Indian J.Sci.Res. 19(1): 53-56, 2018

ISSN: 0976-2876 (Print)
ISSN: 2250-0138(Online)

ETHNOBOTANICAL STUDIES ON ZINGIBERALES USED BY KANIKKAR OF TRIVANDRUM DISTRICT

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ABSTRACT

Ethnobotany is the study of direct interrelationship between human beings and plants. The Information presented in this paper was gathered from the Kanikkar tribal communities in Trivandrum District, Kerala. An Ethnobotanical survey was carried out to collect information about Zingiberales, an integrated approach of botanical collections, group discussions and interviews with questionnaires during July to September 2017. During the present study a total of 17 Ethanobotanically important Zingiberales belonging to 5 families viz. Zingiberaceae, Marantaceae, Musaceae, Cannaceae and Costaceae have been documented. These plants were used to treat various diseases like stomach pain, skin problems, kidney stone, blood purification, etc and also for the preparation of food items. Some plants have insect repellent property. The claim on properties of plants can be confirmed by conducting phytochemical analysis.

KEYWORDS: Ethnobotany, Zingiberales, Kanikkar, Trivandrum, Kerala

Ethnobotany is the Science that studies about interrelationship between local communities and the natural environment, especially the system of knowledge about the natural resources of plants (Walujo, 2000). Traditional medicine still remains the main resource for majority (80%) of people in developing countries for treating health problems, particularly because medicinal plants are accessible and cheap (Nyamanga et al. 2008; Motlhanka et al. 2006). The quality of life and conservation of natural resources have had more success when based on the local knowledge and current patterns of resource use within the involved communities (IES, 1995). Fieldwork in tribal areas and the analysis of different tribal folklores are effective methods by which ethnobotanical research can be conducted (Jain, 1989). The main objective of this study was to assess the diversity of Ethnomedicinal plants used by Kani tribes and document the traditional medicinal practices followed in healing ailments. Similar Ethnobotanical studies have been reported in several parts of India to document the traditional knowledge that has been vanishing (Rajan et al. 2002; Ganesan et al. 2004; Ignacimuthu et al. 2006; Sandhya et al. 2006).

Kanikkar are distributed mainly in Thiruvananthapuram and Kollam Districts and adjoining areas of Tamil Nadu. They were called Kanikkar by the sage Agastya, signifying 'hereditary proprietor of the land'. Kani means land and Karan means owner. Their spoken language exhibits features both Malayalam and Tamil. The 'Kanikudi or Kanipat'(settlement) is the basic unit of social, economic, political and religious organization. Earlier they subsisted on hunting, minor forest produce collection and cultivation. Now they practice settled agriculture like cultivation of rice and tapioca. Kanikkar live in the plain areas along with other communities have improved much in their lifestyle while those living in the interior forests called 'malamkanis' are still deprived of the basic amenities of life. Kanikkar community is mainly distributed in 8 Grama panchayats in Thiruvananthapuram and Kollam Districts (Census report issued by Gov. of Kerala, 2013).

The primary tropical Zingiberales include many conspicuous taxa, such as the bananas (Musaceae), birds of Paradise (Strelitziaceae), Heliconias (Heliconiacae) and Gingers (Zingiberaceae) (Kress et al. 2002). Zingiberales are monophyletic clade of eight families and they are almost entirely restricted to tropical regions (Kress, 1990). The order Zingiberales are with immense medicinal values is distributed widely throughout the tropics, particularly in Southeast Asia. Among Zingiberales, Zingiberaceae family is important include many natural resource that provides useful products for food, spices, medicines, dyes, perfume and aesthetics (Jantan et al. 2003).

MATERIALS AND METHOD

The Ethanobotanical studies were conducted in three places of Trivandrum District *viz.* Amboori, Pachamala and Vithura during July to September 2017. The field trips were carried out to villages and areas inhabited by tribal people. The data were collected by group discussions, direct interaction and personal interviews. The acquired data were cross-checked by using available literature. All doubtful and misleading information where the informants showed little knowledge

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concerning the identification of plant species were excluded from this survey. The information obtained was documented in a data sheet. The data included the botanical name, local name, location, useful part, uses, mode of preparation, administration and their utility as remedy for treating human diseases.

The specimens were collected from the area and identified by the local people. The specimens were identified using relevant literature and Flora (Sabu, 2006; Baker, 1890). Voucher specimens of each taxon were deposited at Catholicate College Herbarium (CATH). The rhizomes were collected and conserved at Catholicate College Botanical Garden.

Ailment Categories

Based on the information obtained from the traditional healers in the study area, all the reported ailments were categorized into 8 categories and also 3 other categories (T-1) viz. Genito urinary ailments (GUA), Respiratory system disorder(RSD), Dermatological infections/disorders(DID), Gastro intestinal ailments(GIA), Ear infection(EAI), Eye infection(EYI), Kidney stone(KS), Poisonous bites(PB), Food products(FP), Spice(SP), Others(OT).

Data Analysis

Informant Consensus Factor (Fic)

The informant consensus factor (Fic) was used to find out if there was an agreement in the use of Zingiberales in the ailment categories between the plant users in the study area. The Fic was calculated by the following formula (Heinrich et al. 1998).

$$\text{Fic} = \frac{\text{Nur} - \text{Nt}}{\text{Nur} - 1}$$

Where Nur refers to the number of use-reports for a particular ailment category and Nt refers to the number of taxa used for a particular ailment category by all informants. The product of this factor ranges from 0 to 1. A high value (close to 1.0) indicates that relatively few taxa are used by a large proportion of the informants. A low value indicates that the informants disagree on the taxa to be used in the treatment within a category of illness.

Use Value (UV)

The relative importance of each plant species known locally to be used as herbal remedy is reported as the use value (UV) and it was calculated using the following formula (Phillips et al. 1994).

$$UV = \frac{\Sigma U}{N}$$

∑U n where UV is the use value of a species, U is the number of use reports cited by each informant for a given plant species and n is the total number of informants interviewed for a given plant. The UV is helpful in determining the plants with the highest use (most frequently indicated) in the treatment of an ailment. UVs are high when there are many use-reports for a plant and low when there are few reports related to its use.

RESULTS AND DISCUSSION

Documentation of Ethnobotanical Knowledge

The Ethnobotanical studies on Zingiberales used by Kanikkar tribe distributed in different area of Trivandrum District were carried out (Figure 1). A total of 16 ethnobotanically important plant species distributed in 5 families such as Zingiberaceae, Marantaceae, Costaceae, Cannaceae and Musaceae were recorded. The taxa under study are *Curcuma longa*, *Curcuma amada, Curcuma zeodaria, Curcuma aromatica, Zingiber officinale, Eletteria cardamomum, Kaempferia galanga, Alpinia galanga, Alpinia calcarata, Hedychium coronarium, Ensete superbum, Musa paradisica, Canna edulis, Costus speciosus, Costus pictus* and *Maranta arundinacea.* The details are given in the T-1.

Table 1: Ailment categories

S/N	Ailment categories	Biomedical terms/Use
1	Genito urinary ailments (GUA)	Menstrual problems, postnatal care
2	Dermatological infections/disorders (DID)	Pimple, skin irritation, burning injury
3	Gastro intestinal ailments (GIA)	Stomach pain
4	Poisonous bites (PB)	Spider poison, snake bite
5	Kidney stone (KS)	Kidney stone
6	Spice (SP)	Spices
7	Food products (FP)	Food, baby food, body immunization.
8	Others (OT)	Pooja, house cleaning, food serving, etc

Figure 1(A-E): Kannikkaran Tribe in Thiruvanthapuram District, Kerala

Informant Consensus Factor

The product of Fic ranges from 0 to 1. A high value Fic indicates the agreement of selection of taxa between informants, whereas a low value indicates disagreement (Ragupathy et al., 2008). The Fic values in the present study ranged from 0.50 to 1. The highest Fic was reported for Kidney stone (KS), Poisonous bites (PB) (1.0) and lowest for Genito urinary ailments (GUA) (0.50).

Use Values

The most commonly used species are *Zingiber officinale*, *Alpinia galanga*, *Enseta superbum* etc. The use value ranges from 1to 2.4.

CONCLUSION

The tribal people of Trivandrum District cultivate many plants in their crop fields and premises for food, medicine, spice, etc. The study has shown that Zingiberales are used as sources of indigenous medicines,

food, spices, condiments and ornamentals. The efficacy and safety of all the reported ethnobotanical information needs to be evaluated by phytochemical and pharmacological studies. Phytochemical studies for the identification of chemical compound may lead to discovery of new drugs.

ACKNOWLEDGEMENTS

The authors are grateful to Kerala State Council for Science, Technology and Environment (KSCSTE) for the financial assistance to the research project on Ethnobotanical studies on Zingiberaceae of Kerala (029/SRSLS/2014/CSTE). Thanks are due to the Department of Forests, Kerala State for providing necessary forest permission. We are thankful to the authorities of 27th Swadeshi Science Congress for giving the opportunity.

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