

# [The much distinction. thus, this study was carried](https://assignbuster.com/the-much-distinction-thus-this-study-was-carried/)

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TheGinger family or Zingiberaceae is very well known all over the world. Zingiberaceaehas about 50 genera and over 1600 species worldwide (Maarten et al.

, 2016). It is easily recognizableas a flowering plant with distinct aromas and rhizome roots. This perennialherb features simple blades of slightly thick, fleshy leaves on erectpseudostem usually green in colour. To locate members of Zingiberaceae family, one mustknow that the plant thrives warm and sunny areas with damp soil conditions.

Thus, as a tropical plant, it can be found primarily in regions along theequator with environments of adequate humidity and temperature. The plant is widely used as spices in cooking, herbal medicines, and cosmetics. The Indians and ancient Chinese have practicethe use of ginger root to treat various common ailments since olden times. Infact, ginger has been traded throughout history longer than most other spicesdue to its medicinal merits. Common uses of Zingiberaceae stated by Ibrahim etal. (2017) in the medicinal field include  relieving flatulence or stomach ache, post-natal healthcare, treatment for muscle sprains and joint pains anduniversal health drink.

Basically, the plant is used extensively in modernmedicine and pharmacology as well as traditional medicine. Although members of this family are commonly used invarious fields, it is quite difficult to recognize and differentiate betweenspecies of Zingiberaceae as they all bear multiple resemblance with each otherespecially without basic expertise and knowledge in taxonomy and gingermorphological description. For example, turmeric, common ginger and galangalare widely used in Malay delicacies but to the uninformed eyes, the rhizomes ofthese species look basically similar and the plants all have large green leaveswithout much distinction. Thus, this study was carried out to describe themorphological variation of Zingiberaceae and evaluate the distribution ofZingiberaceae family particularly in district of Kuantan, Pahang. This iscrucial for better understanding of Zingiberaceae distribution and goes hand inhand to the efforts for recognizing key identification features ofZingiberaceae family.          CHAPTERTWOLITERATUREREVIEW2.

1                ZINGIBERACEAE2. 2                ZingiberaceaefamilyZingiberaceaeis a well-known plant with roughly 50 genera and over 1600 species worldwide andabout less than a hundred species in Malaysia (Maarten et al., 2016). It is a family of flowering plants of aromaticperennial herbs with creeping horizontal or tuberous rhizomes distributedthroughout tropical Africa, Asia, and the Americas. Plants in Zingiberaceaefamily are herbaceous with distichous leaves that forms pseudostem. The plantsare usually terrestrial or epiphytic.

Flowers are hermaphroditic, usuallystrongly zygomorphic, in determinate cymose inflorescences, and subtended byconspicuous, spirally arranged bracts. The perianth is composed of two whorls, a fused tubular calyx, and a tubular corolla with one lobe larger than theother. Flowers typically have two of their stamenoids (sterile stamens) fusedto form a petaloid lip, and have only one fertile stamen.

The ovary is inferiorand topped by two nectaries, the stigma is funnel-shaped. The fruits arecapsular, fleshy or dry, dehiscent or indehiscent, sometimes berrylike. Seedmay be many or few, arilate, aril, often lobed or lacerate (Jatoi et al.

, 2007). Plants of theZingiberaceae family mainly reproduce asexually through underground rhizomes.  Kingdom         :           PlantaePhylum                        :           Tracheophyta Class                            :           Liliopsida Order                           :           ZingiberalesFamily                         :           Zingiberaceae Genus                          :           Zingiber Species                        :           officinale2. 2. 1          GENERAZingiberaceaeconsist of approximately 50 genus distributed worldwide but according toIbrahim et al. (2007) , only 18 genera have been recorded in PeninsularMalaysia . Below are morphological structure of some common and abundant generaof Zingiberaceae in Malaysia.

2. 2. 1. 1    AlpiniaALPINIARoxburghThegenus is easily distinguished by its terminal inflorescence on leafy shoot, which is emerging above its uppermost leaf sheath, rarely appearing lateral andif so then not densely congested and labellum large and showy (Julius et al., 2010). Rhizomes are creeping andthick. Pseudostems many, well developed and rarely absent.

Leaves are many, leafblade oblong or lanceolate. Inflorescence at terminal panicle, raceme, orspike, dense or lax. Calyx usually tubular. Corolla central lobe.

Ovary usually3-loculed and placentation axile. Stigma usually well expanded. Capsule usuallyglobose, dry or fleshy, indehiscent or irregularly dehiscent. Seeds numerous. (Delinet al., 2000).

2. 2. 1.

2    AmomumAMOMUMRoxburghAmomumis characterised by radical cone-like inflorescences without an involucre ofsterile bracts, sometimes stilted root (Julius et al., 2010). Rhizomes are widely creeping.

Pseudostems elongate. Leaf sheath long, leaf blade usually oblong-lanceolate, oblong, or linear. Inflorescence arising from rhizomes, a densely flowered spike or spikelikeraceme or panicle. Calyx usually tubular.

Corolla tube cylindric. Filament welldeveloped. Ovary 3-loculed; ovules many per locule, superposed. Style filiform; stigma usually funnelform, small, ciliate.

Seeds oblong or many angled. (Delin et al., 2000). 2. 2. 1.

3    EtlingeraETLINGERAGisekeEtlingerais characterised by an involucres of sterile bracts, a short or much elongated peduncle, tubular and elongated bracteoles, and distinct petal lobes, base of filamentand labellum (Julius et al., 2010).  Rhizomes are creeping. Pseudostems robust. Leaves petiolate, lanceolate, large. Inflorescence arisingfrom rhizomes.

Calyx tubular. Corolla tube equaling or longer than calyx. Lateral staminodes absent. Labellum tongue-shaped. Stamen shorter thanlabellum. Ovary 3-loculed; ovules numerous per locule. Capsule fleshy, indehiscent, smooth, longitudinally ridged, or with obtuse warts in rows. (Delinet al.

, 2000). 2. 2. 1. 4    ZingiberZINGIBERMillerZingiberis a monophyletic group which produces radical inflorescenceandcharacterised by having pulvinus petiole and anther crest wrapped around theexerted style (Julius et al.

, 2010). Rhizomesbranched, tuberous, aromatic. Pseudostems erect, leafy. Leaves distichous petioleswollen, leaf blade oblong, lanceolate, or linear. Inflorescences conical, arising from rhizomes on peduncle. Calyx tubular. Corolla tube slender. Filament short.

Ovary 3-loculed; placentation axile. Style slender, stigma notexpanded. Capsule dehiscent loculicidally or irregularly. Seeds black. (Delin et al., 2000). 2.

2. 2       Ecologyand HabitatZingiberaceaeare easily found in tropical and subtropical regions, primarily in tropical Asiawhich posses moist and hot climate as well as large variety of habitats that probablyfavored the development and differentiation of these plants. (Jatoi et a. l, 2007). They not only compromisea prominent fraction of the undergrowth of tropical rain and monsoon forest butare also sometimes found in secondary forest.

2. 2. 3       GeographicaldistributionMalaysiais among one of the countries with the greatest number of Zingiberaceae speciesin South East Asia besides Thailand. Of 60% of tropical rainforest coveringMalaysia, over 320 species of 21 genera of Zingiberaceae have been discoveredas stated by Ibrahim et al. (2007) albeit there are disputes to the exactnumber of genera of Zingiberaceae found in Malaysia due to the persistentprocess of evolution of the plant.   2. 2. 4       UsesTheZingiberaceae species have long been exploited for a wide range of uses andhave been part of the Asian culture for centuries.

In Malaysia, plants ofZingiberaceae family are used as flavoring, spices, vegetables, medicine andreligious practices. Recently, cultivated gingers are utilized forpharmaceutical and cosmeceutical field. (Ibrahim et al., 2007). Almost a fifth of the Peninsular Malaysian gingersare consumable and eaten fresh or cooked. Almost all parts of the plants can beeaten which includes mainly rhizomes but also fruits, seeds, young shoots andflower. (Ibrahim et al.

, 2007). Somespecies of Zingiberaceae are also used in post-natal healthcare and post-partummedicine as it is believed to  be able tohelp the process of internal healing in confinement period of new mothers             Kumar et al. (2013) stated  that the plants are characterized by thepresence of valuable volatile oils. Almost all of Zingiberaceae species havearomatic rhizome and fruit which can act as tonics and stimulants. The plantsalso can be processed into astringent and diaphoretic juice as utilized in Ayurvedicmedicine.

More recent studies into pharmacological potentialof Zingiberaceae revealed anti-cancer and anti-microbial properties obtainedfrom ginger extracts  as revealed byWohlmuth (2008)  which is a spectacularfinding in the ultimate search for the cure to cancer. 2. 3       Recentcollection and checklist (Malaysia, Pahang and Kuantan)Thereare approximately 160 species of Zingiberaceae belonging to 18generain Peninsular Malaysia as mentioned by Ibrahim et al.

(2007) as described in Table2. 1