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# Conservation of indigenous knowledge on the consumption of medicinal Zingiberaceae by locals in Kelantan, Peninsular Malaysia

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**Abstract.** The locals in Kelantan, Peninsular Malaysia have been taking certain Zingiberaceae plants with medicinal value as daily dietary intake primarily for common health purposes and these traditional uses has not been explored and documented well. The objective is to recognize and list out both plants and plant parts that have been utilized by Kelantan people and the traditional uses. Ethnobotanical field surveys were conducted by doing a verbal interview with 20 old folks of the selected village and ethnomedicinal data were collected regarding the uses of Zingiberaceae medicinal plants. The identification process was done by collecting Zingiberaceae plants under guidance from the old folks. Further information from plants identification was assembled through literature reviewed on their recorded medicinal values. The study yielded 10 medicinal plants focused on family Zingiberaceae. Regarding the utilization of medicinal plant, rhizomes were used predominantly followed by leaves and fruits. Decoction of plant parts is used for oral and application on skin. The studied plants list aids to preserve the indigenous knowledge of medicinal plants used by locals in Kelantan.

## 1. Introduction

Malaysia is one of the countries in Southeast Asia which has record of multitude of gingers that are commonly used for exclusive flavor, medicinal and ornamental values [1]. The term ethnobotany refers to the interrelationship study between humans and plants such as important roles of plants in human life [2] and ethnobotany can be categorized into practical, consumption as side dish, cosmetic, medicinal, and ritual [3]. Ethnobotany related studies include recognize local plant resource, indigenous information and traditional medicine practitioners and can be helpful in medical field whereby it acts as



substitute treatment in modern medical practices [6]. The utilization of plants as food, practical and medicine herb has been practiced and become a tradition amongst Malay community in Malaysia [3-5].

Generally, approximately 15,000 plant species distributed in Malaysia with 8,200 plant species in Peninsular Malaysia and 12,000 plant species in Sabah and Sarawak [7]. For family Zingiberaceae specifically, there are estimation of 200 ginger species belong to 19 genera have been recorded in Peninsular Malaysia [8]. Recent studies indicated that gingers are commonly found in Peninsular Malaysia [9-16]. Up to date, the discovery of great number of new species and genera have been done in both lowland and highland areas of Malaysia proven by extensive research [17-24].

Kelantan is a state located in the most northern part on Peninsular Malaysia [25,26]. The area of Kelantan covers approximately 17,100 km<sup>2</sup> and situated within latitudes 4°35' and 6°15' and longitudes 101°22' and 102°33' east [25]. It was reported that the studies regarding wild ginger species in Kelantan not so extensive and further studies need to be carried out especially ginger diversity in this state.

## 2. Methodology

The study of family Zingiberaceae was carried out at various times from 1st February until 30th April 2021 in Kelantan. The field observations were conducted at selected localities in Kelantan which are Kampung Lati, Pasir Mas and Kampung Bukit Tiu, Machang whereas possible and information were obtained by doing the interviews in society by choosing the villagers with knowledge preferably about the use of Zingiberaceae plants in their daily life. 20 respondents were mostly traditional healers, herbalists, midwives, village leaders and other villagers meanwhile the information given were recorded by using audio recorders or notebooks. The information taken included vernacular name, scientific name, collectors name, collection name, habitat, location, traditional uses, and plant parts used and preparation process. The scientific name of plants was identified by the authors and further information about plants were done by the help of literature related [17]. The plant parts were collected for herbarium specimen and the dried herbarium specimen were deposited in Muzium Sumber Asli of Universiti Malaysia Kelantan.

## 3. Results and Discussions

A total of ten species belongs to the family Zingiberaceae including genera *Alpinia*, *Amomum*, *Curcuma*, *Elettariopsis*, *Gastrochilus*, *Kaempferia* and *Zingiber*. All the collected species are common plants and can be found easily as they are cultivated in the yard house by local community. These species are well known for many purposes such as spices, medicines, and ornamental plants as shown in Table 1.

**Table 1.** Species, local name by Kelantan people and traditional uses of ginger species found in Kelantan.

No.	Herbarium Specimen No.	Scientific Name	Local Name	Traditional Uses	References
1.	NSAZ001	<i>Alpinia conchigera</i>	Lengkuas genting	Bone ache, fungal infection ( <i>panau</i> ), dysmenorrhea	[26,28]
2.	NSAZ002	<i>Alpinia galanga</i>	Lengkuas	Spice, anti-inflammatory, diarrhoea	[26,28,29]
3.	NSAZ003	<i>Amomum kepulaga</i>	Buah pelaga	Spice, prevent nausea, reduce smoking addiction	[25]
4.	NSAZ004	<i>Curcuma longa</i>	Kunyit	Colouring, stomachache, postnatal treatment, anti-inflammatory	[26,29]
5.	NSAZ005	<i>Curcuma xanthoriza</i>	Temulawak	Yellow fever, hepatitis, stomach ulcers, anti-inflammatory, pimple	[26,30]

6.	NSAZ006	<i>Elettariopsis curtisii</i>	Pepijat	Postnatal treatment	[28,29]
7.	NSAZ007	<i>Kaempferia galanga</i>	Cekur	Postnatal treatment, swelling, itchiness	[28,29]
8.	NSAZ008	<i>Gastrochilus panduratum</i>	Tepus sehelai setahun	Postnatal treatment	[26]
9.	NSAZ009	<i>Zingiber officinale</i>	Halia	Spice, diabetes, stomachache, fungal infection, postnatal treatment	[26,29]
10.	NSAZ010	<i>Zingiber zerumbet</i>	Lempoyang	Postnatal treatment, anemia, joint ache, <u>hypertension</u>	[28,29]

*Alpinia conchigera* locally known as ‘lengkuas genting’ is a plant that can reach height up to 12 m [31]. This species is reported to produce the smallest flowers among species in genus *Alpinia* in Peninsular Malaysia [32]. The rhizome will be grind producing a paste and can be used to relieve bone ache by rubbing it on the skin [26]. The combination of paste and kerosene aids in fungal infection by treating it on the skin [26]. The mixed of rhizome extract and water can help to reduce dysmenorrhea [28]. The mixed of rhizome extract with fresh milk usually drink in morning as energy drinks [28].

*Alpinia galangal* locally known as ‘lengkuas’ is a herb that can grow up to 3 m. The rhizome from this species is commonly used in cooking as flavor among Kelantan community such as in ‘singgang ikan’ dish. The leaves can be used as one of the ingredients in a drink to treat diarrhoea [26]. The leaves also can be mixed with other herb such as *Pandanus amaryllifolius* to be used as postnatal treatment throughout confinement period [28]. *Amomum kepulaga* is known as ‘buah pelaga’ is commonly used as spice in cooking. The consumption of fruits can relieve nausea and mixture of fruit together with cloves can reduce the smoking addiction [28].

In addition, *Curcuma longa* or turmeric is called as ‘kunyit’ is quite famous in Melayu community not only in Kelantan as it commonly used as coloring and flavoring in dishes. The rhizome is commonly used for health benefits such as the mixture of rhizome with betel leaf and rice aids in stomachache treatment and stomach swellings [26]. Certain people consumed young rhizome in daily food intake to stay young. ‘Temulawak’ with the scientific name of *Curcuma xanthorrhiza* is used as one of the ingredients to produce ‘jamu’ or drink that good for health. It is reported that this species can be cure for yellow fever, hepatitis, stomach ulcers and act as anti-inflammatory antidote [33]. This species can aid to relieve discomfort in digestive system [33]. For cosmetic use, the extract from rhizome can heal the pimple by rubbing it on skin [26].

Moreover, there is a species from family Zingiberaceae are well-known for its unique smell named ‘pepijat’ or *Elettariopsis curtisii*. Most of the people in Kelantan called it as ‘pokok kesing’ as the plants can produce bad smell and word ‘kesing’ refers to stink bug [29]. There is a famous dish in Kelantan made from this species named ‘sambal pepijat’. This species can be used in postnatal treatment traditionally and the leaves are used to flavor fish dish [28].

Next, *Kaempferia galanga* locally known as ‘cekur’ usually taken by Kelantan people in their daily dietary intake. The small herb has height of 10 cm and the leaves and rhizome produce good and interesting aroma. This species is commonly used for traditional uses. The grind rhizome can reduce the swellings by applying it on skin meanwhile by chewing the raw leaves can cure the itchiness in the throat [29] and hypertension [29]. It also can treat the joint ache by applying the mixture of rhizome extract and rice on skin [28].

*Gastrochilus panduratum* with the local name ‘tepus sehelai setahun’ also can used for health benefit. The rhizome can be used to produce decoction drink for postnatal treatment specifically to increase physical recovery [26]. *Zingiber officinale* or ‘halia’ is belongs to genus *Zingiber* is commonly used in food intake because of its benefits in health. Adults in Kelantan accustomed to have drink containing

pounded ginger without sugar after having main dishes to improve digestive problems. It can be used to treat abdominal swellings by boiling rhizome with dried chillies and garlic [26]. Skin infection can be overcome by rubbing a piece of cloth containing grinded rhizome on the skin [26].

Finally, *Zingiber zerumbet* also known as 'lempong' has been used for medicinal purposes. It is commonly utilized in production of 'jamu' as the treatment for confinement ladies. It also can be alternative treatment for anemia by boiling the rhizome with tamarind and sugar and the decoction can be drink at night before sleep [29]. By rubbing leaves on skin can treat joint ache and hypertension can be reduced by eating the raw rhizome [28].

#### 4. Conclusion

This study reveals a list of ten ginger species that are commonly found in Kelantan along with the traditional uses. However, further studies need to be extended to natural forest areas as there are many ginger species remain unidentified and unreported in Kelantan. Field observation at different spatial points is necessary for further studies and description about the ginger species and their uses among locals in Kelantan, Peninsular Malaysia.

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