Journal Homepage: - www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI: 10.21474/IJAR01/4403
DOI URL: http://dx.doi.org/10.21474/IJAR01/4403
ISSN NO. 2320-5407

RESEARCH ARTICLE

AN INTRODUCTORY ETHNOBOTANICAL INVESTIGATION ON ZINGIBERALES USED BY MALAVETTUVAN AND MAVILAN TRIBE'S OF KASARAGOD DISTRICT, KERALA.

***V. P. Thomas, Judin Jose and Binoy T. Thomas.**
Department of Botany, Catholicate College, Pathanamthitta, Kerala-689 645.

Manuscript Info

Manuscript History

Received: 06 April 2017
Final Accepted: 07 May 2017
Published: June 2017

Key words:-
Ethnobotany, Zingiberales, Malavettuvan, Mavilan, Kasaragod, Kerala

Abstract

The present study was initiated to document indigenous knowledge on the utilization of ethanobotanically important plants of Zingiberales by Malavettuvan tribal's in Kasaragod District. During the present study a total of 11 ethanobotanically important plant species belonging to 5 families have been documented. These plants were used to treat various diseases, preparation of food, etc. The present study observed that, the Malavettuvan tribe of the Kasaragod District having very good knowledge on the traditional medicine. This type of studies may help pharmacological research in various dimensions.

Introduction:-

Etanobotany is the study of the relationship between plants and human beings. The focus of ethanobotany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, cosmetics, dyeing, textiles, for building, tools, currency, clothing, rituals, divination, social life and mucic (Chaudhary et al., 2008). Malavettuvan Tribe are distributed only in the Ghat areas of Kasaragod District and Kannur Districts of Kerala. They speak a dialet of Malayalam and Tulu (RSES, 2013). The Mavilan community is distributed in Kasaragod and Kannur District of Kerala. Mavilan community is experts in 'Punamkothu', which involves clearing of virgin forests and converting the same for wet land paddy cultivation (RSES, 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). They are mainly distributed in tropics and subtropics with the centre of distribution in the Indo-Malayan region, but extending through tropical Africa to Central and South America (Kress et al., 2002; Tomlinson, 1969; Kong et al., 2010).

Materials and Method:-

Study Area:-

The Kasaragod district is the northernmost district of the State of Kerala. Kasaragod is located at 12.5°N 75.0°E and it has an average elevation of 19 metres. The ethanobotanical studies were conducted in various parts of Kasaragod district *viz*. Kozhichal, Thungal, Kallar, Kanhangad and Muttayam-Kochi (Map 1), during December 2016- January 2017.

Collection of Ethnobotanical Information:-

The data were collected by group discussions, direct interaction and personal interviews. 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 diseases.

Corresponding Author:- V.P. Thomas.
Address:- Department of Botany, Catholicate College, Pathanamthitta, Kerala-689 645.

Ailment Categories:-

Based on the information obtained from the traditional healers and house wives in the study area, the ailments were categorized into 5 and 3 other categories (Table 1) *viz*. Genito urinary ailments (GUA), Dermatological infections/disorders (DID), Gastro intestinal ailments (GIA), Kidney stone (KS), Poisonous bites (PB), Food products (FP), Spice (SP) and Others (OT).

Table 1:- Ailments and other 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

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, 1998) (Eq. 1).

$$\mathbf{Fic = \frac{Nur-Nt}{Nur - 1}} \quad (1)$$

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) (Eq. 2).

$$\mathbf{UV = \Sigma U/N:-} \quad (2)$$

∑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.

Result and Discussion:-

Documentation of Ethnobotanical Knowledge:-

The ethnobotanical studies on Zingiberales used by Mavilan and Malavettuvan tribe distributed in different area of of Kasaragod District were carried (Plate 1). A total of 11 ethnobotanically important plant species distributed in 5 families such as Zingiberaceae, Marantaceae, Costaceae, Canaceae and Musaceae were recorded. The taxa under study are *Curcuma longa*, *C. zeodaria*, *Elatteria cardamoum*, *Hedychium spicatum*, *H. coronarium*, *Zingiber officinale*, *Z. zerumbet*, *Maranta arundinacea*, *Canna edulis*, *Costus speciosus* and *Enseta superbum*. The details are given in the Table 2.

Table 2:- Ethnobotanical uses of Zingiberales (MV=Malavettuvan, ML= Mavilan).

S/N	**Binominal Name & Family**	**Parts used**	**Diseases/ Others**	**Mode of Administration**
1	*Zingiber officinale* Roscoe (Zingiberaceae)	Rhizome	Gas trouble, digestive problems, spice	For gas trouble and digestive problems, the juice extracted from the fresh rhizome is taken internally and also as a spice (MV). Fresh rhizome along with salt is taken internally for gas trouble. Fresh rhizome is used as an ingredient for the preparation of medicine for snake bite (ML).
2	*Zingiber zerumbet* (L.) Roscoe ex Sm (Zingiberaceae	Inflorescence	Agricultural use	The juice extracted from the inflorescence is applied to paddy for wilting of disease in Paddy (Nellu chuvadu pazhuppu (MV).
3	*Curcuma longa* L. (Zingiberaceae)	Rhizome	Snake bite	Small pieces of fresh rhizomes are used to remove the parts of snake teeth from the wound and also as a spice (MV, ML).
4	*Curcuma zeodaria* Roscoe (Zingiberaceae)	Rhizome	Baby food, constipation	Powder prepared from rhizomes is used for preparation of food items (MV). Fresh rhizomes are eaten for abdominal problems (ML).
5	*Hedychium spicatum* Sm. (Zingiberaceae)	Fruits	Skin diseases, (Vatta chori)	For the treatment of 'vatta chori,' the fruit is crushed with water and the paste is applied on diseased area (MV).
6	*Hedychium coronarium* Koenig. (Zingiberaceae)	Flowers	For pooja, garland making	Tribal's used flowers for worship and preparation of Garlands (MV, ML).
7	*Eletteria cardamomum* (L.) Maton (Zingiberaceae)	Seeds	Digestive problem, abdominal pain	For curing digestive problem, the dried seeds are powdered and mixed with milk and taken internally and also as a spice (MV, ML).
8	*Ensete superbum* Roxb.(Musaceae)	Seeds	Kidney stone	The powder prepared from the seeds are mixed with coconut water or water and taken internally (MV, ML).
9	*Canna edulis* Gawl. (Cannaceae	Rhizome	Food	The fresh rhizomes are edible (MV, ML).
10	*Costus speciosus* J. Koening (Costaceae)	Rhizome	Stomach pain	The Juice extracted from the fresh rhizome is for stomach pain (MV).
11	*Maranta arundinacea* L. (Marantaceae)	Rhizome	Food	The fresh rhizome is edible (MV). Fresh rhizome eaten for menstrual diseases (ML).

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 0.69 to 1 (Fig 1 & Table 3). The highest Fic was reported for Genito urinary ailments (GUA) (1.0) and lowest for Gastro intestinal ailments (GIA) (0.69).

Table 3:- Informant consensus factor (Fic) of Zingiberaceous plants by Malavettuvan & Mavilan Tribals.

S/No	Ailment category/Food/Spice	No. of use report	No of Taxa	Fic
1	Dermatological infections/disorders(DID)	9	3	0.75
2	Genito urinary ailments (GUA)	7	1	1
3	Gastro intestinal ailments(GIA)	14	5	0.69
4	Kidney stone(KS)	5	2	0.75
5	Poisonous bites(PB)	10	2	0.88
6	Food products(FP)	9	3	0.75
7	Spice(SP)	8	3	0.71
8	Others(OT)	7	2	0.83

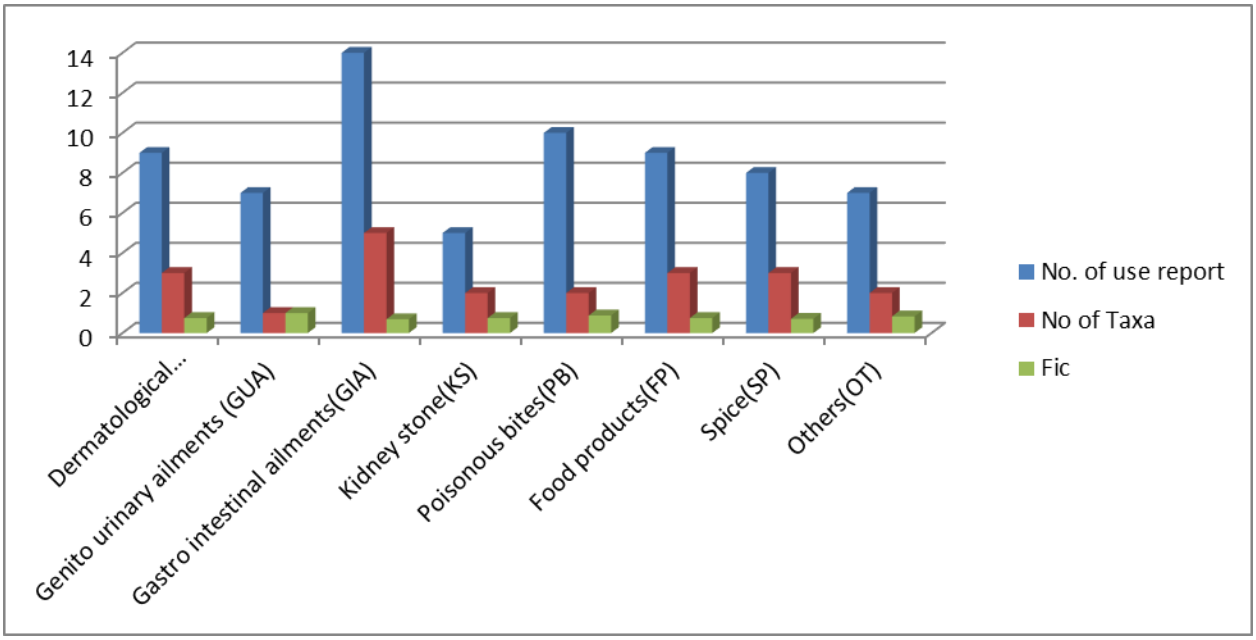


Fig 1:- Informant consensus factor (Fic)

Use values:-

The most commonly used species are *Maranta arundinacea, Zingiber officinale, C. zeodaria Curcuma longa*, etc. The use value ranges from 1.5 to 2.6 (Figure 2 & Table 4).

Table 4:- Use value (UV) of Zingiberaceous plants by Malavettuvan & Mavilan Tribals

S/N	Binomial name	No. of use reports(U)	Total no. of informants(N)	Use value(UV)
1	*Zingiber officinale*	7	3	2.33
2	*Zingiber zerumbet*	2	1	2
3	*Curcuma longa*	15	7	2.14
4	*Curcuma zedoria*	7	3	2.33
5	*Hedychium spicatum*	2	1	2
6	*Hedychium coronorium*	6	3	2
7	*Elatteria cardamomum*	2	1	2
8	*Enseta superbum*	7	4	1.75
9	*Canna edulis*	6	4	1.5
10	*Costus speciosus*	2	1	2
11	*Maranta arundinaceae*	13	5	2.6

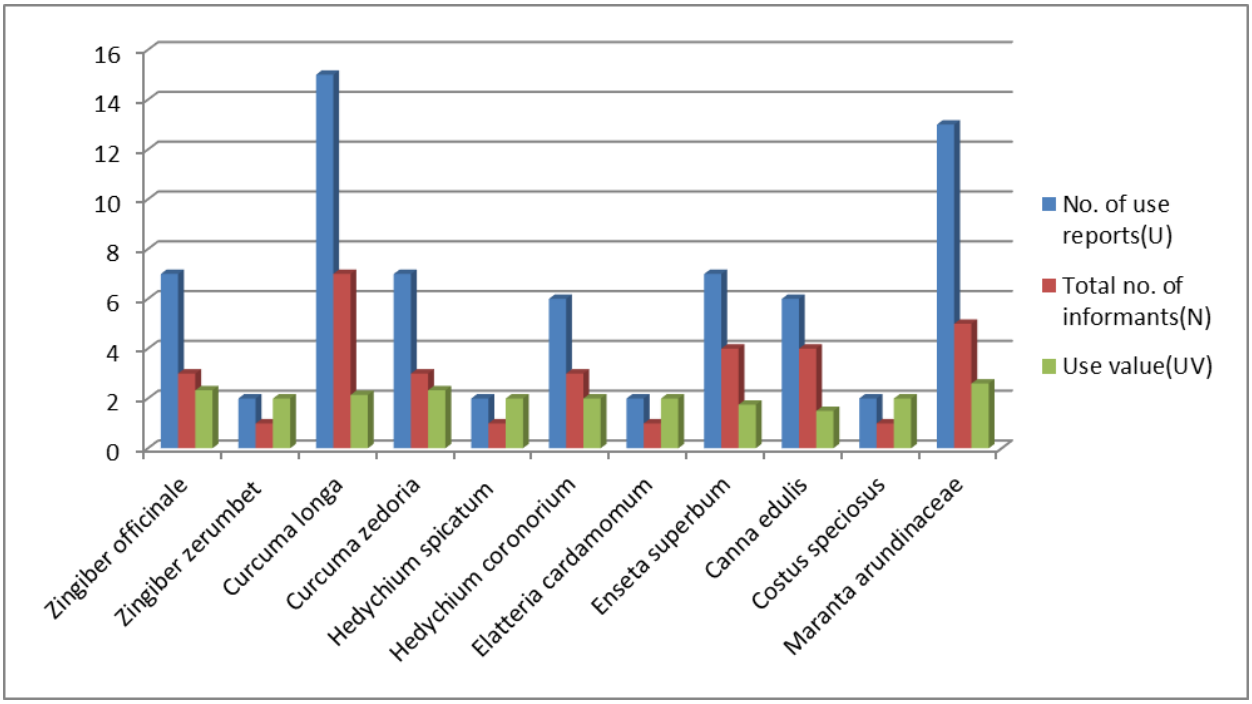
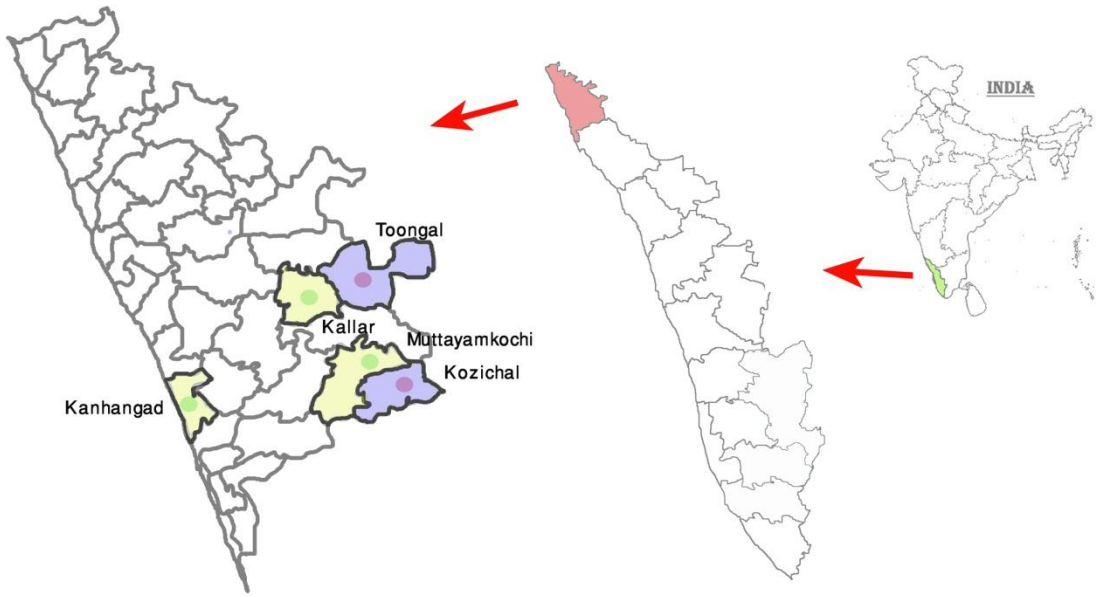


Fig 2:- Use value (UV) of Zingiberaceous plants.



Map 1. Kasaragod District of Kerala

Plate 1. A-C: Members of Malavettuvan Tribe. D-F: Members of Mavilan Tribe.

Conclusion:-

The tribal people of Kasaragod District cultivate many plants in their home gardens and premises for food, medicine, spice, etc. It is observed that some plants were used for ailment like kidney and urinary disorder, skin related diseases, etc. The study have shown that Zingiberales are effective in Ayurvedic and other system of medicine. Zingiberales are well-known for its medicinal and economic significances. Many species are used as sources of indigenous medicines, food, spices, condiments and ornamentals. The traditional knowledge explored in this study significantly contributes for the wellbeing of mankind with locally available natural resources.

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.

References:-

1. Chaudhary, K., Singh, M. and Pillai, U. (2008): Ethanobotanical survey of Rajasthan- an update. Ame. Eura. J. Bot., 1(2): 38-45.
2. Heinrich, M., Ankli, A., Frei, B., Weimann, C. and Sticher, O. (1998): Medicinal plants in Mexico: healers consensus and cultural importance. Soc. Sci. Med., 47: 91–112.
3. Kong, J.J., Xia, Y.M. and Li, Q.J. (2010): Inflorescence and flower development in Hedychieae (Zingiberaceae): *Hedychium coccineum* Smith. Protoplas., 247: 83-90.
4. Kress, W.J., Prince, L.M. and Williams, K.J. (2002): The Phylogeny and new classification of the gingers Zingiberaceae, Evidence from molecular data. Amer. J. Bot. 89(11): 1682–1696.
5. Phillips, O., Gentry, A.H., Reynel, C., Wilkin, P. and Galvez-Durand, B.C. (1994): Quantitative ethnobotany and Amazonian conservation. Conserv. Biol., 8: 225–248.
6. Ragupathy, S., Steven, N.G., Maruthakkutti, M., Velusamy, B. and Ul-Huda, M.M. (2008): Consensus of the 'Malasars' traditional aboriginal knowledge of medicinal plants in the Velliangiri holy hills, India. J. Ethnobiol. Ethnomed., 4: 8.
7. Report on the socio economic status (RSES). (2013): Scheduled tribe's development department government of Kerala.
8. Tomlinson, P.B. (1969): Commelinales - Zingiberales. In: Metcalfe CR. Anatomy of the monocotyledons. Clarendon Press, Oxford, pp. 341-359.