International Journal of Botany Studies
ISSN: 2455-541X, Impact Factor: RJIF 5.12
www.botanyjournals.com
Volume 1; Issue 4; May 2016; Page No. 20-23

Traditional knowledge of medicines belonging to Family Zingiberaceae from South Western Maharashtra, India.

[1] Abhijeet R. Kasarkar, [2] Dilipkumar K. Kulkarni

[1] Department of Botany, Vivekanand College, Kolhapur, India.

[2] BAIF Development Research Foundation, Warje-Malwadi, Pune, India.

Abstract
Traditional knowledge of medicines on family Zingiberaceae were collected from South Western Maharashtra regions like Kolhapur, Satara, Ratnagiri, Sindhudurg Districts, during the year 2008 to 2010. The information related to plant species which are used to cure common ailments and disease by personal interviews with local people and herbalists. The 14 species of family Zingiberaceae are used for medicinal purpose. The Details of these species are described with their botanical name, family, local name, part used and ethno-medicinal uses.

Keywords: Family, Zingiberaceae, common ailments, South Western Maharashtra.

1. Introduction

The term ethno-botany was coined first by John W. Harshberger [6]. Ethno-botany is a dynamic contemporary science with tremendous importance for the future due to conservation in the hilly parts by oral tradition. It is a traditional knowledge passed from one generation to second generation by way of oral tradition and not documented till now. The diminishing forests resources may well hold unknown keys to conquering devastating new diseases, and people's native to the regions can often lead the way with their herbal knowledge. Ethno-botany is the study of how people of a particular culture and region make use of indigenous plants for food, shelter, medicine, clothing, hunting, and religious ceremonies. Ethno-botany has its roots in botany, the study of plants. Botany has originated from an interest in finding plants to help and fight illness. In fact, medicine and botany have always had close ties. Many of today's drugs have been derived from plant resources.

Ethno-medico-botanical studies in human and animal have prime importance in searching new medicines from plants and find the valuable properties of plants utilized by primitive societies in their wild life [20]. Jain [8]. pointed out importance of ethno-botanical studies for modern India and search for new drugs required from our ancient heritage.

Zingiberaceae is the largest monocotyledonous family in India. Zingiberaceae group has 52 genera and 1400 species. Concentrated in India, Malaysion region of Asia. Out of these 22 genera and 178 species are available in North-eastern and peninsular region of India [7]. India has 21 genera and 200 species, out of which 10 genera, 65 species and 2 varieties are reported from wild source of south India and some grown as ornamentals [19]. Maharashtra state has reported 11 genera and 32 species under this family which are found in wild and cultivated state [21].

The family Zingiberaceae has great traditional medicinal value being employed in many indigenous medical systems since ancient time. Many members of Zingiberaceae are used in Ayurvedic, Unani, and Homoeopathic systems of medicine. Ancient Indian books on medicines namely 'Caraka Samhita' and 'Susmta Samhita' describe the wonderful curative properties of Zingiberaceae especially Zingiber Boehm. And Curcuma L. due to their chemical principles. The medicinal and aromatic properties of Indian Zingiberaceae members are described in Materia Indica [1]. Ethnobotanical study of the wild species of Zingiberaceae carried out by Manandhar [16]. in Nepal through personal observation, discussion with local informants and review of literature. Thirteen wild species belonging to seven genera were used for medicine, food and fodder. Out of 13 species, 12 has medicinal value. They were in use to treat headache, cut and wounds, diarrhoea and dysentery, peptic ulcer, bone dislocation, fever, cough and cold. The rhizome of some species of Alpinia Roxb. Are used in traditional Indian medicine. Alpinia galangal (L.) Swartz. Is two to three meter tall plant with fragrant rhizomes and found in Western Ghats [18]. It is commonly known as Sugandha or Rasna among Ayurveda physicians and as Chittaratta in Malayalam. *Alpinia calcarata* Rosc. Is Peraratta in Malayalam and recorded from Western Ghats [18]. Kulkarni [13, 14]. tapped traditional knowledge of medicinal plantes from Mahadeokoli tribal pockets of Western Maharashtra and recorded medicinal uses of Zingiberaceae members like Curcuma aromatica Salisb for jaundice, snake bite, scrofula, Curcuma long L. for cough, *Curcuma zedoaria* Rosc for fever in children, anthelmintic, *Zingiber officinale* Rosc. For snake bite and cough and *Zingiber zerumbet* (L.) Rosc. Ex JE. Sm for abscess and tonsils. *Curcuma aromatic* Salisb. Rhizome along with milk is used for blood dysentery and stomachache. This indicates that traditional knowledge of local people has not documented pertaining to family Zingiberaceae from south western Maharashtra so far.

Considering the earlier research on ethno-medico-botanical studies in Maharashtra state in general and Kolhapur district in particular. The floristic work of Kolhapur region has been carried by Yadav and Sardesai [24]. They have not deal with traditional knowledge of medicinal plants used for human and animal diseases in south western Maharashtra specially

Kolhapur region. Hence, present work was undertaken aiming systematic documentation of Zingiberaceae plant resources used in traditional healing system.

2. Material and Method

Documentation of traditional knowledge survey of tribal areas of South Western Maharashtra was conducted repeatedly since 2009-13 during different seasons and areas. In this region the four Districts are surveyed Kolhapur Satara, Sindhudurg and Ratnaigiri, Kolhapur districts situated between 17° 40' to 15° 43' North latitudes and 73° 40' and 74° 42' east longitudes. The average height above mean sea level varies from 390 to 900 meters. The average annual rainfall is 1645 mm within the districts. The vegetation of these districts grouped intotropical semi evergreen forests, tropical moist deciduous forests, tropical dry deciduous forest, open shrub jungles and grasslands. The coastal districts are Sindhudurg and Ratnagiri. The annual rainfall is 2,155 and 2,247 mm. along the coast the maximum temperature rarely goes beyond 38 °C but in the monthof May reached to 40° or 41 °C. The Ratnagiri district is located between north latitude 17^{0}08' and east longitude 73^{0} 19'. The elevation from sea level is 75 m.Sindhudurg district covers a geographical area of 5087 sq.km. The district lies in between northlatitude 15°37' and 16° 40' and east longitude 73° 19' and 74° 13'.

The information on local use and disease cured was collected from different informants by using questionnaire. They belong to Chandgad, Radhanagri, Gargoti regions of Kolhapur district. Chiplun, Sangmeshwar from Ratnarigi district, Dodamarg, Malwan, Kankavali, Sawantwadi, Amboli, Devgad from Sindhudurg district. Medha, Satara, Patan, Mahabeleshwar from Satara district. The plant collections were identified with the help of Flora of Maharashtra [23]. Flora of Kolhapur District [24]. And Zingiberaceae and Costaceae of South India [19].

A total 14 species of family Zingiberaceae were recorded and enumerated with its botanical name, family, local name, part used and uses for different ailments are given in below table.

Table 1: List of Plants used to cure different diseases.

S. No.	Botanical Name	Family	Local Name	Part Used	Ethnobotanical uses / Disease
1	*Alpinia calcarata* Rosc.	Zingiberaceae	Alpinia	Rhizome	Aphrodisiac, Diuretic, Tonic, Carminative, used in Rheumatic pains, Sorethroat Headache lumbago and chest pains. *Alpiniacalcarata* rhizome are also used to adulterate "Sugandha".
2	*Alpinia galanga* (L.) Swartz.	Zingiberaceae	Kulnigin	Rhizome	Destory bad smell in the mouth and in other parts of the body and used to improve the voice in thorat affections. Rheumatism, Asthma and clearing the throat pain / voice.
3	*Curcuma inodora* Blatt.	Zingiberaceae	Ran Halad	Rhizome	Bone fracture, The leaves are not eaten by animals, The leaves are used in Ganpati festival.
4	*Curcuma amada* Roxb.	Zingiberaceae	Ambe Halad	Rhizome	Blood clotting, removing the patches and pimples of Face, cure dropsy, snake bite. Rhizome with fodder is given to animal to cure fractured bone.
5	*Curcuma neilgherrensis* Wight.	Zingiberaceae	Ran Halad	Rhizome	Leaves are boiled in water and then applied on joints. The fresh leaves are boiled in water and then applied on fractured area of animals.
6	*Curcuma longa* L.	Zingiberaceae	Ran Halad	Leaves Rhizome	Cough and Throat infection. The dried rhizome powder is used in cooking purpose, applied on cutting area for stop the blood, Mixed with oil or milk and applied on skin infected area and insect attack .
7	*Hedychium coronarium* Koen.	Zingiberaceae	Sontaka	Leaves	Leaf is boiled in water and then placed on bone cracks. The leaf is using for joining the bones in animals.
8	*Hitchenia caulina* (Grah.)	Zingiberaceae	Chavar, Ran Halad	Rhizome	Skin diseases.
9	*Kaempferia rotunda* L.	Zingiberaceae	Bhuichafa	Rhizome	After the opening of flower, the surrounding place of the plant is cleaned and covered with cow dunk. Then the pooja of the plant is carry and it is the indication of coming of mansoon. Healing fresh wound, it is taken interally to remove coagulate blood. It is also used in many ayurvedicprepations.
10	*Zingiber nessanum* (Grah.) Ramam.	Zingiberaceae	Ran ale	Rhizome Leaves	Piles, Heart disease, Fungal infection of leg, Cough, Asthma, Rheumatism. Bone joint in animals
11	*Zingiber cernuum* Dalz.	Zingiberaceae	Ran ale	Rhizome Leaves Flowers	Cough disease , Head ache , Pain relief Toothache, Bone Fracture Menstrual Problems
12	*Zingiber zerumbet* (L.)	Zingiberaceae	Ran ale	Rhizome	Asthma, Cough remedy , Stomach diseases , Worms Abscess, Tonsils, Snake bite.
13	*Zingiber purpureum* Rosc.	Zingiberaceae	Ale Malabari Halad	Rhizome Leaves	Juice is used in Measels. Skin Diseases.
14	*Zingiber officinale* Rose.	Zingiberaceae	Ale	Rhizome	Abdominal Pain, Vomiting, Cough and cold, Respiratory problems.

3. Results and Discussion

In present investigation 14 members of family Zingiberaceae were used, out of which Alpinia-2 species, Curcuma-4 species, Hedychium-1 species, Hitchenia-1, Kampferia-1 and Zingiber-5 species. The role of each species in curing of human ailments and their potency is also different. The tribal healers are well versed with the use of each species for a particular diseases and their impact on human body.

Most of the traditional healer's use rhizome and leaves for bone fracture, skin diseases, wounds and cuts, blood clotting, toothache, piles, etc. A major phyto-chemicals present in Alpinia Roxb. Are polyphenols, tannins, lignins, falavonoides. While Zingiber Boehm. Species contains polyphenols, flavonoids, lignins, saponins, etc. Major phyto-chemical is polyphenols present in their leaf and rhizome of all species [10, 12,].

Rhizome of the Alpinia Roxb. And Zingiber Boehm. Constitutes essential oils and Terpenes. These terpenes like Borneol, Camphor, Cineole, Camphene, Pinene, Zingiberene, etc are present in oil cells. The compound β-pinene in *Alpinia* galangal (L.) Swartz is very useful as antiseptic, candidicide, insectifuge, anti-inflammatory. This volatile compoundsare found in the rhizome. This indicate that majority of the local people use rhizome for bone fracture and skin diseases having antiseptic and anti-inflammatory properties. Similarly Zingiber nessanum (Grah.) Ramam. Rhizome content β-pinene while other species of *Z.* rerumbet (L.) and *Z.* Cernuum Dalz. Rhizome contains β-phellandrene and β-sesquiphellandrene, cineol, citralar-curcumene and 6-shagaol. These compounds have anti-cancer properties. Some of the rhizome are also used in cattle diseases.

Members of family Zingiberaceae are used for medicinal purpose since ancient time. The scientific evaluation of Alpinia Roxb. And Zingiber Boehm. Members have been carried out for mineral content in leaves and rhizome [11]. These members deposited Iron, Calcium, Maganese, Copper, Zinc, Nitrogen and Potassium in the higher level in their rhizome and leaf. It is essential to know the role of above minerals in consumption for medicine purpose by human being since ancient time.

Iron combines with protein for the development of haemoglobin and the red pigment of the blood. Iron is an essential constituent of many tissues (Muscles). Iron is found in various nucleoproteins and porphyrin proteins which include cytochromes, peroxidase and catalase. Therefore, it plays a very important role in respiratory mechanism [2].

Manganese is a trace element and an essential part of cell enzymes. It is a component of enzymes required for glucose utilization [9]. Manganese is a very useful for chlorophyll synthesis and respiration. Heavy consumption of Manganese mainly effects on respiratory tract and brain. Symptoms of manganese poisoning are hallucinations, forgetfulness and nerve damage. Manganese can also cause Parkinson, lung embolism and bronchitis.

Calcium is beneficial for mechanical strength to the tissues [3].Calcium strengthens bones and Teeth's. It controls the transmission of nerve impulses. It also helps in clotting of blood [17].

Zinc is a mineral in the human environment but the elevated levels of Zn may cause pancreatitis, anaemia, muscle pain, acute rental failure and even death. Potassium is required for the maintenance of osmotic pressure and fluid balance within the cell.

Copper is an essential mineral to human life, if in higher concentrations, it accumulates in the blood, liver, kidneys and causing anaemia, rental and intestinal irritations, coma, death and Wilson's disease [4].

Chemical compounds and ethno-medico-botanical knowledge has very close relationship to find out new drugs from our traditional knowledge preserved by local people from India in general and South Western Maharashtra herbalists in particular. Some minerals present in rhizome and leaf which are rich source of trace elements required for our health. These local barefoot doctors or vaidus have integration with culture, religion and other aspects of a community's life; animal healers often also treat humans and human healers treat animals. Their main approach is holistic i.e. to treat whole patient and to depend mostly on observations and the senses [5]. One of the challenges posed by the modern age is finding ways of strengthening and nurturing the roots of traditional medicine so that its fruits can be enjoyed by future generations with modern scientific approach [15].

4. Conclusion

The traditional healer's knowledge is based on their practice and life long experience. The roots of traditional medicines are exist in communities, it is necessary to pay some amount for their efforts for searching medicines in forest. Present barter system is not enough for their survival and it result into erosion of traditional knowledge at faster rate. Young generation is not learning from the age old people about traditional medicines. Whole system of education for tribal or rural people need to be change and is based on forest ecosystem and need base approach which will help in forest conservation with traditional medicines.

5. Acknowledgments

The authors are highly thankful to Principal, Vivekanand College, Kolhapur and President, BAIF Development Research Foundation for facilities and encouragement. It is a pleasure to acknowledge local people for the help and ethno-medicinal information.

6. References

1. Ainslie Whitelaw. Materia Indica, Longman, London, 1826.
2. Bogorad. The biosynthesis of chlorophylls. In: Vernon LP. Secly GR. (eds.). The chlorophylls Academic Press, New Work, 1966
3. Cleland RC. Effect of Auxin upon loss of calcium from cellwalls, Plant Physiology, 1960; 35:581-584.
4. Gratten JP, Huxley SL, Pyatt FB. Modern bedouin exposure to Copper contamination. Ecotoxicology and Environomental Safety, 2003; 55:108-115.
5. Hafeel A, Darshan Shankar. Revitalising indigenous health practices, Compas Newsletter, 1999; 1:28-29.
6. Harshberger JW. The purpose of Ethnobotany. Bot Gaz. 1895; 21:146-158.
7. Jain SK. Zingiberaceae in India, Phytogeography and Endemism, 1995; 5(2):154-169.
8. Jain SK. Ethnobotany in Modern India. Phytomorphology, Golden Jubilee issue 2001; 39-54.

9. Joshi Shubhangini A. Nutrition and Dietetics, Second Edition. Tata McGraw- Hill Publishing Company Limited, New Delhi, 2002. 121-123.
10. Kasarkar AR, Kulkarni DK. Phyto- chemical studies in the genus Alpinia (Zingiberaceae) Journal of Pharmacy Research, 2010; 3(10):2521-2522.
11. KasarkarAR, Kulkarni DK. Mineral investigation from genus Alpinia, Zingiber from south western Maharashtra, Journal of Pharmacy Research, 2012; 5(7):3913-3915.
12. Kasarkar AR, Kulkarni DK. Phytochemical studies of the genus Zingiberfrom family Zingiberaceae, International Journal of Research and Ayurveda and Pharmacy, 2011; 2(2):648-649.
13. Kulkarni DK, Kumbhojkar MS, Bonde SD. Tapping indigenous medicinal plant resources from Mahadeokoli tribes Western Ghats, Maharashtra, Indian J. Plant Genet. Resources, 1999; 12(2): 191-200.
14. Kulkarni DK, Kumbhojkar MS. Ethnobotanical resources for veterinary medicinal practices by Mahadeokoli tribe from Western Maharashtra, India, Journal of Maharashtra Agric. Univ. 2007; 27(2):172-176.
15. Kunle OF. Modes of Compensation in Exchange for Indigenous Knowledge: A Case Study of the Federal Capital Territory, Abuja, Nigeria, Ethnobotanical Leaflets, 2009; 13:1140-1147.
16. Manandhar N P. Ethnobotanical Note on the Family Zingiberaceae of Nepal. J. Inst. Agric. Anim. Sci., 1995; 16:95-97.
17. Mudambi, Sumati R, Rajagopal MV. Fundamentals of Foods and Nutrition. Fourth Edition. New Age International (p) Limited, Publishers, New Delhi,India, 2005, 146-149.
18. Ravindran OT. Gardening Hardy Spice. The Hindu Magazine, 2004.
19. Sabu M. Zingiberaceae, Costaceae of South India. India association for Angiosperm Taxonomy, Calicut University, Kerala, India, 2006.
20. Schultes RE. Tapping our heritage of ethno-botanical lore. Econ. Bot. 1960; 14(4):254-262.
21. SharmaBD, Karthikeyan S, Singh NP (Eds). Flora of Maharashtra State. Monocotyledones, BSI, Calcutta, India, 1996, 1-793.
22. Singh NP, Karthikeyan S. (Eds). Flora of Maharashtra State. Dicotyledones-Vol-I, BSI, Calcutta, India, 2000, 1-898.
23. Singh NP, Lakshminarasimhan P, Karthikeyan S, Prasanna PV. (Eds) Flora of Maharashtra State. Dicotyledones Vol-II, BSI, Calcutta, India, 2001. 1-1080.
24. Yadav SR, Sardesai MM. Flora of Kolhapur District, Shivaji University, Kolhapur, 2002.