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RESEARCH ARTICLE

ETHNOBOTANICAL PRACTICES OF KODAVAS, KODAGU DISTRICT OF KARNATAKA STATE, INDIA

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ABSTRACT

The study is an effort to document the culture and ethnobotanical practices of Kodavas, an indigenous tribe of Kodagu district. Coorg, the anglicized name of the district is located in the eastern slopes of Western Ghats of India, known as Scotland of India, famed for natural beauty with rugged hills, tropical forests, plantations on the hill slopes and rice fields in the valleys. Kodagu is one of the densely forested districts of India with about 65% tree cover. Kodavas, the dominant tribe of Kodagu, are land owning agriculturists known for their martial tradition, culture and food habits. The study area is experiencing heavy impact on cultural heritage, socioeconomic, biodiversity and environment due to developmental activities and increased tourism. Hence documentation of tradition and traditional knowledge at this point of time becomes crucial. In this study about 170 uses of 136 plants belonging to 60 families are recorded. The information is given in the form of table detailing botanical, local and English names of the plant, family, part used, uses, along with preparation. These plants are grouped according to the purpose they are used viz. ethno-agriculture, ethnoecology, ethno-pediatrics, ethno-medico Botany, ethnoveterinary, plants used in food etc.

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INTRODUCTION

The intimate relationship between human and plant world has evolved with civilization. The study of relationship between man and his ambient vegetation is known as Ethnobotany (Schultes, 1962). It includes all aspects of aboriginal and traditional use including food, clothing, fuel, poisons, narcotics, stimulants, perfumes, dyes, medicines, health products, cosmetics etc (Jain, 1989). Ethnobotany is rapidly disappearing as the world is steadily becoming more uniform culturally and biologically. It is estimated that 80% of all cultural diversity will disappear in the next hundred years. Degradation of biodiversity is directly linked with disappearance of cultural diversity. Hence there is an urgent need to confront the linked challenges of rapid loss of biodiversity and cultural diversity (The Working Group on Indigenous Populations, 2005). As traditional knowledge is considered as the heritage of a country, many countries have initiated ethnobotanical documentation. Ethnobotany plays a crucial role in the study of traditional medicine and helps in preservation of plant resources by reducing the damage to the habitats and biodiversity (Patrick, 2002; Pei, 2005).

About 80% of the world population relies on traditional medicine for their primary health care (Alves and Rosa, 2005). Rural population of the world still relies on herbal medicine as an alternative or a health care choice (Levetin and McMahan, 1999). Concerted efforts are going on to ensure development of sound policy on the protection of traditional knowledge, genetic resources, cultural heritage and research activities about the traditional knowledge of different countries (The Working Group on Indigenous Populations, 2005). India is a vast country with a variety of topographies, climates, vegetation, and people. Out of the 102 million population of this country 50 million people belong to 550 tribal communities. Each tribe has rich indigenous traditional knowledge on the uses of biodiversity for their daily sustenance. India is known for its rich heritage of ethnobotanical knowledge (Mao *et al.*, 2009). In the present work the ethnobotanical study was carried out in Kodagu District of Karnataka State of India during 2018-2020. It is an effort to document data regarding the overall ethnobotanical practices of Kodava community and their unique culture. Earlier studies carried out by few authors have mainly concentrated on usage of plants in curing human diseases (Indira, 1998; Kshirsagar and Singh, 2007; Nanjunda, 2010; Lingaraju *et al.*, 2013). Keshava Murthy and Yoganarasimhan (1990) have included the information of plants of Kodagu district used in Siddha and Ayurveda system of medicine.

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This study will be an addition to the existing Ethnobotanical data base of Kodagu district as well as information on traditional uses of plants in other fields viz., agriculture, veterinary, rituals etc.

Study area and back ground: Kodagu is second smallest district of Karnataka state. It was a separate state when India attained independence, later it merged with Karnataka state in 1956. It is located in the eastern slopes of the Western Ghats of India, which is one of the world's eight 'hottest hotspots' of biological diversity and world heritage sites (Bhattarai *et al.*, 2012). The diverse vegetation found in the district makes it one of the micro hotspots of biodiversity within the larger hotspots of the Western Ghats (Myers, 2000). Villages are found scattered and isolated amidst estates, farm lands or forests. Kodagu has low population density (Kodagu or Coorg, 2014). The district is rich in natural resources, the community lives in harmony with nature, there is an intimate relationship between their culture and nature. Biodiversity conservation is practiced ritually by the local community, there is a unique tradition of maintaining sacred groves locally called as 'Devada kaad' (Jungle of God) in each and every village of this district. There are around 1200 sacred groves spread across the district covering 2% of total area. (Accavva *et al.*, 2002, Kushalappa & Kushalappa, 2007).

Kodavas are the earliest dwellers and the dominant tribe of the district, in fact Kodagu, the name of the district is derived from 'Kodava' community. Other than Kodavas the district is inhabited by many ethnic groups, tribal communities and settlers which include Amma kodava, Gowda, Kodava heggade, Airi, Meda, Male-kudiya, Kembatti, Maringi, Kapal, Kolla, Kavadi, Kuruba, Koleya, Koyava, Kanya, Kudiya, Banna, Ganiga, Golla, Thatta, Yerava, Malaya, Brahmins, Christians, Muslims, etc. Kodagu is one of the districts having higher percentage of tribal community. (Krishna-Iyer, 1948, Nanjundaiah, 2004, Lalitha, 2015, <http://www.karnataka-info.in/coorg-karnataka/>). The Kodavas have distinct customs, rituals, culture, language and food habit, they are proud of their cultural heritage and tradition. Their culture and tradition is retained in spite of the district being ruled by rulers of different cultures during its history and modern influence. The community worships nature, ancestors and weapons. It is a martial community, the tiny district has contributed two chiefs to Indian army, and from generations has been contributing large number of soldiers to the Indian defence forces. Hunting was one of the most respected activities of Kodavas, weapons are an integral part of their culture and rituals. Killing animals was considered as act of bravery during earlier days. A marriage ceremony called 'Nari mangala (Tiger wedding)' was held when a person killed a tiger, he was wedded to the carcass of the Tiger and this was seen as an accomplishment. The kodava family is known as 'okka', each family has a name.

Earlier the joint family used to live together in 'ainmane', the ancestral home. Members of the family living in different places for their livelihood join once in a year to worship 'guru karona', the ancestors; rituals are performed in a memorial called 'kaimada' in their 'ainmane'. Each family owns an ancestral property known as 'jamma land' and the eldest male member will be the 'pattedara' meaning head of the family. Women are respected and held in high regard in a family, widow remarriage is common in the community.

There is a hierarchy called 'thakka', meaning leader at different stages, at village level 'oor thakka' (oor means village), for a group of villages 'naad thakka' and a 'desha thakka' for whole of Kodagu, 'thakkas' are responsible for taking decisions at different levels. The spoken language is known as 'Kodava thakk', with words and vowels having unique sound, it does not have a script, hence written in Kannada. Linguists consider the Kodava language as an independent Dravidian language. Sports, music and dance are the integral part of the Kodava culture. They celebrate three festivals, 'Kailmurtha' for worshipping weapons and agricultural implements; 'Cauvery sanakramana' the festival celebrated in the name of river Cauvery, which Kodavas worship as Goddess; and 'Puthari' the festival of harvest. In each village every year there will be celebration of diety of the local sacred grove (Devada kaad). Kodavas have folk song for every occasion like birth, death, marriage, festivals etc. They have unique dress code for ladies and gents for different occasions. People of Kodagu love Hockey game, this tiny district has contributed more than 50 players to the National team, Kodavas conduct hockey tournament every year since 1997, more than 200 families participate in hockey festival (Shivaraju and Anil Kumar, 2015, Pasha & Kulandivelu, 2017). The indigenous land-owning community Kodavas are primarily agriculturists. Paddy is an important crop, the commercial crops grown in this district are coffee, cardamom, pepper, orange and areca nut. One third of the Nation's coffee is grown in Kodagu (Kulkarni *et al.*, 2007, Bhagwath *et al.*, 2005). Kodavas have their own ethnobotanical practices, the traditional knowledge is still being valued and the practice continues among Kodavas. But the ethnobotanical knowledge is reducing with passing of years. If this is not documented it may be lost in the course of time.

MATERIALS AND METHODS

Ethnobotanical information was collected between 2018-2020 from community representatives, leaders, elders, medicinal practitioners, traditional birth attendants, local healers etc. Standard method and guidelines for conducting ethnobotanical research and collecting plant specimens is followed during the studies (Miguel & Jennie, 1996). Data was collected through the following methods. *Personal observation:* As the author is native to the study area, the information/knowledge got through experience throughout the years of stay helped in obtaining and confirming data. *Face-to-face interviewing:* Information was collected through direct meeting with the target individuals and groups. *Discussion with groups:* Discussions were conducted in social gatherings, meetings etc., to gather information.

At each session the following data was recorded:

- Name of the plant and part used and ingredients when more than one plant materials are used
- Vernacular name.
- Family name
- Preparation if any
- Purpose / Use

Plants having ethnobotanical use were collected and identified by referring to local floras (Gamble, 1957; Saldanha, 1984; Mallikarjunappa, 1981; Keshava Murthy and Yoganarasimhan, 1990).

Table 1. List of ethnobotanical plants with name, family, vernacular name, common name, part used and uses

| Sl. No. | Botanical name | Family | Vernacular name | English name | Part used | Preparation & uses |
|--------------------------|--|---------------|-----------------|--------------|---------------|--|
| <i>Ethno-agriculture</i> | | | | | | |
| 1 | <i>Artemisia vulgaris</i> L. | Compositae | Gaali thopp | Wormwood | Twigs | Hastening banana ripening: Twigs immersed in lime water is sprinkled over banana bunches for quick ripening and to enhance colour. |
| 2 | <i>Lobelia nicotianifolia</i> Roth ex. Schult. | Campanulaceae | Kaanda gida | Wild tobacco | Twigs | Green manure: Twigs are added as green manure in ploughed rice fields. |
| 3 | <i>Nicotiana tabacum</i> L. | Solanaceae | Pyathopp | Tobacco | Leaf | Pest borer control: Chewing tobacco soaked in water over night and sprayed to the stem attacked by the stem borer insect. |
| 4 | Fire wood | | | | Plant ash | Insecticide: Plant ash is sprinkled over the plant part affected by insect pests like Aphids, Mealy bug, Chewing insect etc. |
| <i>Ethno-toxicology</i> | | | | | | |
| 5 | <i>Aloe vera</i> (L.) Burm.f. | Asparagaceae | Lolisara | Aloe | Whole plant | Insect attractant: Whole plant along with the root is hung upside down in the roof to avoid fruit fly nuisance, plant attracts fruit flies. |
| 6 | <i>Acacia concinna</i> (Willd.) DC. | Leguminosae | Cheenge | Soap pod | Bark | Fish toxin: Coarsely pound and added to water bodies, left until fishes become drowsy and start floating |
| 7 | <i>Catunaregam spinosa</i> (Thunb.) Tirveng. | Rubiaceae | Kaare kai | | Fruit | |
| 8 9 | <i>Azadirachta indica</i> A.Juss <i>Mecaranga peltata</i> | Meliaceae | Bevu | Neem | Oil | Myiasis curing: Neem oil is mixed with camphor powder and applied to the wound of domestic animals |
| 10 | <i>Blumea mollis</i> DC. | Compositae | | | Twigs | Insecticide: Twigs are spread on the beds of domestic animals or rubbed on the body to get rid of fleas. |
| 11 | <i>Citrus limon</i> (L.) Osbeck | Rutaceae | Chorange | Lemon | Fruit | Leach repellent: Lemon juice is smeared on the foot. |
| 12 | <i>Garcinia gummi-gutta</i> (L.) Roxb. | Clusiaceae | Panpuli | | Fruit | Leach repellent: 'Kachampuli', the boiled concentrated fruit extraction is applied on foot. |
| 13 | <i>Gordonia obtusa</i> Wall. ex Wight | Theaceae | Honne mara | | Bark | Fish toxin: Pounded bark is added to water bodies, after sometime fishes become unconscious and floats on water. |
| 14 | <i>Lycoperdon pyriforme</i> Schaeff | Lycoperdaceae | | Puff ball | | Leach repellent: The powdery spores of mature 'puff ball' is smeared on foot. The powder used for wound care caused by leech bite. |
| 15 | <i>Nicotiana tabacum</i> L. | Solanaceae | Pyathop | Tobacco | Snuff | Leach repellent: Snuff is smeared on foot and legs. Pediculicide: Snuff paste made using water is applied on scalp and left for about half an hour before washing to get rid of lice. |
| 16 | <i>Psidium guajava</i> L. | Myrtaceae | Kaayi | Guava | Young shoot | Pediculicide: Pounded young leaves is applied on scalp, left for about an hour and washed to kill lice. |
| 17 | <i>Trichosanthes tricuspidata</i> Lour. | Cucurbitaceae | | | Ripe fruits | Insecticide: Fruits are cut and hung on the roof and other places infested with cockroaches. |
| 18 | <i>Vitex negundo</i> L. | Lamiaceae | Nokki thop | Chaste Tree | Leaves | Eradication of poultry lice: Fresh twigs are spread on the floor of the coop. |
| <i>Ethno-paediatrics</i> | | | | | | |
| 19 | <i>Acorus calamus</i> L. | Acoraceae | Bembu | Sweet flag | Dried rhizome | laxative and curing indigestion: About half spoon of paste made using mother's milk is administered to empty stomach in the morning, the paste is smeared around the navel of the baby in case of flatulence |
| 20 | <i>Caesalpinia bonduc</i> (L.) Roxb. | Leguminosae | Chitti goli | | seeds | Anti-stuttering: the paste is administered to stop stammering and enable tongue twisting Indigestion: Seeds paste made using mother's milk is given to child. |

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| 21 | Centella asiatica (L.) Urb. | Apiaceae | Ondelaga | Indian pennywort | Leaves | Indigestion: Leaf extract is given to infants on empty stomach in early morning. |
| 22 | Dioscorea bulbifera L. | Dioscoreaceae | Naar kalnji | Wild yam | Tuber | Baby food: Peeled tuber is cut into small pieces, dried and powdered. The flour is mixed with rice flour and used in the preparation of nutritious porridge. |
| 23 | Drymaria cordata Willd. ex Schult. | Caryophyllaceae | Pana thopp | Chick weed | Leaves | Increase appetite and digestion: Leaf extraction is administered to empty stomach of infants Eye ailment: Extraction is used as eye drops in early morning. Baby food ingredient: Dried plant twigs is powdered along with rice and other cereals, used in making porridge. |
| 24 | Myristica fragrans Houtt | Myristicaceae | Jai kai | Nutmeg | Seed | Baby food supplement: the paste prepared used mothers milk is given as food supplement |
| 25 | Solanum americanum Mill. | Solanaceae | Potute | Black night shade | Young leaves | Stomach clearing: Early morning extraction into eyes and administered to the empty stomach of infants to keep away eye ailments and believed to sharpen the eye sight and improves digestion power. |
| 26 | Physalis angulata L. | Solanaceae | | | Young fruits and leaves | |
| 27 | Solanum virginianum L. | Solanaceae | Kachute | | Young fruits and leaves | |
| 28 | Zingiber officinale Roscoe | Zingiberaceae | Shunti | Ginger | Rhizome | Persistent cold: 2-3 drops of supernatant of rhizome extraction is given. |
| Ethnocosmetology | | | | | | |
| 29 | Asparagus racemosus Willd. | Asparagaceae | Ummit thopp | Shataavari | Leaves and tuber | Hair stimulant and growth: Leaves and small piece of tuber is boiled in coconut oil and applied on scalp for healthy hair growth. |
| 30 | Citrus aurantium L. & | Rutaceae | Kaipuli & | Bitter orange | Fruit juice | Skin toning, Pedicure and Manicure: Juice is used for cleaning, brightening skin, pedicure and manicure. |
| 31 | Citrus limon (L.) Osbeck | | Chorange | | | |
| 32 | Coix lacryma-jobi L. | Poaceae | Pill mani | Job's Tears | Fruits | Ornament: Dried fruits are used to make string of beads |
| 33 | Jatropha curcas L. | Euphorbiaceae | Kaachi | | Sap | Prophylaxis: Small twig is used as tooth brush to clean teeth and clear dental plaques. |
| 34 | Oryza sativa L. | Poaceae | Ummit | | Husk | Teeth cleaning: Husk is fried till it turns to black but still retain hardness, to this salt powder is added and stored. This mixture is used to scrub teeth. |
| | Woody plants | | Masi | Charcoal | Stem | Teeth cleaning: Charcoal obtained by burning fire wood is used to clean teeth. It is chewed to make coarse powder and scrubbed. |
| 35 | Ricinus communis L. | Euphorbiaceae | Anake mara | Castor | Root | Jaundice: Decoction of root is used to cure jaundice. |
| 36 | Rubia cordifolia L. | Rubiaceae | Kaadige balli | Manjishta | Leaves | Kajal (Eye cosmetic) preparation: while cloth is dipped in leaf extraction, dried and made into wicks. Soot collected by burning wicks is mixed with butter. It improves eye sight, gives cooling effect, darkens and stimulate eyebrow growth |
| 37 | Syzygium aromaticum (L.) Merr. & L.M.Perry | Myrtaceae | Lavanga | Clove | Flower bud | Ear stud: Dried young flower buds used as nose and ear studs |
| Wild edible plants | | | | | | |
| 38 | Bambusa spp. & | Poaceae | Beyimbale | Bamboo | Bamboo shoot | Pickle: Fermented bamboo shoot is used to make pickle |
| 39 | Ochlandra spp. | | Kuyakande | Canna | Rhizome | |
| 40 | Canna indica L. | Cannaceae | | | | Tuber: Boiled tuber is eaten. |
| 41 | Caryota urens L. | Arecaceae | Pone mara | Fish tail palm | Pith | Edible palm heart: Palm heart is edible. Toddy: Palm sap is tapped from young inflorescence is consumed as toddy. Jaggery : Toddy is also used making jaggery |
| 42 | Drynaria quercifolia (L.) J. Sm. | Polypodiaceae | Mara therme | | Rhizome | Ingredient in dosa batter: Rhizome is added to soaked rice with other ingredients and pounded for the preparation of dosa (pan cake) batter. |
| 43 | Lagenandra ovata (L.) Thwaites | Araceae | Njand kande | | Rhizome | Rhizome of this plant is one of the ingredients used at the time of pounding of soaked rice for 'Dosa' batter. |
| 44 | Phoenix loureiroi Kunth. | Arecaceae | Each gida | | Palm heart | Raw palm heart is edible. |
| 45 | Piper nigrum L. | Piperaceae | Nalla malu | Pepper | Young fruits | Pickle: Young fruits along with the peduncle is used to make pickle |
| Wild edible fruits | | | | | | |
| 46 | Carissa spinarum L. | Apocynaceae | Karmunji pann | Bush plum | Pericarp | Whole fruit except seed is eaten; unripe fruit is pickled. |
| 47 | Dimocarpus longan Lour. | Sapindaceae | Puvathi pann | | Fleshy aril | Aril of the fruit is edible |
| 48 | Elaeagnus conferta Roxb. | Elaeagnaceae | Tholyaar pann | | Pericarp | Entire fruit except seed is edible. |
| 49 | Elaeocarpus variabilis Zmarzty | Elaeocarpaceae | Kumme pann | | Epicarp and mesocarp | Pulpy part of the fruit is edible; the seed |
| 50 | Ensete superbum (Roxb.) Cheesman | Musaceae | Kall baale | Cliff banana | Pulpy mesocarp | Fleshy part of the wild banana is eaten |

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| 51 | <i>Ficus racemosa</i> L. | Moraceae | Athi pann | Cluster fig | Whole syconus | Ripe fruit is eaten |
| 52 | <i>Garcinia xanthochymus</i> Hook. f. ex T. Anderson | Clusiaceae | Jeerke puli | False Mangosteen | Mesocarp | The fleshy sweet and sour mesocarp |
| | <i>Microcos paniculata</i> L. | Malvaceae | Parche pann | | Pericarp | Whole fruit except the seed is eaten |
| 54 | <i>Lantana camara</i> L. | Verbenaceae | Unni pann | Lantana | Pericarp | Pericarp of this fruit is edible |
| 55 | <i>Mimusops elengi</i> L. | Sapotaceae | Elande pann | Spanish cherry | Mesocarp | Mesocarp of the fruit is edible |
| 56 | <i>Morus alba</i> L. | Moraceae | Pippli pann | Creeping woodsorrel | Entire fruit | Whole fruit is edible |
| 57 | <i>Oxalis corniculata</i> L. | Oxalidaceae | Puli thopp | | | Unripe sour fruit is edible |
| 58 | <i>Physalis peruviana</i> L. | Solanaceae | Gummate | Cape gooseberry | Whole fruit | Entire fruit is edible |
| 59 | <i>Psydrax dicoccos</i> Gaertn. | Rubiaceae | Amme pann | Ceylon box wood | Fruit except seed | Fleshy epicarp and mesocarp is edible |
| 60 | <i>Rubus ellipticus</i> Sm. | Rosaceae | Vaale pann | Hill rasp berry | Whole fruit | The etaerio of drupes is edible |
| 61 | <i>Rubus fockei</i> Gandhi. | Rosaceae | Vaale pann | Hill raspberry | Whole fruit | The etaerio of drupes is edible |
| 62 | <i>Rubus niveus</i> Thunb. | Rosaceae | Vaale pann | Hill raspberry | Whole fruit | The etaerio of drupes is edible |
| 63 | <i>Scutia myrtina</i> (Burm.f.) Kurz | Rhamnaceae | Kokkarchi pan | Cat thorn | Pericarp | Fruit except seed is edible |
| 64 | <i>Solanum americanum</i> Mill. | Solanaceae | Kaake pann | Common night shade | Fruits | Whole fruit is edible |
| 65 | <i>Syzygium caryophyllatum</i> (L.) Alston | Myrtaceae | Kunji nerale pann | South Indian plum | Fleshy pericarp | Pulpy part of the fruit is edible |
| 66 | <i>Syzygium zeylanicum</i> (L.) DC. | Myrtaceae | Kathi pann | | Fleshy pericarp | Except seed entire fruit is edible |
| 67 | <i>Toddalia asiatica</i> (L.) Lam. | Rutaceae | Gudda menasu | | | Fruit except seed is edible |
| 68 | <i>Ziziphus rugosa</i> Lam. | Rhamnaceae | Kotte pann | | | Fruit except seed is edible |
| | Green leafy vegetable | | | | | |
| 69 | <i>Adenia hondala</i> (Gaertn.) W. J.de Wilde | Passifloraceae | Kaad thonde | | | Young twigs with leaves |
| 70 | <i>Allium sativum</i> L. | Amaryllidaceae | Bollulli | | | The leaves are roasted till it becomes soft, and used to make chutney |
| 71 | <i>Capsicum frutescens</i> L. | Solanaceae | Malu gida | | | Young twigs |
| 72 | <i>Colocasia esculenta</i> (L.) Schott | Araceae | Kemb | Swamp colocasia | | young leaves with petiole |
| 73 | <i>Cucurbita pepo</i> L. & | Cucurbitaceae | Kumbla | Pumpkin | | Young tender twigs |
| 74 | <i>Cucurbita maxima</i> Duchesne | | | | | |
| 75 | <i>Diplazium esculentum</i> (Retz.) Sw. | Athyriaceae | Therme | Fern | | Tender fronds |
| 76 | <i>Senna tora</i> (L.) Roxb. | Leguminosae | Thathe thopp | Foetid cassia | | Young twigs with 2,3 youngest leaves are cooked in water, after draining the water used to prepare curry with pigeon pea dal |
| 77 | <i>Solena amplexica - ulis</i> (Lam.) Gandhi | Cucurbitaceae | Bimpuli | | | Twigs |
| | <i>Seeds / nuts</i> | | | | | |
| 78 | <i>Artocarpus altilis</i> (Parkinson ex F.A.Zorn) Fosberg | Moraceae | Ajin chakke | | | The seeds of the ripe fruit is roasted and eaten. |
| 79 | <i>Artocarpus heterophyllus</i> Lam. | Moraceae | Chakke kuru | Jack fruit | | The seeds of the ripe fruit is collected and stored. Storing for a long time seeds are mixed with paste of red soil and sun dried and stored. During rainy season is dry roasted and eaten. |
| 80 | <i>Canarium strictum</i> Roxb. | Burseraceae | Dhupa kai | Kernel | | Eaten raw |

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| 81 | <i>Elaeocarpus variabilis</i> Zmarzty | Elaeocarpaceae | Kumme | | Kernel | Eaten raw |
| 82 | <i>Oryza sativa</i> L. | Poaceae | Akki | Rice | grains | Boiled rice is half cooked and sun dried. Roasted to get puffs, it is eaten with jaggery. |
| 83 | <i>Terminalia bellirica</i> (Gaertn.) Roxb. | Combretaceae | Thare kai | | Kernel | Eaten raw |
| 84 | <i>Sterculia guttata</i> Roxb. | Malvaceae | Tonapa kai | | seeds | The kernel of the seed is eaten raw as well as roasted seeds are also eaten. |
| 85 | <i>Ziziphus rugosa</i> Lam. | Rhamnaceae | Kotte pann | | | Seeds roasted and eaten. |
| | Sour agent | | | | | |
| 86 | <i>Connarus wightii</i> Hook.f. | Connaraceae | Ayambuli | | Fruits | Preparation: Juice extracted is boiled until it becomes thick and dark liquid locally known as 'Kachambuli', stored in airtight containers. Used as a source of sour in curries. |
| 87 | <i>Garcinia gummi-gutta</i> (L.) Roxb. | Clusiaceae | | | Fruit | |
| 88 | <i>Mangifera indica</i> L. | Anacardiaceae | Pole mange | wild sour mango | Fruits | |
| | Spices | | | | | |
| 89 | <i>Cinnamomum malabratum</i> (Burm.f.) J.Presl | Lauraceae | Naru mara | | Twigs and Bark | Steamed dishes: The twigs are placed on the rice dishes while it is steam cooked. It gives characteristic aroma to the food dish. |
| 90 | <i>Persea macrantha</i> (Nees) Kosterm. | Lauraceae | Karpa chakke | | Bark | Substitute to Cinnamon: Dried bark is used as cinnamon. |
| 91 | <i>Piper trioicum</i> Roxb. | Piperaceae | Kaad nallamalu | | fruit | Substitute to Cinnamon: The bark is dried and used as substitute to cinnamon. |
| | Vegetable | | | | | Substitute to Pepper: Dried fruit is used. |
| 92 | <i>Artocarpus heterophyllus</i> Lam. | Moraceae | Chakke | Jack fruit | Young fruits & Seeds | Fruit: The rind and central part is removed and remaining part is used as vegetable. |
| 93 | <i>Bambusa</i> sp. | Poaceae | Baimbaale | Bamboo shoot | Young bamboo shoots | Preparation: Chopped bamboo shoot is soaked in water for three days. Every day water is changed. Next day in the same water it is cooked. |
| 94 | <i>Colocasia esculenta</i> (L.) Schott | Araceae | Kemb | | | Preservation: Sliced bamboo shoots are salted and preserved for a long time. |
| 95 | <i>Dioscorea bulbifera</i> L. | Dioscoreaceae | Puthari kalnji | | Tuber | Curry: Tubers used as vegetable. |
| 96 | <i>Dioscorea oppositifolia</i> L. | | Kaad kalnji | | Tuber | Curry: used as vegetable. It is boiled and eaten. |
| 97 | <i>Erythrina variegata</i> L. | Leguminosae | Paanwala | Coral tree | Immature inflorescence | Curry: Tuber is used as vegetable or eaten raw |
| 98 | <i>Momordica dioica</i> Roxb. ex Willd. | Cucurbitaceae | Paavakke | | Fruit | Curry: Young inflorescence is cooked in water and water is discarded. The cooked inflorescence is used in the preparation of savory dishes. |
| 99 | <i>Musa paradisiaca</i> L. | Musaceae | Baale | Plantain | Unopened inflorescence, unripe fruits, and young pith | Curry: Used in the preparation of curry Curry : Very young spathe along with flower buds is used as vegetable. It prevents urinary problems. Unripe fruit: Green fruits used after skinning. Young pith: it is also good for health, keeps away urinary problems. |
| 100 | <i>Ochlandra scriptoria</i> (Dennst.) C.E.C.Fisch. | Poaceae | Vaate baimbale | | Young shoots | Curry: Chopped young shoots can be fermented and used as vegetable to get a characteristic taste or it could be used directly. |
| 101 | <i>Remusatia vivipara</i> (Roxb.) Schott | Araceae | Mara kembu | | Rhizome and leaf | Curry: Rhizome is used in the preparation of chutney (A spicy condiment). |
| 102 | <i>Solena amplexicaulis</i> (Lam.) Gandhi | Cucurbitaceae | | | Fruits | Petiole along with the leaf is used as vegetable. |
| | Incense | | | | | Curry: Young fruits used as vegetable |
| 103 | | | | | | |
| | <i>Allium sativum</i> L. & | | | | | Dry peelings of onion and Garlic is used to get fragrant smoke. |
| 104 | <i>Allium cepa</i> L. | Amaryllidaceae | Bollulli & Neerulli | Garlic & Onion | Peelings | To this dried elephant dung and pedicel of dried chilly is added. It's believed that the smoke keeps away evil spirit. |
| 105 | <i>Canarium strictum</i> Roxb. | Burseraceae | Dhoopa | Black dammar | Resinous exudation of the stem | Dried resinous exudation is powdered and sprinkled on red charcoal to get fragrant smoke during prayers. The smoke is also used to keep away insects. |
| 106 | <i>Santalum album</i> L. | Santalaceae | Chaandh | Sandal wood | Dry stem | Chunks of dry sandal wood sprinkled on red charcoal to get fragrant smoke. |
| 107 | <i>Vitex negundo</i> L. | Lamiaceae | Nokki | Chaste Tree | Leaves | Dried leaves sprinkled over charcoal to get smoke. Post natal care room is smoked few times in a day to freshen up the room. The smoke acts as insect repellent. |

Plant names and assigned families were cross checked by referring recent taxonomic literature and Kew data base (Mabberley, 2008; The Plant List, 2010). Standard methods were followed for the preparation of voucher specimens of collected plants by referring to Anonymous (1999). Specimens were deposited in the herbarium of Yuvaraja's College (YCMUOM), University of Mysore, Karnataka State, India. Information given in the table about the Ethnobotanical plants includes name of the plant, family, vernacular name, common English name, part used and its uses. Based on the uses the plants are divided under the following headings-ethnoagriculture, ethnobiocides, ethnocosmetics, ethnoecology, ethno-medicobotany, ethnopediatrics, ethnoveterinary, plants used as food or ingredients of food, incense, evil eye, lactation, rituals and other uses.

RESULTS

Present study explains overall culture, tradition and practices of the Kodava community. The ethnobotanical studies includes 170 uses of 107 plants belonging to 60 families. Majority of these plants belong to angiosperms, few are from gymnosperms, pteridophytes and fungi (Table 1). Farming is practiced for subsistence and commercial purposes in Kodagu, four ethno agricultural practices; thirteen plants used in harvesting fish, eradication of insects, treating domestic animals, pests and leeches, etc., are listed under ethno-toxic category; ten plants used in the health care of infants and children are documented under ethno pediatrics category; nine plants used for beauty care under ethno-cosmetics; sixty three edible plants including wild fruits, greens, vegetable, edible seeds, nuts, sour agents used in food preparation, spices etc., are listed under edible plants category; and four plants used in incense are included in the result (Table 1)

CONCLUSION

The drugs derived from the plants used in traditional medicine is stimulating interest in tapping indigenous knowledge which has less or no side effects. The documentation of traditional knowledge is becoming vital because of the laws pertaining to patents and the increased awareness about practices of bio piracy. The nations which are rich in biodiversity are considering indigenous plant lore as part of their national heritage. The accelerated speed in which the indigenous plant lore is depleting is a subject of concern to these nations (Patil *et al.*, 2011). Hence there is a need to document indigenous traditional uses of plants before they are lost forever. Kodagu is witnessing continued conversion of forest land to plantations and encroachment especially sacred groves (Chandrakanth *et al.*, 2004). Increased and uncontrolled tourism in the district along with other developmental activities reducing the biodiversity. These activities have direct effect on tradition and cultural practices. Traditionally used plants are becoming rare due to changing agricultural practices and habitat conversion for development. Though Kodavas proudly follow their traditions, ethnobotanical practices which were the part of the Kodava culture are slowly declining among recent generation people. Census conducted by government shows that indigenous Kodava languagespeaking people are decreasing. Compared to 1951 census it has reduced from 24 % to 15% percentage, due to social, economic, political reasons. Intensive effort by the leaders and community organizations is needed to preserve and endure the unique tribe

with rich culture (Lalitha, 2015, Mallikarjun, 2020). Systematic exploration and documentation of traditional usage of plants is required as the traditional knowledge systems are rapidly fading away (Cox P.A, 2003). This type of study may help in identifying new or alternative drug or the discovery of new useful plant resource for human welfare.

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