcare practices, in drug plant selection, processing and drug administration. This practice of herbal-cure is guided by the experience and practice-based knowledge of the community which is handed down from generation to generation. The Munda of Jajpur district used various types of plants and their parts with diverse methods of application with respect to the particular disease. The present work has attempted to document the folklore claims of the herbal resources used by the Munda tribe in the study area. The survey identified 59 species of medicinal plants that are used by the community in Jajpur district for the prevention of and prophylactic measures for common ailments. Various types of plants and their parts used by the tribe for their healthcare need along with the mode of application are enumerated in the paper.

Area of study

Jajpur district was carved out from erstwhile Cuttack district after the reorganization of the districts in 1992. It lies roughly between 85^0 41' 30" to 86^0 37' 30" eastern longitude and $20^0$34'30" to $20^0$10'30" northern latitude. Physiographically, the district may be divided into two physical regions such as (a) the eastern alluvial plains and (b) the north-western hilly terrains. The eastern alluvial plains slope gently from the north-western hilly terrains. The flora of the above region consists of different moist tropical and semi evergreen types. The vegetation includes mixed Sal and mixed bamboo jungles around north to north western region of the district. The fauna of the district is remarkable but are not found abundantly in the forest of the district because of rapid deforestation and pressure of steady industrialization. The district contains both indigenous and migrated tribal communities. Present habitations of both tribes and non tribes are located in the foothills, plains close to the hills and alluvial plain lands in the district. The district is known for its rich archaeological heritages and as a potential region for studying human history and ethnic cultures of the tribes and castes.

Munda, Bhuyan, Gond, Juang, Kol, Ho, Santal, and Sahara or Savara are predominant tribal inhabitants of the district. Among these tribes, Munda is a relatively backward community. Their population is large in the Sukinda, Danagadi, Darpan and Dharmasala tahasils in the district. They are largely dependent upon the local forests for most of their requirements from food to medicines. For their healthcare they exhibit strong faith in indigenous herbs found in the forest around their habitat. They have their own methods and techniques of health practices like any other indigenous communities.

Many studies and reports are available referring to the use of medicinal plants by different tribal communities living in different regions of Odisha, such as Aminuddin and Girach, 1991; Behera, 2006; Behuria, 1996; Das and Mishra, 1987; Dash *et al.*, 2003; Jain, 1991; Mohapatra *et al.*, 2008; Mudgal and Pal,1980; Nayak *et al.*, 2004; Pattanaik *et al.*, 2007; Prasad Rao *et al.*, 1964; Rout and Thatoi, 2009; Sahoo and Satapathy, 2009; Sahoo *et al.*, 2010; Satapathy, 2001; Satapathy and Panda, 1992; Satapathy and Brahmam, 1994;

Satapathy and Chand, 2003; Saxena and Dutta, 1975; Subudhi and Choudhury, 1985 ; Tribedi *et. al.,* 1982. However, no comprehensive study on ethno medicinal plants used to cure different diseases by the Munda tribe with reference to the study area is lacking. Therefore, through this work an attempt has been made to gather information on some traditional uses of medicinal plants from the Darpan and Dharmasala tahasil area of the district to prepare a data-base of the plants having medicinal uses used by the Munda community to cure the common diseases. The overarching objective of the study was to identify, collect and document medicinal plants used by Munda tribal community and their utilization for primary health care in treatment of different ailments in the study area in an ethno medicinal perspective.

Methodology

This work was undertaken during May, 2014 to June 2015 to collect data on different medicinal plants species which are used for curing ailments by the people of Munda community in the study area. Both participant and non-participant observation with interview technique were followed by the investigators and extensive field visit were made to local medicine-men for collection of information and identification of places of occurrence of the medicinal plants in the survey area. This study was conducted with the help the informants from Munda community who are familiar with plants and their mode of utilization. The details about medicinal plants such as local name, parts used for the treatment, name of the disease for which plants are used, preparation and mode of administration, dosage, etc., were provided by the medicine men and elderly persons of the locality. Primary data has been collected from 135 respondents including 110 men and 25 women, which was later compared with and supplemented by secondary source. Plant specimens were identified following flora of Odisha (Saxena and Brahmam, 1994).

Medicinal plants and methods of used by the Munda community

Sl. No	Botanical Name & Family	Local Name in Odia	Parts used	Method of use
1	*Abutilon indicum*, L Malvaceae	Pedipedika	Leaf	• Three numbers of leaves with *Piper nigrum* is given in empty stomach to the patients for 3 days to cure jaundice • Bark extract is used to check bleeding from wounds. It facilitates coagulation of blood.
2	*Abrus precatorius*, L Fabaceae	Kaincha	Seed	• White seed (one) is kept in raw cow milk overnight and given to women in morning to eat at the end of menstruation cycle to prevent conception
3	*Acacia catechu*, L Mimosaceae	Khaira	Bark	• Bark extract is used to check the bleeding from wounds. The blood is coagulated immediately. • Worm extract of bark is used to wash mouth to cure mouth ulcer.
4	*Acorus calamus*, L Araceae	Bacha	Root	• Paste of the root is applied on fore head to cure headache.

				• Root ingrated with mother's milk is given to children to cure cough
5	*Albizia lebbeck*, L (Mimosaceae)	Sirisa	Leaf, Bark	• Leaf extract is applied on eye for eye problem. • Powder of root is applied on tooth to cure tooth ache
6	*Allium cepa*, L (Amaryllidaceae)	Piaja	Leaf	• 2 ml. of extract is taken twice a day to cure swollen anal veins(hemorrhoid)
7	*Alstonia scholaris*, L (Apocyanaceae)	Saptaparni	Flower	• Flowers are consumed along with flower of *Pterospermum acerifolium* to cure dysentery
8	*Amaranthus spinosus*,L (Amarumthucees)	Kantateutia	Root, Leaf	• Paste of the root applied on injury to check bleeding. • Leaf is eaten by lactating women to increase lactation. • Root paste is applied on boils to heal
9	*Andrographis paniculata*,Burm (Acantheceae)	Bhuinima/ chireita	Root Leaf	• Leaves boiled in water & infusion is used to wash wounds for fast healing. • Powder of leaf is taken with hot water to treat malaria • Leaf extract is taken to treat worm. • A fresh leaf paste is applied on skin to cure skin infection.
10	*Annona squamosa*, L (Annonaceae)	Sitafala	Root	• 5gms of root powder is taken once in morning for 5 days by women to terminate pregnancy of 3 to 4 months
11	*Anthocephalus cadamba*, Roxb (Rubiaceae	Kadamba	Seed, leaf Root	• Leaf applied with mustard oil is heated & applied on knee to treat rheumatism. • Leaf extract is applied on forehead to treat headache. • Leaf extract is applied for treatment of skin infection
12	*Argemone mexicana*,L (Papaveraceae)	Agara	Root, Leaf	• Powder of the seed is cooked & applied on body to cure scabies & eczema. • 10 ml. leaves extract of *Tinospora cordifolia* with 8 drops oil of *Argemone mexicana* is taken to cure Jaundice. • Leaf extract is applied on wound for healing

13	*Argyrea nervosa* (Brum) (Convolvulaceae)	Brudhadaraka	Seed, Leaf, root	• One seed per day is taken for 3 days to cure constipation and indigestion. • Leaves placed on earlobes of women to facilitate detachment of placenta after delivery. • Root extract is taken 10 ml. twice to treat fever. • Root paste is applied to reduce swelling
14	Asteracantha longifolia, L (Acanthaceae)	Koelekha	Root leaf	• Plant extract along with *Piper nigrum* is taken twice a day to treat skin disease • Leaf extract along with honey is taken for 8 days to cure jaundice. • Leaf extract along with *Piper nigrum* is taken twice to cure dysentery
15	*Bauhinia variegata*, L (Caesalpeniaceae)	Kanchan	Root, Leaf, Flower, Bark	• 20ml of root extract from 20gm root is taken twice to treat enlargement of liver (hepatomegaly). • 100ml leaf extract is taken 3 times for 3 days to cure jaundice. • Flower is boiled & extract is taken twice to check bleeding from piles. • Bark extract is taken once for 2 days to kill worm in stomach
16	*Barleria prionitis*, L (Acantheceae)	Daskerenta	Root, Leaf	• Two table spoonful leaf extract is taken once per day for 3 days to teat gastritis. • Mouth is washed with leaf extract to treat bleeding gum. • 10ml. root extract is taken with cow milk for retention of pregnancy
17	*Benincas hispida*. L (Cucurbitaceae)	Panikakharu	Fruit	• Prepared curry is taken regularly to cure piles. • Curry is to be taken regularly to retain pregnancy. • Fruit is grinded & mixed with *Piper nigrum* & taken twice to cure stomach ache
18	*Bombax malabaricum* Syn: *B.ceiba*, L	Simili	Root	• Root extract along with raw molasses is taken to increase sperm.

	(Bombacaceae)			• Root is grinded with cow milk & is taken for 3 days once daily to treat dysentery. • Thorn grinded with cow milk to prepare paste & is applied to cure acne & pimples. • Powder of root powder of *Piper nigrum* & powder of dry zinger is taken twice as one tea spoonful to cure cough & cold
19	*Barleria articularis*, L (Rubiaceae)	Sanagarpadia	Leaf	• Root paste 15gm is taken with hot water to regulate excess menstrual flow in empty stomach
20	*Bryophyllum pinnatum*,L (Crassulaceae)	Amarpoi	Leaf	• Leaf paste is applied on forehead to get relief from headache. • 10ml. of leaf extract mixed with 2 gm of dry zinger powder & is taken to cure dysentery. • Leaf is heated and applied on wound to facilitate healing
21	*Capparis sepatia*, L (Capparaceae)	Kantikapali	Root	• Root extract along with honey is taken to treat to rheumatism. • Root powder mixed with ghee is applied on anal fistula for relief
22	*Carica papaya*, L (Caricaceae)	Amrutabhanda	Leaf Fruit	• Ripe fruit is eaten by lactating women to increase lactation. • Latex of papaya mixed with salt is applied 3 times to cure swelling gum. • Latex is applied on anal fistula to cure it.
23	*Chenopodium album*,L (Chenopodiaceae)	Bathua	Leaf	• Leaf extract 2 tea spoonful is taken to kill worms. • Leaf is heated & applied on swelling part to get relief. • 10 ml. leaf extract is taken for few days to get relief from enlargement of liver (hepatomegaly)
24	*Citrus aurantifolea*, Christm (Rutaceae)	Kagjilembu	Fruit	• Total fruit is grinded & taken 3 times a day to cure dysentery. • Fruit juice is taken to cure bleeding gum. • Fruit is eaten to cure dyspepsia
25	*Coriandrum sativum*,L (Apiaceae)	Dhania	Seed	• One tea spoonful of seed & amla powder is soaked in water over night & taken in empty stomach in

				morning to treat gastritis and acidity. • Same amount of seed & amla powder is soaked & then applied on head to get relief from head ache
26	*Courouptia guinanensis*, Aubl. (Lecythidaceae)	Nageswara Flower, Seed	Flower Seed	• Two of flower along with *Piper nigrum* is grinded & taken to cure dysentery. • Oil of seed is applied to joints to get relief from rheumatic pain
27	*Crateva nurvala*, Buchham (Cappareceae)	Boruna	Stem Bark	• 3ml. of juice of bark mixed with seed powder of *Piper nigrum* (1 gm) is taken by women on 7th day of menstrual cycle as contraceptive. • 2 ml. of leaf extract with honey is taken to kill worms. • Four gm. of root powder with honey is taken to treat skin diseases
28	*Cuminum ciminum*, L (Apiaceae)	Jira	Seed	• Powder of seed mixed with honey is given 3 times a day to treat dysentery. • Seed is boiled in water & the extract is taken to kill worms. • Powder of seed mixed with sugar is taken in empty stomach in morning to get relief of acidity
29	*Cuscuta reflexa*, Roxb (Cuscutaceae)	Nirmuli	Whole plant	• Plant is boiled in water & the decoction is taken to cure enlargement of liver (hepatomegally). • Plant extract mixed with powder of *Piper nigrum* is taken to cure piles
30	*Datura stramonium*, L (Solanuceae)	Dudura	Leaf	• Leaves are fried with sand and the hot mixture is placed on joints to get rid of rheumatic pain & inflammation. • Leaf powder is smoked to cure chronic cough. • Leaf extract boiled with sesame oil is massaged to get rid of aching of body parts
31	*Dillenia aurea*, Sm (Dilleniaceae)	Rai	Stem bark	• 10ml. extract of stem bark is taken once a day for 2 weeks in empty stomach for restoration of

				health after child birth
32	*Embelia ribes*, Burm.f(Primulaceae)	Nunumnia	Root	• 2 gm of root powder is taken with honey to kill worms
33	*Euphorbia thymifolia*,L (Euphorbiaceae)	Patrasiju	Leaf	• Leaf extract mixed with powder of *Negelia sativa* is applied on swollen part to treat elephantiasis. • Leaf extract is heated and is applied in ear to get rid of ear ache
34	*Ficus benghalensis*, L (Moraceae)	Bara	Leaf	• 2 drops of latex mixed with 4drops of mustard oil & applied in ear to get relief from ear infection. • Leaf extract mixed with mustard oil is heated and massaged on scalp to cure hair infection
35	*Ficus recemosa*,L (Moraceae)	Dimiri	Leaf Bark	• Bark is grinded with water & the extract is taken by lactating women to increase lactation. • Leaf extract mixed with honey is taken to kill worms
36	*Ficus religiosa*, L (Moraceae)	Aswastha	Leaf, bark	• Leaf powder mixed with molasses is taken to kill worm. • One tea spoonful powder of bark is taken with water twice daily to cure leucoderma. • Bark is boiled in water & decoction is taken twice a day to cure cough
37	*Heliotropium indicum*,L (Boraginaceae)	Hatisundha	Root	• Decoction of root (10ml.) is taken with honey (2ml) to prevent anemia during pregnancy
38	*Hemidesmus indicus*, L (Asclepiadaceae)	Anantamrula	Root, Leaf	• Root paste (10gm) is taken in empty stomach for 7 days to treat leucoderma. • One leaf with 3 *Piper nigrum* is chewed & taken with worm water for 3 days to cure asthma
39	*Marcotyloma unifiorum*, L (Fabaceae)	Kolatha	Seed	• Seed is boiled with water & taken to treat cough & Asthma
40	*Marcotyloma unifiorum*, L (Fabaceae)	Kolatha	Seed	• Seed is boiled with water & taken to treat cough & Asthma
41	*Momordica charantia*,L (Cucurbitaceae)	Kalara	Leaf, Bark, Fruit	• Few drop of juice of leaf is put in nostril to get relief from headache • Decoction is prepared from bark of root. It is taken twice a day

				with sugar to cure piles
42	*Nardostachys jatamansi*, DC (Valerianaceae)	Jatamarsi	Root	• 20 gm. Root powder is taken with luke warm water to get relief from rheumatic pain. • 25gm root powder is given once to psychiatric patient to treat the problem
43	*Oldenlandia corymbosa*, L (Rubiaceae)	Gharpodia	Whole plant	• Whole plant is boiled to prepare decoction & taken 25ml 2 times a day to cure fever
44	*Phyla nodiflora*, L (verbenaceae)	Gosingi	Root	• Decoction of root 3ml. with un-boiled egg is given to women to promote sexual desire
45	*Piper longum*, L (Piperaceae)	Pipal	Seed	• 2 gm. Powder mixed with honey is taken for relief from cough • Seed along with dry ginger is boiled with mustard oil. It is massaged to get relief from sciatic pain
46	*Pueraria tuberosa*,wild (Fabaceae)	Bhuinkakharu	Leaf	• Paste of leaf is applied on fore head to get relief from headache
47	*Punica granatum*, L (Puniaceae)	Dalimba	Fruit, Leaf	• Unripe fruit along with sugar is grinded & taken to treat blood dysentery. • Leaf is dried in shade & powder is prepared. This powder along with cow milk is taken as wormicide
48	*Saraca asoka*, Roxb (Caesalpiniaceae)	Ashoka	Bark, Flower	• 2 gm flower is grinded with water & is taken 3 times per day cure wood dysentery. • 15ml bark is boiled with cow milk is taken in morning for 15 days to ensure pregnancy
49	*Sida acuta*, L (Malvaceae)	Bajrumuli	Root, Fruit leaf	• Root of the plant is grinded & the paste is applied on wound of body to cure it. • Fruit, root & leaf are boiled to prepare decoction & dry ginger powder is added to it. It is taken 15ml. thrice a day to treat malaria
50	*Solanum melangena*,L (Solanaceae)	Baigarna	Fruit	• Fruit is boiled & taken with molasses 3 times a day to treat fever. • Boiled fruit with *Allium sativum* is eaten to get rid of acidity &

				gastritis
51	*Solanum xanthocarpum*, L (Solanaceae)	Ankaranti	Fruit, Root, Leaf, Whole plant	• Bark, root, fruit & leaf is boiled & decoction prepared to wash mouth to treat toothache • Powder of whole plant is boiled with water to prepare decoction. It is taken 2 tea spoonful with honey to treat cough
52	*Streblus asper*, Lour (Moraceae)	Sahada	Bark Seed	• It is used as tooth brush & decoction of bark is used to wash mouth to get relief from tooth ache • Seed is grinded with urine of cow & is applied on affected part to treat leucoderma
53	*Strychnos nux-vomica*,L (Loganiaceae)	Kochila	Stem, Leaf	• Paste is prepared from stem & applied on affected part to treat leucoderma. • Powder of leaf is applied on wound to facilitate healing
54	*Tagetes eracta*, L (Asteraceae)	Gendu	Seed, Flower	• Paste of seed & flower is applied on face to cure pimple & acne. • Paste of seed is applied on wart to cure it
55	*Terminalia arjuna*, Roxb. (Combretaceae)	Arjuna	Bark	• Bark powder with water is given twice to cure blood dysentery. • Bark extract is given twice a day for 15 days to treat menstrual disorder
56	*Termilnalia bellirica*, Roxb. (Combretaceae)	Bahada	Bark	• 2 gm. Bark paste is given women with hot water twice a day to treat leucorrhoea. • Bark of the plant & bark of *Terminalia chebula* equal amount is mixed & taken 2 gm. twice to treat asthma
57	*Withania sominifera*,L (Solanaceae)	Aswagandha	Root	• 2 gm. Root powder along with 1 gm. powder of *Piper nigrum* is mixed with honey and given to treat leprosy twice a day. • 2 gm. Powder along with cow milk is taken to get relief from rheumatism
58	*Woodfoldia frutiscosa*, L (Lythraceae)	Dhataki	Flower	• Dry flower 5gm & honey 1ml. is given once a day for 1 month to women to treat leucorrhoea. • Powder of flower 1 to be spoonful is taken in empty stomach

				for 3 days to kill worm
59	*Zyziphus mauritiana*, L (Ramnaceae)	Barkoli	Bark, Leaf	• Paste of bark is taken twice a day after food to treat abdominal pain during pregnancy. • Leaf extract mixed with honey is applied on head o treat epilepsy

Result and Discussion

The present study revealed 59 medicinal plants belonging to 41 families and 56 genera used by Munda people for the treatment 123 human diseases. Out of 59 species, four each belongs to Solanaceae family and Moraceae family. Three each from Fabaceae, Acantheceae, Rubiaceae and two each from Malvaceae Mimosaceae, Cucurbitaceae, Capparaceae, Apiaceae, Combretaceae and one each from Araceae, Amaryllidaceae, Apocynaceae, Caesalpiniaeceae, Bombaceae, Crassulaceae, Caricaceae, Chenopodiaceae, Rutaceae, Couroupitaceae, Gypoxidaceae, Cuscutaceae, Dilleniaceae, Primulaceae, Euphrobiceae, Boraginaceae, Asclepiadaceae, Valerianaceae, Verbenaceae, Piperraceae, Puniaceae, Caesalpinlacea, Loganiaceae, Asteraceae, Lythraceae and Rhamnaceae family. Most of these plants grow wild in nature. Out of the 59 plants species, the majority of the species are herbs (35.59%), trees (33.89%) followed by shrubs (20.33%) and climbers (10.16%). It was observed that several parts of individual plant e.g. root; leaf, flower, bark, fruit, stem, seed etc. are used as medicine for different types of ailments. The mostly used medicines are derived from leaf (30.50 %), followed by root (20.38%), stem (11.86%), bark (11.86%), seed (10.16%), fruit (8.47%), flower (6.77%). For curing the ailments, the use of above-ground plant parts was higher (71.18%) compared to the under-ground plant part that is 28.81%. In only two ailments such as for curing fever, the whole plant of *Oldenlandia corymbosa* and for curing cough and fever decoction out of the powder of the whole plant of *Solanum xanthocarpum* mixed with honey were used as medicines.

The method of preparation varies from person to person as the herbal healers prepare the herbal medicine in a different way from each other, although the plant parts and the ailments remain constant. Medicinal plant parts were mostly to be grinded (30.50%), powered (28.81%) smash and mixed (22.03%), boiled (10.16%), smeared (5.08%), fried (3.38%) during preparation of remedies. It is also evident that, sometimes certain plants become more effective to treat certain ailments when administered in combination with some other plants. It was observed that some of the preparations include the combination of two or more species (27.11 %) and mostly single plant species (72.88%) are used for external application as well as ingestion/consumption for the treatment of diseases. Analysis of the species use procedure reflects that the oral uses (86.44%) and external application (13.55%) are made as major ways of administration of medicine. A single plant may be used to treat a single or multiple ailments. Recovery time of the majority of the recipes was two to three days. The largest number of plants (22.22%) was used to treat gynecological disorders and 11.11% each were used for skin diseases and joint pain (Rheumatism and Arthritis), 7.40% each were used for Jaundice (Liver diseases), cough, dysentery, headache, gastritis and the rest 3.70% of plants were used each for toothache, worm infection, eye problem and as contraceptive. Aged persons have much more indigenous knowledge as compared to younger generation which might be due to lack of interest on the part of the later in such practices.

Conclusion

Medicinal plants constitute the base of health care system among Munda community in Jajpur district of Odisha. Ethno medicine and their traditional knowledge is a good illustration of traditional healthcare practices. Different plant parts are directly used as medicine by the Mundas. The findings of present study will be immensely helpful to the scientists to isolate bioactive principles and development of new drugs. Present study finds that rapid deforestation due to industrialization has resulted in dwindling of these natural resources and there is an urgent need of conservation and sustainable plantation of indigenous medicinal plants. There is also an urgent need for comprehensive analysis and documentation of indigenous knowledge of curing ailments among the tribal community of Jajpur district of Odisha. The documentation of medicinal plants and associated indigenous knowledge can be used for conservation and sustainable use of medicinal plants in the area and for validation of these plant preparations for treatment of various diseases.

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TRADITIONAL HEALTHCARE PRACTICES AMONG THE KONDH AND PARAJA TRIBES OF KORAPUT

Gopinath Pradhan [1]

Abstract

The present paper is an attempt to highlight the traditional healthcare practices among the Kondh and Paraja tribes in Dasmantpur block of Koraput district in the perspective of ethno medicine. The said tribes have been by and large depending upon their traditional plant based medicines on which they still rely appreciably despite the fact that the western medicine has reached out to nooks and corners of the State. In this presentation the author, on the basis of his field work in 2015 with the said tribal communities, reveals the understanding of the tribes on diseases and ailments; their contextual choice of healthcare systems and have documented the application of 50 plant species variously used as remedy and cure for certain diseases. The findings are indicative of the fact that the tribal communities perceive disease and sickness in their own socio-cultural and environmental contexts in which traditional plant based medicines has maintained its supremacy. The author recommends that the modern healthcare system should suitably integrate the traditional healthcare systems in order to be better accepted by the communities as well as for providing more informed choices to communities to choose from available healthcare systems and alternatives.

Keywords: *Traditional medicine, ethno medicine, Kondh, Paraja, Koraput*

Introduction

Health is one of the important and basic requirements for the growth of a human society. There are different systems of healthcare, some of which have become part of great traditions like that of Allopathic, Ayurvedic, Homeopathic, Unani, etc.; while some systems like folk medicine has remained as part of traditional medicine practiced by different societies and cultures. In the tribal context, the traditional medicines have maintained their supremacy even though western medicine has reached their door steps. However, tribal people especially those living in inaccessible pockets by and large rely on their folk traditions of healthcare because, on one hand their traditional healthcare systems are culturally approved, and on the other hand their reach and access to developed healthcare systems is

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challenged by geographical barriers. In the tribal cultures there are designated people who have assumed the status of specialists in administering traditional medicines, who mainly diagnose the ailments in their own ways and handle the treatment by mainly using local bio-resources including plants and their parts, animal parts and products, minerals and other materials with or without execution of sacrifices. Some of these medicines are administered raw and directly as single or multiple ingredients; some are processed in traditional ways and administered with prescriptions on dosage and restrictions; some are administered through religious performances using magic and religion as tools for better efficacy of drugs.

The tribals have their indigenous methods of curing diseases. They have their own medicine men who have practice based knowledge about the medicinal plants available in their immediate environment and their effectiveness in curing diseases. Koraput district of Odisha is one of the tribal dominated districts inhabited by ethnic communities like Kondha, Paraja, Gadaba, Omanatya, Holva, Durua, Bhatra, Pentia, Kotia etc. These tribes have their Disari/Gurmain who handles the folk healthcare systems in their respective communities.

Traditional medicine, often used synonymously with ethno medicine refers to the 'holistic knowledge and practices, oral or written, functioned in diagnosis, prevention and curative aspects of illness and diseases, to promote total well-being, confide explicitly and implicitly on practical experiences and observation or know how techniques with or without local/regional culture having overtone of religion or not' (Reddy, 1986). World Health Organization (WHO) defined traditional medicine as 'the sum total of all knowledge and practices, whether explicable or not, used in diagnosis, prevention or elimination of physical, social and mental imbalance and relying exclusively on practical experiences and observations handed down from generation to generation, whether verbally, or in written' (1978). Seen from this perspective the tribal traditions of healthcare are holistic, culturally approved and time tested phenomena of healing and curing practices.

In the current scenario, despite the reign of western medicines throughout, plant based healthcare systems embedded in traditional knowledge has been considered recognised tools in search for new drugs. Despite many developments over the years in the study area the local tribal communities believe their traditional systems of drug administration and healthcare is stable, systematic and trustworthy. The present study highlights the healthcare practice and use of medicinal plants in traditional medicine by the tribal people in Koraput district of Odisha.

Scholarly works on ethno medicine in the context of tribes in Koraput region is very scarce and sporadic. However, some praiseworthy scholarly works on ethno medicine in Koraput region that is worth mentioning here includes Dash and Misra (1996, 1995, 1988, 1987), Das and Ramakant (1985), Mohapatra and Sahoo (2008), Srivastava and Rout (1994), among others. The conceptual and contextual framework for ethno medicinal study as provided by Joshi (1994), Kallu and Joshi (2004), Reddy (1986), WHO (1978), however, have opened up the approaches and dimensions of the study.

Health seeking behaviour of Tribal People

It cannot be said that the tribal people are fully ignorant about the modern healthcare systems. They believe in it, they take recourse to it and they have faith in it. However, they have not ignored their traditional medicines in any way. The continuation of their traditional healthcare system is based on their understanding of cause and effect of disease which is culturally rooted. They believe that most of the diseases are caused by hostile spirits or due

to breach or violation of some taboos linked with their notion of well-being. They thus consult their own Disari/Gurmain forthwith and also accept remedies through magic-religious practices to appease the supernatural power that is believed to have inflicted the disease in a person. Culturally attuned practices of the tribals by and large regulate their health seeking behavior. The Kondh and Paraja communities first of all refer their Dissari and Gurumain for a remedy or treatment as they are the people who act as bridge between the supernatural powers and the community members.

Study area and methodology

Koraput is a tribal dominated district of Odisha with 50.56% (2011 census) of tribal population. Kondh, Paraja, Gadaba are the major tribal group in Koraput district. The present paper presents findings from a field study conducted in 2015 on Kondh and Paraja communities in Dasmantpur block of the district.

The researcher followed multistage sampling technique for selecting sample households in the Dasamantpur block. Out of 16 Gram Panchayat in the block, the researcher has selected P. Phulabeda Gram Panchayat on the basis of dominance of Kondh and Paraja population. Further, four villages namely Majhiguda, Pindapadar, Kachaguda and Raulipadar of the GP were selected by using purposive sampling technique considering high concentration of tribal population and pre-dominance of Below Poverty Line (BPL) families. The study covered all the households of four villages. Data was collected by using a semi-structured survey instrument. The survey instrument was designed to assess choice/preference of healthcare system for treatment; to assess the extent to which the community people consult their folk healers and government health providers; to understand the diseases frequently occurring in the area; to document the medicinal plants used/advised by folk healers; and the extent to which people believe in magico-religious practices in healthcare. Total 105 households in the four villages were surveyed.

The approach taken for the study included: interview based approach; inventory based approach; and interactive discussion based approach. By discussion with local people a detailed list of the Disari and Gurmain in the villages and neighboring villages was prepared who were consulted to document the plant based medicines that were validated by cross checking. The plants have been identified with their local names and the botanical names could not be mentioned because of the author's limitations.

Findings and discussion

a. Preference of sample households for treatment

Both the Kondh and Paraja have high faith in traditional healthcare practices. They believe that not all the diseases are inflicted by supernatural powers. Some common diseases are environmental in nature. However, they attribute chronic diseases and mental diseases to have been caused by the wrath and anger of evil spirits and supernatural powers.

Out of 105 respondents, 60 respondents (57.14%) expressed their preference for traditional medicine better to modern medicine. As many as 45 respondents (42.86%) preferred institutional healthcare facilities at dispensaries and hospitals, and also the qualified medical practitioners who have opened clinics. The observation indicates that there is inadequate awareness about modern healthcare systems for which a majority of the respondents pose trust on traditional healthcare system and medicines.

b. Choice of specialist for treatment: folk healer vrs qualified health provider

Out of total 105 respondents 75 (71.42%) stated that they strongly believe in their traditional healthcare system and the folk healers for which they consult the folk healers for treatment and cure immediately when required whereas 19 respondents (18.10%) preferred consulting healthcare functionaries and institutions of modern healthcare systems including ANMs, Multi-purpose Health Worker (MPHW), Malaria worker, Registered Medical Practitioners (RMPs), Pharmacists, Homeopaths, etc. Only 11 respondents (10.48%), however, preferred to consult only properly qualified Doctors in hospitals or clinics for their treatment.
From further discussion with the respondents it was understood that there are three important considerations determining the choice of the people for system and practitioner in healthcare matters. The first consideration is faith in the traditional healthcare practices; the practitioner and the plant based medicine; while the second consideration is the reach and access of people to formal system/institutions and qualified practitioners, and the ease of communication facilities. The third consideration is the level of literacy and exposure that influences the decision of people in choosing traditional or modern healthcare system and health providers. The respondents, however, maintained that in case of sickness or disease of serious nature, or when a sickness or disease did not heal despite taking traditional medicine for a prolonged period they visit healthcare institutions. Some respondents viewed that healthcare institutions are higher up referrals for them.

It is also articulated by the respondents, who prefer traditional medicine and healthcare systems better to the modern system and facilities, that they give priority to indigenous health practices due to their age old and generations of association with the cultural and religious processes associated with traditional healthcare. The entities like spirits, ghosts, and deities as cause of diseases is so much ingrained in the minds of the tribals that they seek the help of traditional diviners, medicine men, sorcerers, (Dissari , Jani, Pujari etc) for healing and treatment along with magico-religious practices to appease the entities.

c. Diseases most frequently occurring in families

The most frequently occurring diseases in the survey villages, as stated by the respondents, includes malaria, cold & fever, skin diseases, diarrhea, eye infection, stomach pain, anthrax, gynaecological disorders, etc. The respondents belonging to both the communities have varied perceptions regarding the cause of the diseases. While about 72% believe that the diseases may have been environmental origin but if they continue for a long time then it is attributed to the wrath and anger of spirits and gods. In the same manner 11.5% people are of opinion that there are certain health problems especially related to gynaecological disorders, conception, miscarriage, mental problems, which are attributed to have been inflicted by malevolent gods, goddesses and spirits. The rest of the respondents i.e. 16.5% believe that disease is inherent and they happen because of behavioural problems and exposure to environment. These diverse opinions connect the traditional medicine with the developed systems of medicines; when the former fails the latter is referred to.

All the respondents, however, affirmed trust on the plant based medicines as effective remedies against the diseases like malaria, skin diseases, cold, cough, stomach pain, diarrhea and dysentery, inducing abortion and for many gynaecological disorders. However, for diseases like eye infection, prolonged fever, anthrax, and many other health problems and disorders they visit dispensaries and hospitals for effective cure.

d. Traditional plant based medicine used by Kondh and Paraja in study area

Information on the plant based medicine administered against specific diseases and ailments was gathered through oral interviews with the tribal healers. The local names of the plants, plant parts that are used, method of preparation of medicine, mode of application were recorded. The information thus gathered was peer reviewed and cross-checked with healers of other villages and other individuals practicing in or near the locality for validation.

The study enumerated 50 plant species belonging to 36 families that are used for treatment of various diseases and ailments. According to the traditional healers they know about the medicinal efficacy of plants and their modes of applications from their predecessors by following them while practicing. Such knowledge systems have passed down from generation to generation. Documentation of such knowledge has been hardly attempted by them. The healers viewed that there are many plants having efficacy to cure a certain disease but the choice of the drug plant depends on its availability. They usually prescribe the plant medicine that is easily available in their immediate surroundings. The following table presents the plant remedies prescribed by the Disaris against specific diseases and ailments in the study area.

Traditional medicine of plant origin used against various diseases

Sl. No	Name of the disease	Vernacular name (O: Odia, T: Tribal)	Part of the plant used	Method of use
1	Stomach Pain & joint pain	O: Basanga Tulsi, T: Bhotachali Tulsi	Bark, Leaves	Bark is crushed and taken with a fistful of leaves is boiled in water and the infusion is taken orally till the pain is relieved
2	Scabies	O: Pokosungha, T: Gandhiridala	Leaf	Leaf paste is applied on scabies
3	Eye infection	O: Agara, T: Kantakusm	Latex	Thin film of latex is applied on eye to cure infection
4	Rheumatic pain	O: Agara, T: Kantakusm	Latex	Latex is massaged on body to relieve rheumatic pain.
5	Skin Disease	O: Sorisa, T: Sorsu	Seed	Mustard oil taken with turmeric paste is applied on affected parts to cure skin diseases.
6	Cuts & Wounds	O & T: Kalabhalia,	Fruits	Oil extracted from the fruits and applied externally.
7	Diabetes	O&T: Jamukoli	Leaves and berries	Juice of leaves and powered fruit with water taken orally everyday
8	Diabetes	O&T: Bija	Bark	Decoction of the bark given orally everyday
9	Dysentery	O&T: Bel	Fruit	The pulp is boiled with water, 10-15ml of infusion taken twice daily
10	Dysentery	O&T: Siali	Fruit	Decoction of 7 young pods to the quantity of 10 ml taken thrice daily for two days
11	Dysentery	O: Aonla, T: Anula	Fruit	Decoction of seven fruits taken each time, twice daily, for 3 days

12	Snake Bite	O&T: Arakh	Root and Latex	The root of the plant is crushed and made into a paste, taken orally as cure for snakebite
13	Snake Bite	O&T: Kochila	Root	Root paste applied locally
14	Snake Bite	O: Dhuanpatra, T: Dhungia	Leaf	Dry leaf given to the victim to chew to check spread of poison
15	Vomiting	O&T: Lembu	Fruit	Tender fruit grated with water and given to patient. Lemon juice with salt and sugar prevents further vomitting
16	Fever	O: Sakuta, T: Haladikastura	Rhizome	Crushed rhizome taken orally
17	Fever	O: Banaphula, T: Dhobamalti	Tuber	Tuber is grated with water and taken
18	Wound	O&T: Kalachakunda	Leaf	The paste of the leaf is applied on wounds
19	Round worm	O&T: Haldi		For children a paste of turmeric and neem is given orally to cure round worm
20	Cough	O: Kapa, T: Balukanda	Root & Fruit	Root and fruit is crushed together and taken
21	Migraine	O&T: Banatulasi	Leaf	Leaf is crushed along with garlic and applied on forehead with oil
22	Headache	O&T: Jada	Seed	The oil extracted from seeds is locally applied on scalp to get relief from pain
23	Burn	O&T: Sapua	Leaf	Fresh leaf juice is applied on affected part to cure burns
24	Toothache	O&T: Bhejri	Fruit	The fruit is put on fire and the smoke is taken to get relief from toothache
25	Toothache	O&T: Chirmar	Root	Root paste is applied on gum or a piece of root is crushed by teeth
26	Constipation	O: Tentuli, T: Tentil	Fruit	The fruit is boiled in water and taken orally to cure constipation
27	Blood dysentry	O: Pijuli, T: Jamba	Bark	Bark of guava along with the bark of mango is crushed and taken for blood dysenty
28	Cold and cough	O: Kathachampa, T: Nisanphool	Bark, flower	The decoction of bark is taken against cold and cough. For cough twenty one flowers are grated with roasted ginger, garlic and onion and taken orally
29	Cold and cough	O&T: Ada	Rhizome	Rhizome is burnt and grated with five to ten seeds of black pepper taken orally to cure cold and cough
30	Epilepsy/ Fits	O&T: Bankulthi	Root	Root is grated and taken orally. Root is also worn in hand

31	Weakness and debility	O: Brudhadarak, T: Motapatra	Root	The root is grated and taken to cure general weakness and debility
32	Acidity, burning stomach	O&T: Banhaldi	Rhizome	Rhizome is grated and taken for acidity and burning stomach
33	Exorcizing evil spirit	O: Kandriphula, T: Drustibhota	stem	The stem is grated and taken
34	Waist Pain, abdominal pain	O: Khadi Siju, T: Sanajilledi	Leaf	For waist pain, first Karanj oil is massaged on waist then the leaf of Khadisiju is heated and applied on affected area
35	Mosquito repellent	O: Karanja, T: Karanji	Seed	Oil applied on body parts work as mosquito repellent
36	Leprosy	O&T: Simili	Root, Bark	The root is grated and given along with juice of sour orange
37	Diarrhoea	O&T: Simili	Root, Bark	Bark is crushed and taken
38	Night Blindness	O&T: Agasti	Fruit, Leaf	Cooked leaf is taken as a vegetable to cure night blindness
39	Diarrhoea	O: Akanabindhi, T: Sathimala	Root	The root is grated and taken
40	Anemia	O: Lalkhada, T: Bhaji	Leaf	The leaf is used as vegetable against anaemia
41	Earache	O: Kalara, T: Karla	Leaf	Leaf juice is poured into ear
42	Lactation	O&T: Amrutbhanda	Fruit	Fruit is cooked and given as diet
43	Asthma	O&T: Dudura	Flowers & Leaf	The flowers and young leaves are rolled and sundried, then used as cigars smoked to cure asthma
44	Jaundice	O&T: Manjuati	Root	The root is grated and taken with water of raw rice to cure jaundice
45	Nose bleeding	O: Amba, T: Aam	Bark & Kernel	The juice of mango kernel is poured into the nose to stop bleeding in nose
46	Dumbness	O&T: Bacha	Root	The root is given to children who are unable to speak
47	Acute Gastric	O: Mandi-koli, T: Kuruma-koli	Root	The root paste is used against gastric
48	Worm infection, liver and spleen trouble	O&T: Bhuin nimba	Whole plant	10-15 ml juice of this plant root is administered orally along with honey for all types of worm infestations and related stomach problems. The leaf paste also used to cure the headache
49	Hair fall	O: Neem, T: Limba	Leaves	Juice extracted from 10-12 fresh leaves and applied on the scalp regularly

50	Abortion	O&T: Kaincha	Seeds	Three seeds taken for 4 days to induce abortion
51	Liver disorder	O&T: Palaso	Leaves	A glass of leaf extract taken orally for 2 days
52	Gonorrhea & contraception	O&T: Doobghas	Whole plant	Whole plant is grated and applied locally on the inured part to stop bleeding and early recovery. Whole plant of dubaghasa with root is grated and taken orally to ensure contraception.
53	Piles	O&T: Mankadakendu	Bark	The grated bark is mixed with milk and castor oil to prepare a solution and the preparation is taken one spoon each three times daily for 15 days to heal piles
54	Pain during menstruation	O&T: Mandar	Leaf	The paste from stem bark is used to pain during menstruation
55	High Blood Pressure	O: Sajana, T: Muninga	Leaf	The juice extracted from the boiled leaves taken to normalize blood pressure
56	Measles	O&T: Bhuin amla	Whole plant	The whole plant is grated to paste and mixed with 10 ml of mustard oil and applied on the measles for 2 to 3 days
57	Antidote to poisoning	O: Tentuli, T: Tentli	Fruits	Juice derived from 2 to 5 years old fruits, given to the patient to induce severe vomiting who swallowed poison
58	Bone fracture & any injuries	O&T: Bisalyakarni	Leaves	The leaves are pestled with mustard oil. The paste is applied on the fractured area and wrapped with bamboo split for one month to fix the fractured bones
59	Burn	O&T: Harida	Fruits	Roasted fruit is grated, mixed with Vaseline and applied on the burnt part
60	Excess fat	O&T: Harida	Fruits	Fruit powder is used for high cholesterol and digestive disorders
61	Kidney stone & Small gall bladder stone	O: Hemakakiri, T: Patharchata	Leaves	Chew (2-3) leaves or extract leaf juice and drink twice a day to relieve

Source: Field Study-2015

The use of these traditional medicines is wide spread and prevalent in the study area. However, due to rampant deforestation many of the plant species have become rare in occurrence which relatively poses problems in maintaining healthcare traditions.

Apart from the above there are many magico-religious uses of plants, under which the tribal subscribe to supernatural agencies through traditional healers (Disaris) and perform a wide variety of rituals and sacrifices in order to appease the angry spirits.

Conclusion

The Kondh and Paraja in the study area have their own understanding and beliefs relating to the cause and cure of diseases. For them, even though there could be several factors causing diseases and ailments, yet the belief that supernatural powers are hidden causes of diseases are prevalent. For many common diseases and sickness they still rely heavily on their traditional medicine and folk healers for immediate benefit. In comparison to western medicines, in case of certain diseases, they give first preference to the traditional health care practices. In remote and geographically inaccessible pockets the supremacy of traditional medicines is maintained. Further, lack of ample awareness on healthcare and poor economy makes the people to trust their traditional healthcare practices, which, for them is cheap and effective.

The study of traditional uses of plants in healthcare practices may pave way for alternative medicines in a futuristic perspective. The use of herbs to treat diseases is almost universal among tribals and is often more affordable than purchasing modern pharmaceuticals. It is therefore necessary to ameliorate the government run health care programs by integrating them with traditional healthcare systems.

It is apparently clear from the study that the common beliefs, customs and practices connected with health and disease influence the tribals' choice of treatment methods. Hence, giving due attention to the socio-cultural contexts of tribal health the modern healthcare delivery programs should be designed and implemented in the tribal areas giving ample choice to the health seekers to chose between scientifically validated and time tested alternatives.

To make the healthcare delivery system more effective the local folk medicine practitioners need to be identified and fully involved in health care delivery. Awareness programs should emphasize on removing knowledge barriers and help people take informed choices for their healthcare needs.

Furthermore, traditional medicines have been approved by the scientific community for their efficacy in preventive, curative and ameliorative healthcare. This location specific knowledge preserved in parochial traditions need to be documented thoroughly before they are lost forever.

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PLANTS USED IN ETHNO-MEDICINE AGAINST BREAST CANCER AND THEIR PHARMACOLOGICAL REVIEW

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Abstract

Traditional societies have been using many plant remedies in their health care systems. These plant remedies, beliefs, practices and knowledge systems in relation to given cultures has been the essence of studies in ethno-medicine. Over the years ethno-medicine has been taken as a valid discipline for research, especially in the context of traditional knowledge and alternative healthcare. Researches in ethno-medicine over the last many decades have documented and chronicled hundreds of plant species used by traditional societies for healing and cure of many diseases, thereby justifying that ethno-medicine is still in practice and it is a reliable alternative healthcare. However, the challenge that the research in ethno-medicine has been facing is that the scientific validation and academic authentication of information availed from the local communities.

In the present paper, the authors have attempted to scientifically validate local information on medicinal plants, disease and treatment by traditional healers, experts and professionals on the basis of an ethno-botanical field survey in Western Odisha, especially in the districts like Angul, Boudh, Sambalpur and Jharsuguda during 2014-15. The locals use certain plants for prevention and cure of breast cancer. The novel dynamic constituents of anticancer herbs have immune enhancing, free radical scavenging, anti-mutagenic, anti-angiogenesis and anticancer properties. Out of many, 12 important plants that are held important by locals as effective against the breast cancer caught the attention of the authors which the authors have attempted to scientifically validate with reference to earlier studies on ethno-medicine. The presentation brings together the primary and secondary information, i.e. both empirical and bibliographic. The authors are of the view that ethno-pharmacological research must be duly encouraged to validate ethno-medicine across any culture and community.

***Key words**: Ethno-medicine, Ethno-pharmacology, Traditional knowledge, Breast cancer*

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Introduction

Odisha is a reservoir of medicinal plants, is a repository of traditional knowledge on utilization of medicinal plants preserved through centuries old practices in ethno-medicine by varied ethnic groups and cultures across the State. Many studies on ethno-botany and ethno-medicine on Odisha have provided vivid account of traditional healthcare systems with plant remedies that has been continuing even today. Many of these plant remedies have been studied from ethno-botanical perspective. However, most of the works have remained limited to documentation of medicinal uses of plants as practiced by different ethnic groups inhabiting different geographical regions. Looking at the ethno-botanical documentations question often arises about the scientific validation of the information although the evidences suggest that the knowledge system is scientific in the local context, as otherwise, such practices would not have been there. However, the scientific validation of such knowledge and practice would not only authenticate the traditions, practices and applications of plant based drug in ethno-medicine but also it would help drawing an impression on valuing the importance of traditional knowledge systems.

Studies on ethno-medicine in Odisha are very sporadic and in many studies, it appears, the terms ethno-medicine and ethno-botany have been used synonymously. The ethno-botanical literatures available today indicate that researches in ethno-botany in Odisha started during the 1980s. Before that some scholars did some work on the folk knowledge of plants and trees with reference to tribal communities in Odisha. However, research on tribal peoples' knowledge on plants and trees, especially in the context of traditional healthcare systems have been there since about last many decades. Most of the information and literature published by earlier scholars are of great value today in the context of further research in the field. The researches in the past have brought out many less known efficacious uses of plants in treatment and cure of complicated diseases and sicknesses which open up arena for further research to scientifically and pharmacologically validate such information.

Many plants widely available in Odisha have been utilized as anticancer therapy in ethno-medicinal practices. The present paper enlists some such plants used in ethno-medicine for prevention and cure of breast cancer related symptoms. Basing on the information and prescriptions on plant based drug, as held by local healers or *Vaidyas* or *Kabiraj*, a review of the pharmacological literatures available so far has been made in an attempt to establish the authenticity of such traditional practices.

In the current context, because of various complicacies in the wake of utilizing allopathic anticancer therapy, researchers are in inquiry to explore other wellspring of solutions with negligible adverse effects and other reactions. Presently, many new medications have been synthesized utilizing ethno-medicinal plants for treating different types and forms of cancer (Nair, *et.al.* 2010, Suryavanshi, *et.al.* 2011). Research reports clarify that the presence of certain phyto-constituents in therapeutic plants leads the anticancer activity. They may improve body resistance by fortifying both specific and non-specific immunity. Some phyto-constituents have cancer prevention properties which ground in anticipating cell damages brought by free radicals (Pandey, 2011, Suryavanshi, *et.al.* 2011).Using antioxidant rich diet from plant source defends body by radical scavenging mechanism (Gupta and Sharma, 2006, Olidori, 2003). Vitamins like A,C,E,K, flavonoids, terpinoids, carotinoids, polyphenols, enzymes, minerals, alkaloids, xanthenes, lignans, polysaccharides, etc. are the chief phyto-antioxidants preventing and curing cancer (Pandey, 2011; Gupta, and Sharma, 2006). Universally, usually one breast cancer case is established in four newly diagnosed cancer/tumour in females (Nagaprashanthi, 2012; Omogbadegun, 2013).

Materials and methods

The authors, comprising ethno-botanists and pharmacologists, during their explorations for ethno-botanical enumeration of plants in parts of Western Odisha came across certain local healers, *Vaidyas, Kabirajs* who are well known in their respective areas for their authority on traditional medicine through years of experience. During the field work and through interviews with those knowledge bearers it was found interesting to note that they have been prescribing plant based drug to prevent and cure breast cancer. While in general understanding determining case of breast cancer follows sophisticated laboratory analysis, the ethno-medicine practitioners viewed that they determined breast cancer cases by meticulous and careful analysis of symptoms related to breast cancer. Based on their observation they prescribed the medicines.

By several cross checking, especially among the practitioners who have been mentioned against the information on specific plants, the authors shortlisted 12important plant and tree species on the basis of their widely acclaimed use in treatment of breast cancer. To further validate it a pharmacological review of such plants was made. The following presentation thus include the description on ethno-medicine as applied for treatment of breast cancer followed by the pharmacological review on such drug plants in relation to breast cancer. Ethno-medicinal account described against each plant suffices the source of information. Although each piece of information is cross checked among the sources mentioned yet the first source is referred in the text.

Findings, Observations and Reviews

Ethno-medicine for breast cancer and their pharmacological validation

Understanding and analysis of symptoms

Conformation of a breast cancer case is a matter of sophisticated laboratory analysis. However, the local healers and ethno-medicine practitioners identify breast cancer case from certain symptoms. On the basis of presentation by patient the practitioner relates the symptoms and behavior with breast cancer. Usually, the healers suspect breast cancer from symptoms like: feeling of lump(fibroadenoma), locally called *gutta* in the breast mass and inflammatory pain around; the lump disappearing at certain times and reappearing after some days; lump nodes in armpit; size variation between two breasts, the affected one swelling up unusually; pus like discharge from nipple of affected breast; tiny acne like outgrowth around nipple with reddish patches; feverish feeling with fluctuation in body temperature; irregularity in menstrual cycle and menstrual flow; sciatica pain below the knee; etc. If the lump remains fixed at one point in the breast then it is taken for sure as cancer whereas if the lump moves from point to point in the breast it is believed benign. Further, if the skin on the lump looks porous like in orange peel then it is considered a sure case of cancer. The allied symptoms are mood swing, dizziness, frustration, etc. The healer relates the symptoms to identify the case as breast cancer.

Plant based drug used in treatment

***Allium sativum* (Rasuna; Family: *Liliaceae*)**

Cloves of garlic (2/3) taken with dinner everyday acts as a preventive against breast cancer. It helps in regulating occasional rise in body temperature which is common in case of women having symptoms of breast cancer. *Ref. Abani Kumar Pradhan, Redhakhol, Sambalpur.*

The organo-sulfur compounds (diallylsulfide, diallyldisulfide, diallyltrisulfide, Sallylcysteine and Sallylmercapto-L-cysteine) have marked anticancer activity (Lambertini, *et.al.,* 2005). Diallytrisulfide is the most potent cancer chemo-preventive derivative and induced apoptosis in MCF-7 human breast cancer cell line (Capasso, 2013; Park, *et.al.* 2013). Allium also contains Selenium, in which control of genes involved in carcinogenesis (Lambertini, *et.al.,* 2005).

***Aegle marmelos* (Bela; Family: *Rutaceae*)**

Raw fruit and leaves are collected and left for shade drying. Then they are pounded by *Dhenki* (rice husking lever). The powder is sieved. The residual material is further pounded and sieved. The fine powder thus made is prescribed to patient with a dosage of two to three tea spoonfuls per day continuously to relieve lump i.e. that appears in breasts. The prescription also helps reducing any pain because of the lump, and prevents further growth or expansion of it. *Ref. Kunu Vaidya, Athmalik, Angul.*

Pulp and seeds of fruit contain Lupeol, showing strong positive action against breast cancer, thyroid cancer and other form of malignancies (Pandey, 2011; Lambertini, *et. al.,* 2005). Lupeol affects the gene expression of MDA-MB-231 breast cancer cell line and inhibits cell proliferation (Lambertini, *et. al.,* 2005). Adverse effects of both radiotherapy and chemotherapy get diminished by antioxidant property of *Aegle mamelos* (Pandey, 2011).

***Azadiracta indica* (Neem; Family: *Meliaceae*)**

Fresh leaves are collected, grated and taken with sugar or molasses every morning. Continuous intake of the preparation helps healing discharge from the nipples, reduces the occurrence of red spots around nipple, and prevents any further infection. It also acts to prevent worms. *Ref. Sadasiv Dehuri, Radhanagar, Boudh.*

Neem possesses anti-viral, anti-microbial, anti-inflammatory, anti-tumour, anti-pyretic, anti-bacterial, anti-fungal, and anti-hyper-glycaemic properties (Arun & Sivaramkrishnan, 1994). Several studies have demonstrated that alcoholic extracts of neem leaf are more effective than aqueous extracts for cancer treatment (Subapriya *et. al.,* 2004; Kumar *et. al.,* 2006).

***Centella asiatica* (Thalkudi; Family: *Umbelliferae*)**

The whole plant is a useful remedy against breast cancer as understood from early symptoms. The whole plant is grated to make a paste. Part of the paste is ingested and part of paste is applied on the affected breast to heal the lump over a period of time. The paste applied on the affected breast also eases pain out of the lump. *Ref. Sadasiv Dehuri, Radhanagar, Boudh.*

It has been used as memory tonic, in many neuro-degenerative disorders, extensive wounds, eczema, ulcer, leprosy, etc. in indigenous system of medicine (Satyavati *et. al.,* 1976; Sharma, 1992). Thalkudi extract is reported, to have a wide range of therapeutic activity against diabetes, hypertension, oedema, etc. along with chemo-preventive and anti-proliferative effect (Sivarajan, 1994). MECA and Asiatic acid inhibited the proliferation of human breast cancer cell line MCF-7 (Sufferedini *et. al.,* 2007; Babykutty, 2009).

***Cissus quadrangularis* (Hadasankari; Family: *Vitaceae*)**

The plant parts are grated to make a paste. The paste is applied on the lump on the affected breast to relieve pain. Continuous application not only heals the lump but also helps the breast to restore its normal size. *Ref. Kunu Vaidya, Athmalik, Angul.*

The plant is used in the treatment of anorexia, dyspepsia, colic, flatulence, tumours, convulsions, asthma, epistaxis, otorrhoea, irregular menstruations, inflammations, pain, and syphilitic infections (Chatterjee & Chandraprakash, 1997). The aerial part of the plant has potential antioxidant and anticancer activities. The flavonoid fraction possesses potent anticancer property against breast cancer cells -MCF7 (Vijayalakshmi *et. al.,* 2013).

***Curcuma longa* (Haladi; Family: *Zingiberaceae*)**

Raw rhizome is grated and a part of the paste is ingested in early morning. Paste is also applied on the affected breast to relieve lump, heal the discharge from breast and eases itching effects. Raw turmeric is better. If not available then the dry rhizomes should be soaked in water over night and grated in the morning. Only fresh prepared paste should be used. *Ref. Kunu Vaidya, Athmalik, Angul.*

The major constituents of the extracts are curcumin sulphate and glucuronide causing apoptosis in various cancer cells. Curcumin allows suppression, retardation and invasion of carcinogenesis and the most studied natural chemo-preventive agent. Curcumin is also depicted as an anti-tumoral, anti-oxidant and anti-inflammatory agent (Nair *et. al.,* 2010; Gladys, *et. al.,* 2013). The percentage of apoptotic cells in MCF-7 cells from 5.90% in control untreated cells to 54.58% in treated cells (Sashidhara *et. al.,* 2013).

Mangifera indica* (Amba; Family: *Anacardiaceae)

The foliage leaves with petioles of mango is grated to make a paste and taken with water. It is prescribed to women having symptoms of breast cancer; like, any abnormality seen on the breast, mood swing, fluctuation in body temperature, dizziness, acne like developments around nipple etc. It acts as a remedy against existing symptom as well as acts to prevent further increase in related complicacies. *Ref. Bhaskar Sethy, Birmaharajpur, Subarnapur.*

Abundant number and type of bioactive compounds give rise to the multi health beneficial characteristics of mango (Robles-Sanchez *et. al.,* 2009). Ethanolic extract of peel has the phenolic content accountable for its antioxidant and anti-proliferative action. Butylatedhydroxytoluene (BHT) most abundantly found in the extract is a highly antioxidant compound and Apigenin 7-glucoside, a phenolic compound having both antioxidant and anticancer potentials (Nakazaki *et. al.,* 2013). Ethanolic mango kernel extraction MCF-7 and MDA-MB-231 cell lines showed significant cytotoxic effect in a dose-dependent manner (Abdullah *et. al.,* 2014).

***Mimosa pudica* (Lajakuli; Family: *Leguminosae*)**

The plant is believed to be highly efficacious as a preventive and curative for breast cancer. The roots of the plant are grated with raw turmeric rhizome or dried rhizome soaked in water. A bole to the size of amla is prescribed to be taken every morning till the pain in affected breast subsides. Continuous application would relieve the pain completely and prevent any further complicacies. *Ref. Abani Kumar Pradhan, Redhakhol, Sambalpur.*

It is reported to contain alkaloid, glycoside, flavonoids and tannins. It has anti-microbial, anti-convulsant, hyperglycemic, anti-oxidant, anti-venom, diuretic, anticancer, anti-diabetic, anti-fertility and anti-histamic activities (Chauhan & Johnson, 2009; Mishra *et. al.,* 2010; Saraswat & Pokharkar, 2012). Cytotoxic study suggested that flavonoids from *Mimosa pudica* has the maximum cytotoxic effect against MCF-7, Human breast cancer cell line (Jose *et. al.,* 2014).

***Ocimum gratissimum* (Rama tulasi, Family: *Lamiaceae*)**

The whole plant is grated to make a paste. Part of the paste is ingested and part of paste is applied on the affected breast to heal the lump over a period of time. The paste applied on the affected breast also eases pain out of the lump. *Ref. Sadasiv Dehuri, Radhanagar, Boudh.*

Ocimum gratissimum reportedly is used as chemo-preventive, anti carcinogenic (against breast cancer), radio-protective and numerous other pharmacological uses. It has the property to restrain the succession of human breast cancer as natural non-toxic inhibitor of MMP-2/-9 (Makker *et. al.,* 2007).

***Rubia cordifolia* (Barheipani/Manjistha; Family: *Rubiaceae*)**

When the symptoms of breast cancer appear the leaf paste of the plant is prescribed for early relief and prevention of further complicacies. The leaf paste should be taken in the morning. The leaves may also be taken with black pepper. It is a holistic remedy for any type of symptoms related to breast cancer. *Ref. Sadasiv Dehuri, Radhanagar, Boudh.*

Rubia cordifolia leaves are reported and documented for antiviral and *in vitro* free radical scavenging activity (Prajapati and Parmar, 2011). Other activities include blood purification, hepato-protection, nephro-protection, gastro-protection, immune-modulation, anti-diuretic, anti-diabetic, anticancer, antibacterial, anti-inflammatory, analgesicetc (Lodia and Kansala, 2012; Tripathi and Singh, 2007; Kamboj, 2000). Roots illustrate cyto-toxicity against MCF-7 breast cancer cell lines strongly, and inhibitory action for DNA topoisomerase I and II (Jong *et. al.,* 2006).

***Trapa bispinosa* (Panisingida; Family: *Trapaceae*)**

The fruit of the plant is believed to be a wonderful drug for prevention and cure of breast cancer related problems. Particularly the outer coat of the fruit is highly efficacious as medicine and hence the matured fruits with thick coat should be taken for preparation of medicine. The fruits of the plant are to be sun dried and powdered. One spoonful of the powder taken with warm water taken in empty stomach in early morning holistically relieves all complicacies related to breast cancer. *Ref. Kunu Vaidya, Athmalik, Angul.*

In Indian system of medicine, Trapa is used in the problems of stomach, genito-urinary system, liver, kidney and spleen. It has also bitter, astringent, stomachic, diuretic, febrifuge, and antiseptic property. The whole plant is used in genital disorder like gonorrhea, menorrhagia and also useful in diarrhea, dysentery, ophthalmopathy, ulcers, and wounds (Adkar *et. al.,* 2014).*Trapa acornis* exhibited the anti proliferative effect on human breast cancer cell lines SKBR3 and MDA-MB435via G2/M cell cycle arrest, thus it should interact with tubulin (Pradhan and Tripathy, 2014).

***Teminalia chebula* (Arjuna; Family: *Combretaceae*)**

Bark of the tree is boiled in water till a thick decoction is prepared. The decoction is taken daily as a remedy to the complicacies of breast cancer. The decoction helps melting the mass that is felt in the breast. Additionally, it helps in making the body toxic free and also helps breaking the calculi in kidney. *Ref. Abani Kumar Pradhan, Redhakhol, Sambalpur.*

The fruit powder has been used in digestive diseases, urinary diseases like renal calculi, diabetes, skin diseases, heart diseases, irregular fevers, nervous disorder like nervous weakness, nervous irritability, constipation, etc. (Khare, 2007; Gupta *et.al.*, 2003; Bag *et.al.,* 2013). The phenolicschebulinic acid and ellagic acid possess moderate inhibition and they

may be responsible for the inhibiting cell proliferation. Ethanolic extract of *T. chebula* fruit inhibited cell proliferation and induced cell death in a dose dependent manner in several malignant cell lines including human breast cancer cell line, MCF-7 and mouse breast cancer cell line, S115 (Reddy *et.al.,* 2009).

Conclusion

From the study the conclusion emerges that the traditional knowledge held by the traditional medicine or ethno-medicine practitioners is valid and scientific. Although the method and practice of drug administration may vary from practitioner to practitioner yet, as regards to the selection of drug plants, the practitioners have been using the right sources and their affinal or close alternatives in the practice of treating breast cancer. The practitioners' observation on symptoms also matches with the western medical science and hence the method of diagnosis followed by them is scientific on its own accord.

In the conservative culture that is in Odisha, many cases of breast cancer are not reported by women. In many cases the women affected by the complicacies take recourse to the traditional medicine practitioners. In this context, the ethno-medicine in general and specific to treatment of breast cancer is reasonably relevant.

In a larger scenario, with reference to National Cancer Registry Programme, it is indicated that the cases of breast cancer is in increasing trend with rising numbers. Breast cancer is now the most common cancer in most cities of India, and second most common in the rural areas. The increasing incidence of breast cancer is in the younger age groups i.e. in 30's and 40's. Apart from the awareness programs the effectiveness of traditional medicine in curbing the cases need to be popularized. Further researches in ethno-medicine may find new solutions and alternatives to medical care to many such fatal diseases.

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ETHNO-MEDICINES USED FOR TREATMENT OF GYNAECOLOGICAL DISORDERS OF TRIBAL WOMEN IN MAYURBHANJ DISTRICT OF ODISHA

Gulsan Khatoon[1]

Abstract:
This is an empirical study on the ethno-medicinal practices to cure gynaecological problem among the tribal women of Mayurbhanj district. The present paper reports about 16 plant species belonging to 8 families, mostly used for treating various gynaecological disorders by the tribal people in the said district. The tribal population of the region primarily depends upon plant based drugs to prevent and cure various diseases and ailments. Use of plants as medicine against certain gynaecological problems, especially by tribal women is a discrete knowledge confined to the healer and the women who used it. Although in certain cases they purchase some of these medicines from the local market, yet their dependency on plants available in their surroundings is remarkable. In this attempt an enumeration of plants used by tribal women in gynaecological disorders have been presented with botanical names, family, local names, parts used and the way the drug is administered or used. The information has been validated in the field through cross checking, although, further studies on chemical and pharmacological actions are suggested to validate the claims.

Key words: *Gynaecological, ethno-medicine, Traditional healers, Tribes*

Introduction

Throughout history, traditional societies across different cultures tended to use wild plants and animal species and their parts in their healthcare systems. According to the World Health Organization, 80% of the developing world's rural population use traditional medicine for primary health care (Alves, 2005) and the same percentage can be applied to world populations (Ahmad, 2005) depending on traditional medicine. The traditional medicine is scientifically studied under the purview of ethno-medicine, which is 'the study of traditional medical practices combined with the cultural interpretations of health, disease, illness, health care, and healing practices is known as ethno-medicine'(Krippner, 2003). The study of ethno-medicine is complex because it consists of plants and animal materials as well as spiritual practices (Lowe, *et.al*., 2000). Many diseases and disorders are there which are not commonly

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reported by people and for which they do not consult healthcare professionals out of conservative thinking and shyness. The infertility, for example, and gynaecological disorders, for instance, are areas for which ethno-medicine assumes supremacy in local contexts. It is a phenomena world over. 'The use of plants in the treatment of infertility is gradually gaining popularity in different parts of the world due to its availability and affordability (Erhabor, *et.al.*, 2013). Thus, ethno-medicine, while encompassing a wide range of prescriptions for preventive, curative and ameliorative healthcare traditions across cultures is highly relevant for certain health problems that are not commonly reported. The gynaecological disorders are one of important area of healthcare concerning tribal communities, for which the tribal women take recourse to their ethno-medicine, better to any other alternative available. In this context, an exploration into the ethno-medicine used by the tribal women in certain villages such as Chititangar, Basantpur and Khedia Dunguri village of Jamda Block, Mayurbhanj for treatment of gynaecological problem has been attempted. The observations placed in the paper are the information and knowledge shared by the tribal women who have, in matter of fact, used these medicines by prescription of the ethnic healer or by advice of senior women.

Health System encompasses many areas: perceptions and classifications of health problems, preventive measures, diagnosis, healing (magical, religious, scientific, healing substances) and healers. Ethno-medicine in this connection studies the traditional healthcare systems with an expanded focus to include culture, traditional knowledge and worldviews. In the 1960s, when the term ethno-medicine first came into use, it referred only to non-western health systems and was synonymous with the now abandoned term, the 'primitive medicine'. The early use of the term was ethnocentric. Contemporary Western Biomedicine (WBM), a healing approach based on modern Western science that emphasizes technology in diagnosing and treating health problems related to the human body, is an ethno-medical system, too. Medical anthropologists now study WBM as a cultural system intimately bound to Western values. Thus, the current meaning of the term ethno-medicine encompasses health systems everywhere.

Every culture, irrespective of its simplicity and complexity has its own beliefs and practices regarding health and disease, it does not work in a meaningless fashion. Every system of culture tries to treat diseases in its own way. The treatment of the disease varies from one group to another (Choudhari, 1986).

Ethno-medical practices of any ethnic group are considered important components of culture, which are transmitted systematically across generations, often through folk means. As a result of several factors including expansion of modern medicine and globalisation, a huge part of ethno-medicine is gradually disappearing thereby endangering part of societies' cultural heritage.

Over the years, scholars studying the ethno-medicine have classified the subject under some specialized areas matching the classification as used in western medical system and larger traditions. Ethno-gynaecology is one of such terminologies that have been in practice dealing with the healing of ailments among tribal women, for example, conception and abortion, menstrual trouble, leucorrhoea, anti-fertility, delivery, and lactation related problems.

Study Area and People

The study was conducted in Jamda block of Mayurbhanj district, Odisha. Mayurbhanj, presently the largest district in the State is a tribal dominated district. The district is home to many ethnic tribes; the Santal, Munda, Kolha, Ho, being the numerous ones. Besides, there are three Primitive Tribal Groups (PTG) who have been recently redesignated as Particularly

Vulnerable Tribal Groups (PVTG) namely; Hill Kharia, Mankirdia and Lodha. In the Jamda Block, the Santal, Kolha and Munda are predominant tribal communities. The three villages; Chititangar, Basantpur and Khedia Dunguri where the study concentrated are multi-ethnic villages comprising Santals, Mundas and Kolhas.

Methodology

Relevant anthropological methods were employed in the study. Individual and Group interviews guided by semi-structured questionnaire, collection and analysis of illness stories were the important tools of data collection during field work. Series of interactions with local folk healers and women were conducted to elicit relevant information. The healers and women were also consulted for identification of the plants prescribed or used by them. The plant specimens were collected and photographed for sake of botanical identification. Peer reviews were conducted among healers and women separately to validate and authenticate the information. Local interpreter were also consulted to properly question the people as well as to record the responses and presentations by the community members.

Ethno-medicinal practice in the study area

In the study areas, people collect plants based on traditional knowledge which is scientific in their contexts. In their society, it is believed that the healers are the authority of knowledge on medicinal use of plants. None other lay person, the people strongly believe, can be trusted as much to the level of a healer as regards to their knowledge on identification, selection and collection of plants; determining dosage and diet; processing and method of drug administration.

Certain plants and plant parts are used in very raw form while some are processed and preserved. For drying the plants, people do not spread it directly under sun rather spread them under shade. It is believed that if the plant parts are directly sun dried then the active ingredients in the plants would be damaged which would typically reduce the medicinal efficacy of the material. The preserved materials are further processed for medicine.

RESULTS AND DISCUSSION

Plant based medicines prescribed and used for curing gynaecological diseases

Some of the plant based medicines prescribed by these healers for curing gynaecological disease are presented below.

SL. No.	Botanical Name and Family	Local Name/ Collected from	Parts Used	Used For	Mode of Use
1	*Abrus pracatorius* L. F: Fabaceae	Kaincha/ Forest	Whole plant	Gonorrhoea	Two spoonful decoction of plant is taken orally twice a day for a week to treat gonorrhoea.
2	*Asparagus racemosus* Willd F: Asparagaceae	Satawari/ Forest	Root	Quick Delivery	Root paste is applied externally on abdomen for quick delivery.
3	*Desmodium heterocarpon* (L) DC	Salpani/ Forest	Root	Regulation of Menstrual cycle	Root of the plant is boiled. A cup full of the preparation

	F: Fabaceae				taken in the morning for a week to regulate menstrual cycle.
4	*Enhydra fluctuans* Lour. F: Asteraceae	Hidmicha/ swampy places	Leaves	Gonorrhoea	Half cup of infusion of leaves is drunk as a remedy against gonorrhoea till cure.
5	*Tephrosia purpurea* (L) Pers F: Fabaceae	Bano-Kulthi/ Wasteland and Forest	Leaves	Post-natal complications	Leaves are boiled in water, then mixed with honey and given to women twice a day continuously for one month as remedy for post natal complications
6	*Annona squamosa* L. F: Annonaceae	Maghua, Ata/ Wild and cultivated	Dried root Powder	Abortion	Dried root powder is taken once in morning for five days by women to effect abortion and terminate pregnancy of 3 to 4 months.
7	*Millettia pinnata* F: Fabaceae	Karanja/ Wastelands and forests	Stem/ bark	To control excessive bleeding and gain strength after delivery	Extract of stem bark is taken and filtered and a heated iron rod is dipped into it. About half cup of the preparation is given to the mother once in the morning
8	*Ricinus communis* F: Euphorbiaceae	Jada phala/ Wastelands and Cultivated	Fruit	For easy delivery and for reducing delivery pain	The oil is massaged gently on the belly
9	*Zizyphus mauritiana* F: Rhamnaceae	Barakoli – Wild and wasteland	Stem/ Bark	Relief from pain in abdomen during pregnancy	Paste out of bark or stem is taken twice a day after food
10	*Cissampelos pareira* F: Menispermaceae	Akanabindhu Forest	Root, Leaves	Leucorrhoea	Two to three leaves are boiled with water. The affected part is washed with the water as cure from the infection.
11	*Clitoria ternatea*	Aprajita	Root	Leucorrhoea	One tea spoonful of

	L F: Fabaceae	Kitchen garden			root paste with black pepper (*Piper nigrum)* mixed in water taken in the morning as remedy for leucorrhoea.
12	*Woodfordia fruticosa* l(L) Kurtz. F: Lythraceae	Dhataki Forest	Flower	Leucorrhoea, gynaecological disorder, skin diseases	Powder of flower to the quantity of 1-3gm taken as directed
13	*Cissus quadrangularis* L. F: Vitaceae	Hadabhanga/ Hedgegrow	Stem	Preventing Conception	Stem of the plant and banana flower are grated to make a paste and is applied on the head of women for ten days or so for preventing conception
14	*Saraca asoca* (Roxb.) de Wilde F: Caesalpiniaceae	Ashok/ Forest	Bark	Gynaecological disorder	Bark used in gynaecological disorders
15	*Woodfordia fruticosa* (L) Kurz F: Lythraceae	Dhataki/ Forest	Flowers	Menstruation	Flower of the plant with bark of Champa (*Michelia champaca*) is given twice a day for 7 days to women in excessive bleeding during menstruation. Juice is good for treating dysentery

General observations on the study area and people provide to understand that the communities rely on their traditional medicines for primary healthcare especially to prevent and cure many kinds of diseases and ailments although the western medicine has reached their doorsteps. The herbal medicines are prescribed by folk healers, experienced people and also by qualified medical practitioners. Some herbal medicines are prepared out of single ingredient; part of a plant or whole plant, and some are prepared out of multiple ingredients; parts of plants, parts of animals and minerals. From discussions with the folk healers and the community members it was understood that only the specialized practitioners refer to and prescribe medicines prepared out of multiple ingredients and hence preparing and administering multi-ingredient medicines is a very specialized knowledge. On the other hand, most of single ingredient medicines which mostly constitute the home remedy are known to many common people. Thus there is a characteristic categorization of medicines and the knowledge holders.

The importance of local healers may be understood from the point of view that they have the knowledge of all kinds of medicines. Thus they are the knowledge leaders in the context of

ethno-medicine. These healers have inherited knowledge from their predecessors as well have ascribed knowledge by coming across other practitioners of same or different cultures. In this context, some traditional healers were interviewed in order to assess the level to which they practice inherited knowledge or ascribed knowledge. The following case studies explain how the practitioners of traditional medicine have acquired knowledge on the subject.

Case Study of Traditional Healers

Narayan Kondankel, aged about 49 years, is a medicineman of Basantpur village. He has a genuine interest in traditional medicine since his boyhood. Nobody in his family ever worked as a medicineman. He acquired knowledge in medicine by following some healers in the locality and by readings about medicinal plants from available books. For last nine years he has been practising folk medicine as a hobby and gradually became known as a professional in prescribing traditional medicine. He is not specialised in treating any specific diseases, although, however, he has treated a number of infertility cases including men and women. According to him, the most important task of the ethno-medical practitioner is to identify the cause or aetiology of the disease rather than just to prescribe a medicine. In diagnosing the disease, he takes genetic factors into consideration. He has treated a number of infertility cases throughout the years.

Japayee Sing, aged about 42 years, is the *Ojha* of Basantpur village. He acquired knowledge of treating infertility from his father and his own personal experience. In one case, he treated a woman who was unable to become pregnant for 11 years. Using a traditional procedure of diagnosis, in which he placed his hand above the umbilicus and found no pulse there, he diagnosed the problem as uterus displacement. He treated this case by a massage of the abdomen to bring the uterus back to its normal location; cupping; and inserting a vaginal suppository for five consecutive days. When the inflammation is characterised as severe, *Ricinus communis* (castor oil plant), egg white, and alum are mixed together, and the formed suppository is implemented for half an hour. The same prescription is tried twice a day in the morning and afternoon for three days. This treatment procedure was very beneficial for a woman who had been unable to conceive for 4 years as she became pregnant after going through this treatment.

Kailash Pal, aged about 47 years, of Khedia Dunguri village is a medicine man. He has been practising ethno-medicine for almost last 12 years. He acquired the knowledge from his Guru. In diagnosing the health problems, he follows a similar procedure used by the second healer, especially the use of palpation in which she places her fingers tips on the woman's abdomen above or on the umbilicus to examine the presence of pulse. If there is pulse, this means that the uterus is placed in its normal anatomical location. If not, he uses massage therapy on the client while fastening to bring the uterus back to its normal position. He is popular for his knowledge on treating gynaecological problems.

In these cases only one part of these plants is utilized for treatment; but in maximum cases multiple parts are used. Medicines are taken orally directly or mixed with water, milk, honey, black pepper etc. It was observed during the course of survey that most of the medicines were administered in empty stomach early in the morning and period of treatment varied from 7 to 21 days in most of the cases. Doses were measured generally in teaspoonful or in millilitre which varies from patient to patient depending on their age, physical health conditions and several other factors.

The healers carefully examine the symptoms of disease as presented by the patients. All the above four healers expressed that in their treatment practice they have realized that cases of Gonorrhoea and Leucorrhoea outnumber any other gynaecological diseases. According to

them the symptoms of gonorrhoea are: yellow or white discharge; pain in lower abdomen or pelvic area; and feeling of a burning sensation during urination. The leucorrhoea symptoms includes: foul smelling vaginal discharge; headache; fatigue; pain in the stomach and constipation. According to the healers, these diseases should be treated immediately after getting the symptoms and the treatment may continue for weeks together. However, their observation is that patients consult them at an aggravated stage hence prescribed treatment may continue for months.

The study provides information on 15 plant species belonging to 8 families. Species of Fabaceae family outnumber any other family in this enumeration. The plant parts used for medical preparation are bark, flowers, rhizomes, roots, leaves, seeds, gum and also the whole plant. As regards to parts of plants used the roots and leaves predominate over bark, flower, fruit and whole plant.

Conclusion

Ethno-medicine is the mother of all other systems of medicine. Recently the importance of these traditional medicines has been realized worldwide as some of them proved to be very effective. Further scientific analysis of the plants in relation to the diseases on which they are applied would be required for pharmacological validation of these traditional medicines. The knowledge on the subject is gradually fading away because of lack of interest of local youth to go by the traditional knowledge of local folk healers. Hence, more organized efforts should be made to document traditional knowledge of the local people so in order to conserve the knowledge systems before they are gone with time.

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