Journal Homepage: - www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
ISSN NO. 2320-5407
Article DOI: 10.21474/IJAR01/10022
DOI URL: http://dx.doi.org/10.21474/IJAR01/10022

RESEARCH ARTICLE

SYSTEMATIC DOCUMENTATION OF TRADITIONAL KNOWLEDGE ON FUNGUS INFECTED ETHNOMEDICINALLY IMPORTANT PLANTS USED BY KANI TRIBES OF KERALA.

Dr. Vimalkumar cs.
Former research scholar, jawaharlal nehru tropical botanic garden and research institute(jntbgri), palode,thiruvananthapuram, kerala,india.

Manuscript Info

Manuscript History
Received: 08 September 2019
Final Accepted: 10 October 2019
Published: November 2019

Key words:-
Traditional Knowledge, systematic documentation, ethnomedicinal plants, fungus, Kani tribes.

Abstract

Traditional Knowledge associated with biodiversity is a living body of functional knowledge system and the same is getting eroded rapidly because of the changing lifestyles of the people. The systematic documentation of traditional knowledge related to ethnobotanically important plants deserves utmost importance, and it appears this is particularly true with fungus infected plants. Based on the aforementioned issue, the major lines of work under taken in this investigation were a) Systematically Documented Traditional Knowledge related to fungus infected ethnobotanically important plants used by the Kani Tribes of Thiruvananthapuram, Kerala, India b) Data accrued through the documentation were subjected to analysis for scientific validation. The study resulted in the systematic documentation of 114 formulations prepared using 74 fungus infected ethnomedicinal plants being used by Kani tribes. Also documented 101 fungal species infecting on 74 ethnomedicinally important plant species. Statistical analysis and the relative frequency of citation, informant consensus factor, usage value of plant taxa etc were also calculated. The findings indicated a general agreement for the treatment among the tribal people and also exemplifies the utility of fungus infected ethnomedicinal plants in the development of novel drugs. This information would also be of much avail for the preservation of the traditional knowledge and also provides a baseline information for the development of novel drug. The present investigation concluded in such a way that the tribal claims documented would serve as a lead which often play a key role in the drug discovery and designing of novel drugs.

Introduction:-

Traditional Knowledge associated with biodiversity is a living body of functional knowledge system that is developed, sustained, refined and passed on from generation to generations of people through continuous interaction, observation and experimentation with their surroundings. But this functional knowledge system is rapidly dwindling due to the influence of modern life styles, reduction in number of traditional healers and the lack of interest of younger generations to carry on with the tradition. Hence, the systematic documentation of traditional

Corresponding Author:-Dr. Vimalkumar cs.
Address:-Former research scholar, jawaharlal nehru tropical botanic garden and research institute(jntbgri), palode,thiruvananthapuram, kerala,india.

knowledge related to ethnobotanically important plants deserves utmost importance, and it appears this is particularly true with fungus infected plants. Presently, documentation pertaining to the fungus infected plants are fragmentary and there exists a huge lacuna in this regard. In this context, scientific scrutiny and validation of the documented knowledge has become inevitable (Singh and Dubey, 2012; Henrique *et al.,* 2014).

In the last few decades, the main strategy of drug development based on traditional medicine is of a single target, single compound, based on a super reductionism that involves mostly tests of compounds at the molecular level. We are now witnessing the entry of a new informational paradigm in the scientific validation of natural products. A more thoughtful approach by incorporating modern tools like reverse pharmacology, systems biology, proteomics, metabolomic sciences seems much more suited to confirm efficacy and to obtain information that might lead to understanding the mode of action. As an array of secondary metabolites are being triggered in fungus infected medicinal plants, comparable holistic approaches for the pharmacological investigation of fungus infected medicinal plants will surely bring out novel drug which may find useful in the treatment of various disorders.

Materials and Methods:-

Area selected for the present systematic ethnomycological investigation was Kani tribal settlements of Thiruvananthapuram district of Kerala, India. Field investigation was conducted at different sites during the study. Frequent field trips were made to the study areas to observe ethnomedicinal plants used in the traditional health care system which are being infected with fungi. Field trips along with the traditional knowledge providers to find out the plants they have been using to cure various ailments has also been carried out. Data was collected with semi-structured questionnaires through the participatory rural appraisal method (Kim and Song, 2008). To ensure the protection of Traditional Knowledge interviews were conducted in different tribal settlement/sample area after obtaining prior informed consent of the informants. The age group, sex, religion, occupation and addresses were noted. Plants used, useful part, method of preparation, mode of administration and disease condition for which they are administering drug were noted. Questionnaire covered the health problems treated, diagnosis and treatment methods, methods of application, threats to medicinal plants due to exploitation and conservation practices etc. The plants used in each medical preparation are separately arranged. The total number of plant species used by the tribes, number of fungus infected plant species used by them were spelt out. The statistical analysis and informant consensus factor (Kim and Song, 2011), relative frequency citation (Bano *et al.,* 2014) were found out.

Field notes regarding host and fungus its pathogenicity, nature of colonies, nature of infection, locality, altitude etc. were recorded during collection. For each collection, a separate field number was assigned. The infected plant parts were pressed and dried in between blotting papers. Colonies in their natural condition was studied. A drop of high quality natural coloured or transparent nail polish, devoid of gilt but having the property of fast drying, was applied to the selected colonies and carefully thinned with the help of a fine brush without disturbing the colonies. Colonies with hyperparasites showed woolly nature were avoided. The treated colonies along with their host plants were kept in dust free chamber for half an hour. When the nail polish on the colonies dried fully, a thin, colourless “film or flip” was formed with the colonies firmly embedded in it. In case of soft host parts, a slight pressure on the opposite side of the leaves and just below the colonies lifts the flip up. In case of hard host parts, the flip was eased off from the edge with the help of a razor or scalpel. A drop of DPX was spread on a clean slide and the lifted flip was spread properly on it. One or two more drops of DPX were again added on the flip and a clean cover glass was placed over it. A gentle pressure on the cover glass brings out the excess DPX and it was easily removed after drying. Care was also taken to avoid air bubbles (Hosagoudar and Kapoor, 1985). The fungi infecting ethnobotanically important plants were identified with the help of experts of JNTBGRI and compared with the TBGT fungal herbarium. For the identification of fungi, secondary data available in the JNTBGRI fungal herbarium were used.

Results:-

Table 1:-Ethnomedicinally important plant of study area prone to infection by 4 fungi species

	Plant species	Fugal species
1	*Helicteres isora* L.	*Irenopsis helicteridis* Hosag., *Asterina leptalea* Sydow, *Irenopsis coimbatorica* Hosag., *Asterostomella helicteridis* Hosag. et al.

Table 2:-Ethnomedicinally important plants of the study area prone to infection by 3 fungi species

	Plant species	Fugal species
1	*Calycopteris floribunda* (Roxb.) Lam. ex Poir.	*Amazonia henryi* Hosag., *Asterina combreti* Sydow, *Asteridiella combreti* (Stev.) Hansf.
2	*Olea dioica* Roxb.	*Zaghouania oleae* (E.J. Butler) Cummins, *Meliola malabarensis* Hansf., *Meliola oleacearum* Hosag.
3	*Strychnos nux- vomica* L.	*Meliola cannonii* Hosag., *Questieriella strychni* Hosag., *Meliola gamsii* Hosag. & Shiburaj
4	*Terminalia catappa* L.	*Questieriella terminaliae* Hosag. & Agarwal, *Meliola pelliculosa* Sydow, Schiffnerula terminaliae Hosag & Riju
5	*Wrightia tinctoria* (Roxb.) R. Br.	*Meliola tabernae montanae* Speg. var. wrightiae Hosag., *Asterina wrightiae* Sydow, *Hemileia wrightiae* Racib.

Table 3:-Ethnomedicinally important plants of study area prone to infection by 2 fungi species

	Plant species	Fugal species
1.	*Aegle marmelos* (L.) Correa	*Oidium citri* (Yen) Braun. *Sarcinella fumosa* Sahni
2.	*Alstonia scholaris* (L.) R. Br.	*Meliola alstoniae* Koord. *Meliolaperingammalaensis* Hosag. & Kamar.
3.	*Cassia fistula* L.	*Meliola aethiops* Sacc. *Asterina cassiae* Hosag. & Archana
4.	*Clerodendrum infortunatum* L.	*Asteridiella clerodendricola* Hosag. *Meliola clerodendricola* Henn
5.	*Cyclea peltata* (Lam.)Hook. f. & Thoms.	*Meliola cycleae* Hosag. *Meliola subramanyaensis* Hosag
6.	*Elaeocarpus tuberculatus* Roxb	*Aecidium elaeocarpi-tuberculati* Hosag. *Asterina elaeocarpi* Sydow var. ovalis Kar & Maity
7.	*Hemidesmus indicus* (L.) R. Br.	*Meliola hemidesmicola* Hosag. *Oidium hemidesmi* Singh & Kamal
8.	*Ichnocarpus frutescens* (L.) W. T. Aiton.	*Meliola ichnocarpi-volubili* Hansf *Meliola frutescentis* Hosag., Abraham & Crane
9.	*Lagerstroemia microcarpa* Wight	*Ophiodothella lagerstroemiae* Hosag. *Lembosia legerstroemiae* Hosag. & Abraham
10	*Mallotus philippensis* (Lam.) Muell.-Arg.	*Asteridiella kombeensis* Hodag *Asteridiella malloticola* Yamam
11	*Persea macrantha* (Nees) Kosterm.	*Periconiellapersae-macranthae* Hosag.& Braun, *Meliola machili* Yamam.
12	*Pongamiapinnata* (L.) Pierre	*Passalora pongamiae* (H.Sydow) Subram. *Meliola pongamiae* Hosag. & Abraham
13	*Tectona grandis* L. f.	*Olivea tectonea* (Ramakr. & Ramakr.) Mueller, *Cercospora tectonae* F. Stevens
14	*Vateria indica* L.	*Asterolibertia vateriae* Hosag. *Echidnodella vateriae* Hosag & Kumar

Table 4:-Ethnomedicinally important plants of the study area prone to infection by single fungus species

No	Plant species	Fugal species
1.	*Abrus precatorius* L.	*Phyllachora abri* (Subhedar & Rao) Cannon
2.	*Acrotrema arnottianum* Wight	*Asterina acrotremae* Hosag. & Chandra. Ex Hosag
3.	*Adenantherapavonina* L.	*Meliola adenanthericola* Hosag., Kamar. & Babu
4.	*Justicia beddomei* (Clarke) Bennet	*Asterina tertia* Racib
5.	*Justicia adhatoda* L.	*Asterina tertia* Racib.
6.	*Alangium salviifolium* (L.f.) Wang.	*Asterostomella alangii* Hosag. & Mohanan
7.	*Allophylus serratus* (Roxb.) Kurz	*Meliola allophylli-serrulati* Hosag & Abraham.
8.	*Anacardium occidentale* L.	*Meliola anacardii* Zim
9.	*Justicia gendarussa* Burm. f.	*Puccinia thwaitesii* Berk.

10.	*Buchanania lanzan* Spreng.	*Meliola ardigoosii* Hosag. & Abraham
11.	*Callicarpa tomentosa* Murray	*Asteridiella formosensis* (Yamam.) Hansf
12.	*Canarium strictum* Roxb.	*Phyllachora sikkimensis* Ramkr., T.S.
13.	*Careya arborea* Roxb.	*Meliola indica* Sydow. var. careyae Stev
14.	*Rotheca serrata* (L.) Steane & Mabb	*Meliola cookeana* Speg. var. viticis Hansf.
15.	*Cymbopogonflexuosus* (Nees ex Steud.) W. Watson	*Phyllachora* sp.
16.	*Desmodium velutinum* (Willd.) DC.	*Meliola bicornis* Wint.
17.	*Dilleniapentagyna* Roxb.	*Asterostomella dilleniacearum* Hosag. et al
18.	*Diospyros peregrina* (Gaertn.) Gurke	*Meliola diospyri* Sydow
19.	*Euphorbia hirta* L.	*Spaerotheca euphorbiae-hirtae* Braun & Somani
20.	*Ficus hispida* L. f.	*Phyllachora* sp.
21.	*Ficus religiosa* L.	*Sphaerodothis raoi* Pande
22.	*Glycosmis pentaphylla* (Retz.) DC.	Meliola cadigensis Yates var. glycosmidis (Kapoor) Hosag.
23.	*Gmelina arborea* Roxb.	*Meliola clerodendricola* Henn. var. micromera (Sydow) Hansf.
24.	*Gnetum edule* (Willd.) Blume	*Meliola gneti* Hansf
25.	*Grewia tiliifolia* Vahl.	*Irenopsis coimbatorica* Hosag.
26.	*Gymnema sylvestre* (Retz.) R. Br. ex Schult.	*Aecidium* sp.
27.	*Hibiscus hispidissimus* Griff.	*Irenopsis molleriana* (Wint.) Stev.
28.	*Hopea parviflora* Bedd.	*Asterina hopiicola* Hosag. & Abraham
29.	*Humboldtia unijuga* Bedd.	*Lembosia humboldtiicola* Hosag. et al.
30.	*Hyptis suaveolens* (L.) Poit.	*Meliola hyptidis* Sydow
31.	*Ixora coccinea* L.	*Meliola randiicola* Hansf
32.	*Lannea coromandelica* (Houtt.) Merr.	*Meliola geniculata* Sydow & Butler
33.	*Memecylon umbellatum* Burm.f.	*Aecidium kaernbachi* Henn
34.	*Memecylon randerianum* S. M. Almeida & M. R. Almeida	*Meliola affinis* Sydow var. indica Hosag
35.	*Murraya paniculata* (L.) Jack.	*Meliola tenella* Pat.
36.	*Mussaenda frondosa* L.	*Meliola anceps* Sydow
37.	*Nothapodytes nimmoniana* (J. Graham) Mabb.	*Meliola chandrasekharanii* Hosag
38.	*Ochlandra travancorica* (Bedd.) Benth. ex Gamble	*Phyllachora* sp.
39.	*Pittosporum neelgherrense* Wight & Am.	*Meliola polytricha* Kalch. & Cooke
40.	*Pothos scandens* L.	*Lembosia malabarensis* (Sydow & Sydow)Hosag. & Goos
41.	*Pterocarpus marsupium* Roxb.	*Meliola pterocarpi* Yates
42.	*Santalum album* L.	*Asterina congesta* Cooke
43.	*Sida cordata* (Burm. f.) Borss.	*Asterina diplocarpa* Cooke
44.	*Spatholobus parviflorus* (Roxb. ex DC.) O. Kutze.	*Meliola spatholobii* Hosag.
45.	*Symplocos cochinchinensis* (Lour.) S. Moore.	*Asterina indica* Sydow et al.
46.	Syzygium cumini (L.) Skeels	*Phyllachora ambigua* (Sydow) Sydow
47.	*Tabernaemontana divaricata* (L.) R. Br. Ex Roem. & Schult.	*Meliolapepparaensis* Hosag. & Abraham
48.	*Terminalia bellirica* (Gaertn.) Roxb.	*Asteridiella combreti* (Stev.) Hansf. var. leonensis Hansf.
49.	*Terminalia chebula* Retz.	*Lembosia terminaliae-chebulae* Hosag., Abraham & Crane
50.	*Thottea siliquosa* (Lam.) Ding Hou	*Asterina thotteae* Hosag. & Hanlin
51.	*Tylophora indica* (Burm. f.) Merr.	*Meliola tylophorae-indicae* Hosag & Manoj
52.	*Vitex altissima* L. f.	*Meliola altissimae* Hosag.
53.	*Ziziphus oenoplia* (L.) Mill.	*Meliola ziziphi* Hansf. & Thirum.

54.	*Ziziphus rugosa* Lam	*Meliola ziziphi* Hansf. & Thirum.

Table 5:-Fungus species infecting on more than one ethnomedicinally important host plant in the study area

No	Fungus species	Host
1.	*Asterina tertia* Racib.	*Justicia beddomei* (Clarke) Bennet *Justicia adhatoda* L.
2.	*Irenopsis coimbatorica* Hosag.	*Helicteres isora* L. *Grewia tiliifolia* Vahl.
3.	*Meliola ziziphi* Hansf. & Thirum	*Ziziphus oenoplia* (L.) Mill. *Ziziphus rugosa* Lam.

Table 6:-Analysis of family wise distribution of fungus infected ethnomedicinally important plants

No	Family	No. of species
1	Fabaceae	8
2	Verbenaceae	6
3	Apocynaceae	4
4	Combretaceae	4
5	Anacardiaceae	3
6	Rutaceae	3
7	Acanthaceae	3
8	Asclepiadaceae	2
9	Dilleniaceae	2
10	Dipterocarpaceae	2
11	Euphorbiaceae	2
12	Malvaceae	2
13	Melastomataceae	2
14	Moraceae	2
15	Periplocaceae	2
16	Poaceae	2
17	Rhamnaceae	2
18	Rubiaceae	2
19	Alangiaceae	1
20	Araceae	1
21	Aristolochiaceae	1
22	Burseraceae	1
23	Ebenaceae	1
24	Elaeocarpaceae	1
25	Gnetaceae	1
26	Icacinaceae	1
27	Lamiaceae	1
28	Lauraceae	1
29	Lecythidaceae	1
30	Loganiaceae	1
31	Lythraceae	1
32	Menispermaceae	1
33	Myrtaceae	1
34	Oleaceae	1
35	Santalaceae	1
36	Sapindaceae	1
37	Sterculiaceae	1
38	Symplocaceae	1
39	Tiliaceae	1
Total plant species		**74**

Table 7:-Relative Frequency of Citation (RFC) of fungus infected ethnomedicinal plants

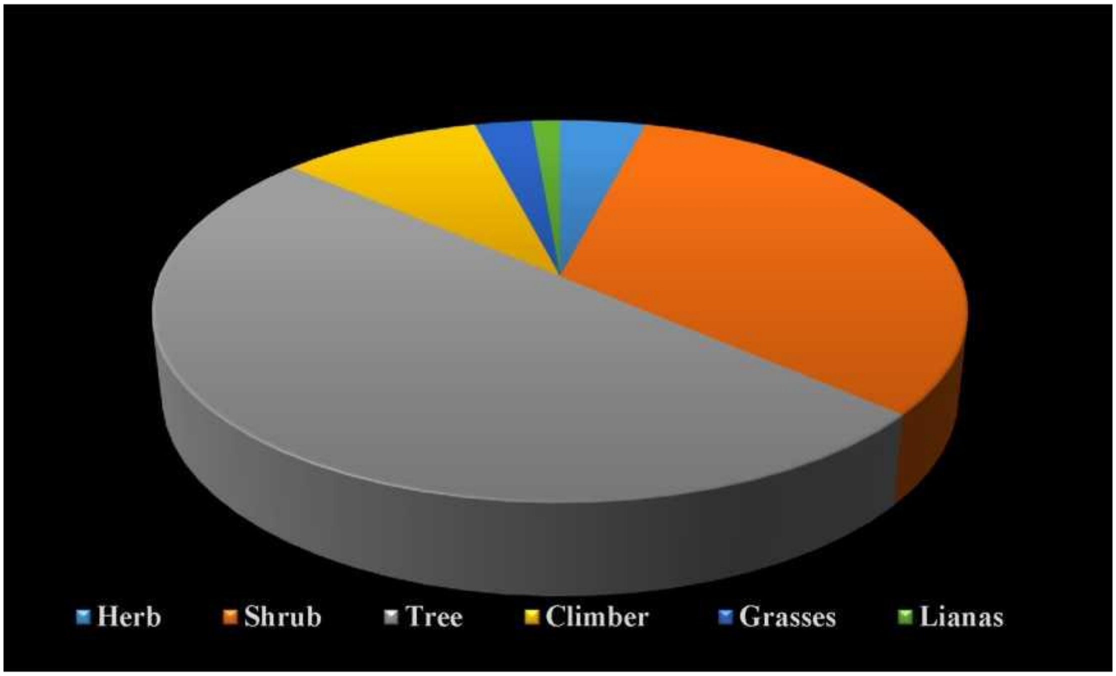
No	**Plant species**	**Disease**	**FC***	**RFC**
1	*Justicia beddomei* (C. B. Clarke) Bennet	Throat infection	28	0.78
2	*Justicia adhatoda* L.	Cough	28	0.78
3	*Aegle marmelos* (L.) Correa	Diabetes	26	0.72
4	*Alangium salviifolium* (L.f.) Wang.	Scabies	25	0.69
5	*Allophylus serratus* (Roxb.) Kurz	Dislocation	25	0.69
6	*Alstonia scholaris* (L.) R. Br.	Skin disease	24	0.67
7	*Anacardium occidentale* L.	Cracks in palm	23	0.64
8	*Justicia gendarussa* Burm. f.	Inflammation	23	0.64
9	*Calycopteris floribunda* (Roxb.) Lam. Ex Poir.	Ulcer	23	0.64
10	*Cassia fistula* L.	Jaundice	22	0.61
11	*Clerodendrum infortunatum* L.	Wound	22	0.61
12	*Cyclea peltata* (Lam.) Hook. f. & Thoms.	Ulcer	21	0.58
13	*Cymbopogon flexuosus* (Nees ex Steud.) W. Watson	Body pain	19	0.53
14	*Euphorbia hirta* L.	Cracks on nail	19	0.53
15	*Ficus hispida* L. f.	Lactagogue	18	0.5
16	*Glycosmis pentaphylla* (Retz.) DC.	Fever	17	0.47
17	*Gymnema sylvestre* (Retz.) R. Br. ex Schult.	Diabetes	17	0.47
18	*Helicteres isora* L.	Wound	16	0.44
19	*Hibiscus hispidissimus* Griff.	Improve digestion	16	0.44
20	*Hyptis suaveolens* (L.) Poit.	Wound	14	0.39
21	*Ichnocarpus frutescens* (L.) W. T. Aiton.	Diabetes	14	0.39
22	*Ixora coccinea* L.	Wound	14	0.39
23	*Memecylon umbellatum* Burm.f.	Female Infertility	13	0.36
24	*Pittosporum neelgherrense* Wight & Am.	Viper poison	13	0.36
25	*Pothos scandens* L.	Smallpox	13	0.36
26	*Pterocarpus marsupium* Roxb.	Obesity	12	0.33
27	*Santalum album* L.	headache	12	0.33
28	*Sida cordata* (Burm. f.) Borss.	inflammation	12	0.33
29	*Syzygium cumini* (L.) Skeels	Diabetes	12	0.33
30	*Tectona grandis* L. f.	Burn	11	0.31
31	*Thottea siliquosa* (Lam.) Ding Hou	Snake bite	11	0.31
32	*Wrightia tinctoria* (Roxb.) R. Br.	Tooth ache	10	0.28

*FC-Frequency of citation

Table 8:-Category of diseases and their Informant Consensus Factors (IFC)

No	Disease	Taxa	Use citation	IFC
1.	Acidity	2	16	0.93
2.	Constipation	3	29	0.93
3.	Burn	3	37	0.94
4.	Fever	3	33	0.94
5.	Scabies	3	36	0.94
6.	Skin disease	4	48	0.94
7.	Chest pain	2	22	0.95
8.	Jaundice	3	38	0.95
9.	Stomach ache	3	45	0.95
10	Tooth ache	3	39	0.95
11	Cough	4	59	0.95
12	Snake and other poisonous bite	4	62	0.95
13	Ulcer	4	37	0.92
14	Reproductive disorders	5	36	0.89

15	Diabetes	5	52	0.92
	Inflammation	6	61	0.92
17	Wound	7	55	0.89



Graph 1:-Habit wise representation of ethnomedicinl plants infected with fungi

Discussion:-

All ancient civilizations of the world have its own signature in that most of them possess unique and diverse cultural expressions emerged by the combined action of multifarious factors like environmental condition, local resource availability, biodiversity richness etc. The close association between man and biodiversity resulted in the emergence of diverse functional knowledge systems of the world. These traditional knowledge systems are on the verge of extinction due to lack of proper record and investigations. Changes in lifestyle and attitude of people in keeping away from their traditional way of living make the situation worse. Hence, there is a dire need and necessity to systematically document and protect these traditional knowledge systems for the well being of the future generations.

In the present investigation, it has been observed that 74 ethnomedicinal plants used by the Kani tribe are being infected by different fungal species. They have been using 114 formulations/drugs prepared out of 74 plant species. It has also been noted that these 74 plant species get infected by 101 fungal species. Among these 98 fungal species appear to be highly host specific, two of them *viz., Asterina tertia* Racib. and *Meliola ziziphi* Hansf. & Thirum., genus specific and one *viz. Irenopsis coimbatorica* Hosag. Which do not show any host specificity. As regards the genus specific fungi observed in the present study, *Asterina tertia* Racib. has been seen to infect the genus *Justicia* and *Meliola ziziphi* Hansf. & Thirum infects the genus *Ziziphus. Irenopsis coimbatorica* Hosag. does not show any host specificity and it is seen to infect two hosts, *Helicteres isora* L. and *Grewia tiliifolia* Vahl. Among the 78 species recorded from the study area, *Helicteres isora* L., stands apart in being infected with four fungal species viz. *Irenopsis helicteridis* Hosag., *Asterina leptalea* Sydow, *Irenopsis coimbatorica* Hosag. and *Asterostomella helicteridis* Hosag. *et al.* The other ethnomedicinally important plants *Calycopteris floribunda* (Roxb.) Lam. Ex Poir., *Olea dioica* Roxb., *Strychnos nux-vomica* L., *Terminalia catappa* L. and *Wrightia tinctoria* (Roxb.) R. Br. are being infected three fungal species each (Table -2).

Family wise analysis of 74 ethnomedicinal plants infected by fungi shows that all these plants belong to 39 different families. Family Fabaceae contributes the major share by representing eight plant species followed by Verbenaceae which contributes four members. The families Apocynaceae and Combretaceae contribute four each. The families

Anacardiaceae, Rutaceae and Acanthaceae contribute three each. Two species have been represented by 11 families where as the remaining great bulk of the families contribute a single species each. From the above data, it is evident that plants belonging to the family Fabaceae and Verbenaceae host more fungal species. This might be due to the abundance of species accommodated in these families. However, the physiological factors underlying the plant fungal association in this regard could not be completely ruled out. Of the various factors which determine the infection of the fungi on plants, the environmental condition and nature of the host occupies a key position. This assumes significance in that fungus predominenlty infects hosts during the month of November - December, during which period the cold condition prevails and this facilitates the fungal species to infect the plants. Also, the nature of the host plays a major role in infection.

Among the 74 species of fungus infected ethnomedicinal plants documented, 32 species have potential therapeutic value. This is supported by the relative frequency of citation of fungus infected ethnomedicinal plants which reveals high degree of user citation with more than 10 frequency of citation and more than 0.28 relative frequency of citation (Table - 7). The informants consensus factor indicated in the study area reveals a general agreement for the treatments among the tribal people (Table - 8). The consensus on the snake and other poisonous bites, cough, tooth ache, stomach ache jaundice and chest pain showed high score. All other disease treatments for single plant administration also showed relatively high degree of agreement between the informants and most of the diseases have shown more than 0.92 informant consensus factor. These statistical data exemplifies the utility of fungus infected ethnomedicinal plants in the development of novel drugs for the future. Also it can provide a baseline data for researchers and academicians concerned in pursuing their plant materials of interest for research.

Traditional knowledge (TK) related to fungus infected ethnobotanically important plants seems unique and rare. Fungi have been occupying a prominent position in the biological world because of their diversity, economic and environmental importance. Fungus infection triggers the production of different classes of secondary metabolites in the ethnobotanically important plants. In many cases, the fungal association in plants affect efficacy and efficiency of the herbal preparations of the tribes. Hence a systematic documentation of fungus infected ethnomedicinally important plants assumes utmost significance. One excellent classical example which subtantiates the use of fungal infected leaves in curing ailments is that of the compound ergometrine produced by the fungus *Claviceps purpurea* upon infecting *Secale cereale***,** used extensively in the treatment of various disorders including female reproductive ailments. There has been a general perception that herbal remedies employed in curing various ailments have adverse effects. This view has been ruled out by the work of many authors (Alves ***et al*.**, 2007), and this apprehension could be completely eliminated by the scientific validation of tribal claims and herbal drugs. Traditional drugs and traditional medicine remain underexplored areas of research in terms of its therapeutic potential as has been pointed out by many (Anjaneyulu and sudarsanam, 2013; Prakash, 2005). In this context, the present work is significant. From the discussion it has emerged that there is a need to foster the successful integration of traditional knowledge with the frame work of scientific research which in turn might prove useful in drug development.

Summary and Conclusion:-

The work embodied in the research paper concerns the results of systematic documentation of ethnomycological information of plants used by the Kani tribes. The main objectives of the work was to systematically document traditional knowledge related to fungus infected ethnomedicinal plants and their uses in traditional medicine. Systematically documented Seventy four ethnomedicinal plants used by Kani tribes infected by fungus. Systematically documented 114 formulations prepared using 74 fungus infected ethnomedicinal plants being used by tribes. Systematically documented 101 fungal species infecting on 74 ethnomedicinally important plant species. Statistical analysis of the the documented data and calculated the relative frequency of citation of fungus infected ethnomedicinal plants which would reveal the usage value of planta taxa against various ailments. Category of diseases and their informant consensus factor in the study area were calculated. This would indicate a general agreement for the treatment among the tribal people. Overall information accrued from the study have brought out to the profound potential of the ethnomycological data for future scientific validation. This information would also be of much avail (1) for the preservation of the traditional knowledge prevalent among the tribes for the use in the future (2) for validating the tribal claim as to the efficacy of fungus infected plants to combat various ailments (3) for providing a baseline information for the development of novel drug which may find useful in the treatment of various reproductive disorders. The present investigation concluded in such a way that the tribal information acquired through the ethnomycological documentation is valid. Such tribal claims serve as a lead which often play a key role in the drug discovery and designing of novel drugs.

Acknowledgement:-
The author sincerely thanks Dr.V.B Hosagaudar, former Senior Scientist & Head of the Department, Microbiology Division, JNTBGI, and Dr.P.G Latha, Former Director, JNTBGI for valuable advice during the investigation. Thanks are due to Dr.S.Rajasekharan, Director Grade Scientist & former Head of the Department, Division of Ethnomedicine and Ethnopharmacology, JNTBGRI for his valuable suggestions during the course of investigation. The author is also thanks Dr.Suja S R, Head of the Department, Division of Ethnomedicine and Ethnopharmacology, JNTBGRI and all the staff of the Division for providing necessary facilities and support to successfully carry out the investigation.

References;-
1. Alves, R.R. and Rosa, I.M. (2007): Biodiversity, traditional medicine and public health: where do they meet ?. J Ethnobiol. Ethnomed., 3(11): 1-9.
2. Anjaneyulu, E. and Sudarsanam, G. (2013): Folk medicinal plants used in the treatment of Asthma in Rayalaseema Region of Andhra Pradesh. India. Res. J. Pharm., Biol. Chem. Sci., 4(1): 833-839.
3. Bano, A., Ahmad, M., Hadda, T., Saboor, A., Sultana, S., Zafar, M., Muhammad, P.Z., Muhammad, A. (2014): Quantitative ethnomedicinal study of plants used in the skardu valley at high altitude of Karakoram-Himalayanrange. Pak. J. Ethnobio. Ethnomed., 10(43):1-17.
4. Henrique, C.H.S., Rinaldo, L.F.C., Luiz, C.M., Marcelo, A.R., Lucilene, L.S., Ulysses, P.A. (2014): Evaluating different methods used in ethnobotanical and ecological studies to record plant biodiversity. J. Ethnobio. Ethnomed., 10:48.
5. Hosagoudar, V.B. and Kapoor, J.N. (1985): New technique of mounting medium for fungi. Indian phytopathol., 38:548-549.
6. Kim, H. and Song, M. (2008): J. Ethnobot. World Science Co. Seoul, Korea.
7. Kim, H. and Song, M. (2011): Oral traditional knowledge for the treatment of digestive system diseases investigated in North Jeolla Province. Korea. J. Med. Plants Res., 5(24): 5730-5740.
8. Prakash, C.K. (2005): Ethnomedicinal botany of the Apatani in the Eastern Himalayan region of India. J. Ethnobio. Ethnomed., 1(11): 1-8.
9. Singh, A. and Dubey, N.K. (2012): An ethnobotanical study of medicinal plants in Sonebhadra District of Uttar Pradesh, India with reference to their infection by foliar fungi. J. Med. Plants Res., 6(14): 2727-2746.