Indonesian Journal of Advanced Research (IJAR)
Vol. 4, No. 5, 2025: 421-438

The Diversity of Medicinal Plants Planted as Ornamental and Shade Plants

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A R T I C L E I N F O

Keywords: Diversity, Diversity Index, Medicinal Plants

Received : 3, April
Revised : 17, April
Accepted: 19, May

A B S T R A C T

This study aimed to identify the diversity of medicinal plants planted as ornamental and shade plants and to determine the plant diversity index on the campus of Universitas Mahasaraswati (UNMAS) Denpasar. Data were collected using an exploration survey and data collection techniques using the cruising technique. The results documented 154 species, 122 genera spread across 54 families. The largest families are Araceae (21), followed by Asparagaceae (12) and Acanthaceae (8). As many as 146 species (94.8%) of 154 species were found to be medicinal plants. The largest species was dominated by Hymenocallis littoralis (Jacq.) Salisb. The shrub level category was the highest (64), followed by herbs (57) and trees (33). The diversity index value of H' = 5.622, which is included in the high category. The diversity index values at each level include shrubs = 3.52 (high), herbs = 3.383 (high), and trees = 2.759 (medium).

DOI prefix: https://doi.org/10.55927/ijar.v4i5.14336
ISSN-E: 2986-0768
https://journal.formosapublisher.org/index.php/ijar

INTRODUCTION

Biodiversity is the diversity of living things on Earth including flora, fauna, and microorganisms (Abidin et al., 2020). According to Odum (1993), there are two components of species diversity, namely species richness and evenness. Species richness is the number of species in a community. Species richness can be calculated by the species or area index, namely the number of species per unit area. Evenness or adequacy is the even distribution of individuals among species. Species richness and evenness are important components of biodiversity. Species richness indicates the diversity of life, while species evenness indicates the balance of the ecosystem. In general, the role of vegetation in an ecosystem is maintaining the balance of carbon dioxide and oxygen concentration in the air, improving the physical, chemical and biological properties of soil, regulating groundwater systems and other beneficial roles (Basrowi et al., 2018)

Indonesia has high flora diversity. It is ranked seventh largest in the world with the number of species reaching 20,000 species and 40% of which are endemic plants to Indonesia (Kusmana and Hikmat, 2015). Indonesia as a tropical country, has abundant types of biodiversity compared to non-tropical regions. Biodiversity varies according to each region, and each region shows its own characteristics (Suwarso et al., 2019). Indonesia is one of the countries with immense biodiversity, one of which is the diversity of medicinal plants whose potential is huge in Indonesia. Based on total data on medicinal plants worldwide, Indonesia contributes 90% of medicinal plants in the Asian region (Widaryanto & Azizah, 2018).

Medicinal plants are plants whose organs are believed to be used as medicine and to cure diseases. Stems, leaves, roots and flowers are parts of plant organs that can be used as medicine (Lestari et al., 2021). Since ancient times, medicinal plants in Indonesia have been used as solutions to health problems, which shows that nature, especially medicinal plants, plays a role in public health efforts (Susanti et al., 2018). The practice of using medicinal plants in traditional Balinese medicine is based on beliefs and knowledge systems (Arsana, 2019).

Since ancient times, traditional medicine has been well-known and popular among Balinese people in everyday life. Most medicinal plants are obtained from forests (Nasution et al., 2018; Rahman, 2019). Most medicinal plants are obtained from the wild, and only 3.63% are intentionally planted (Ratnani et al., 2022). Domestication efforts of medicinal plants are important because only a few studies on medicinal plants have found them to be planted as ornamental plants. Ornamental plants have a primary function as decoration, namely plants that provide beauty or aesthetic value, which are included in the non-food horticulture group. Ornamental plants are usually planted to beautify a place or area, including a campus.

The Campus is the area surrounding the main building of a higher education institution where all teaching and learning activities and administration take place (KBBI). A Campus is a place or location that is the centre of higher education activities, a place for the academic community (academic community) consisting of lecturers, students, and supporting staff. Universitas Mahasaraswati Denpasar, also known as UNMAS Denpasar, is one

of the Private College in the LLDIKTI Region VIII environment, under the management of the Saraswati People's Education Foundation, Based in Denpasar. Universitas Mahasaraswati Denpasar is currently located on Jalan Kamboja Denpasar.

The existence of diverse flora has various functions that can make the campus environment cleaner, greener, and fresher. Plant diversity planted can absorb pollutants and dust, improving the air quality around the campus, and providing a cool feeling by creating a shady green area. In addition, it can also be used as a learning medium for students. So far, there have been several known global extinctions, and many species have not been recorded and may be extinct (Corlett, 2016).

Therefore, the diversity of flora in Indonesia must be protected and preserved so that it can be utilized by the community for future interests (Widia, 2018). For this reason, efforts to explore and preserve the diversity of plant species are significant. This study aimed to identify the diversity of medicinal plants planted as ornamental and shade plants and to determine the plant diversity index on the campus of Universitas Mahasaraswati (UNMAS) Denpasar. Plant biodiversity and green open spaces are a means for the academic community to learn about plant diversity and make it a learning medium so that awareness grows to preserve it.

LITERATURE REVIEW

Flora diversity is the diversity or variation of plant species in a particular region or ecosystem, including variations in shape, structure, color, and other characteristics.

There are two components of species diversity: species richness and evenness. Species richness is the number of species in a community, calculated by the species or area index, namely the number of species per unit area. Evenness or adequacy is the even distribution of individuals among species. Species richness and evenness are essential components of biodiversity. Species richness indicates the diversity of life, while species evenness indicates the balance of the ecosystem.

METHODOLOGY

Study Area

This research was conducted from January to March 2025. The research sites were located in the Universitas Mahasaraswati Denpasar Campus Environment. This research used an exploration survey method, namely observations were made directly at the research location. The data were collected using a cruising technique, by exploring each location of one area where there is plant vegetation. Data collection was carried out throughout the Universitas Mahasaraswati Denpasar area.

Documentation

The collected specimens were then photographed, the local name, scientific name of the species, stature, and ethnicity were recorded (Rugayah et al., 2004). All plant samples obtained from the research location had been

identified, so it was done by matching them with the candra in the flora book and images on the plantNet. The scientific name was validated using an online database on the Integrated Taxonomic Information System website through http://www.theplantlist.org and https://plantamor.com.

Data Analysis

The data obtained were analyzed descriptively and quantitatively. Furthermore, the process of plant identification was analyzed by describing the characteristics of the plants found and quantitative analysis to calculate plant diversity using the Shannon-Wienner diversity index formula as follows:

$$H' = -\sum(pi \ln pi)$$

Where
pi = ni/N
H'= Diversity Index
Ni= Number of individuals in one species
N = Total number of individuals of the species found
Ln= Natural logarithm

Table 1. Interpretation of Shannon-Wiener diversity index values

Index Values	Category
H' > 3	High
1 ≤ H' ≤ 3	Moderate
H' < 1	Low

(Rozak, 2020).

RESULTS AND DISCUSSION

Plant Diversity

The results documented a total of 154 species, 122 genera were obtained, spread across 54 families. The largest families were Araceae (21), followed by Asparagaceae (12) and Acanthaceae (8). As many as 146 species (94.8%) of 154 species were found to be medicinal plants. At the same time, the other eight species are plants that have benefits as air purifiers. The largest species is dominated by Hymenocallis littoralis (Jacq.) Salisb. (144). Plant families and a number of species are presented in Table 2. This finding is higher than the 127 species of medicinal plants on the IPB campus (Mustari, 2022), 150 plants planted at UIN Walisongo (Kusumarini et al., 2022), 69 medicinal plants in North Kluet (Antika et al., 2024), and 124 species of medicinal plants in Bugbug Village (Ratnani & Junitha, 2025).

Table 2. The Diversity of Plants at Unmas Campus

Familiy/Scientific Name	Vernacular Name	Life form	Diversity index				Benefits
			∑	Pi	Ln pi	pilnpi	
Acanthaceae							
Araucaria heterophylla (Salisb.) Franco	cemara natal	T	10	0,0036	-5,622	0,02	cough, bronchitis, worms
Asystasia gangetica (L.) T.Anderson	padang israel	S	34	0,0123	-4,398	0,069	anthelmintic, antidiabetic astrigent, anti-inflammatory.
Crossandra infundibuliformis (L.) Nees	crossandra	S	2	0,0007	-7,231	0,004	fever, headache, aperitif, wound
Justicia pectoralis (Jacq.) J.F.Gmel.	willow	S	41	0,0148	-4,211	0,083	cough, bronchitis, asthma, dysmenorrhea, antidiabetic
Graptophyllum pictum (L.) Griff.	don temen	S	1	0,0004	-7,924	0,002	hemorrhoids, kidney disease, antidiabetic
Pseuderanthemum maculatum (G.Lodd.) I.M.Turner	melati jepang	S	4	0,0014	-6,538	0,008	dengue fever, cold
Ruellia simplex C.Wright	krepetan	S	52	0,0188	-3,973	0,106	diuretic, antipiretik, antidiabetic
Thunbergia grandiflora Roxb.	ponggang	H	6	0,0022	-6,133	0,012	dysentery, cataract, fraktur, snake bite wound, itchy
Amaryllidaceae							
Hymenocallis littoralis (Jacq.) Salisb.	bakung	H	144	0,0521	-2,955	0,293	wound, toothache, pharyngitis
Anacardiaceae							
Spondias dulcis Parkinson	kedondong	T	1	0,0004	-7,924	0,002	cough, atherosclerosis, anemia
Annonaceae							
Annona muricata L.	srikaya	S	1	0,0004	-7,924	0,002	gout, insomnia
Annona squamosa L.	silik	S	3	0,0011	-6,826	0,006	gout
Cananga odorata var.fruticosa	sandat	S	54	0,0195	-3,935	0,11	eczema, hypertension, antiinflammatory
Apocynaceae							
Adenium obesum (Forssk) Roem & Schult.	jepun jepang	T	10	0,0036	-5,622	0,02	wound, antibiotic, yaws
Calotropis igantea (L)W.T.Aiton	medori	S	1	0,0004	-7,924	0,002	wound, toothache, fever
Catharanthus roseus (L.) G.Don	tapak dara	S	5	0,0018	-6,315	0,01	dermatosis, antidiabetic cancer

Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult	tulud nyuh	S	76	0,0275	-3,594	0,155	cough, wound, fever, fracture, headache
Plumeria alba L.	jepun	T	29	0,0105	-4,557	0,059	headache, antibiotic, toothache
Plumeria rubra L.	jepun	T	40	0,0145	-4,236	0,081	headache, antibiotic, toothache
Araceae							
Aglaonema commutatum Schott	sri rejeki	H	7	0,0025	-5,979	0,014	dermatosis
Aglaonema nitidum(Jack) Kunth	sri rejeki	H	3	0,0011	-6,826	0,006	edema, fever
Alocasia macrorrhizos (L.) G.Don	bira	H	1	0,0004	-7,924	0,002	rheumatism, cancer
Alocasia cucullata (Lour.) G.Don	keladi bikul	H	24	0,0087	-4,746	0,049	cancer, antiinflammatory, antibacterial.
Anthurium clarinervium Matuda	kuping gajah	H	21	0,0076	-4,88	0,043	kidney disease, antidiabetic, edema
Anthurium hookeri Kunth	gelombang cinta	H	2	0,0007	-7,231	0,004	kidney disease, antidiabetic, edema
Anthurium schlechtendalii Kunth	ekor burung pegar	H	1	0,0004	-7,924	0,002	sprain, rheumatism, arthritis
Caladium bicolor (Aiton) Vent.	keladi tisu	H	35	0,0127	-4,369	0,071	antibacterial, allergies, cough
Dieffenbachia oerstedii (Schott)	don bagia	H	4	0,0014	-6,538	0,008	antibacterial, cough
Dieffenbachia seguine (Jacq) Schott	sri rejeki	H	50	0,0181	-4,012	0,102	ithchy
Dieffenbachia tonduzii Croat & Grayum	sri rejeki	H	2	0,0007	-7,231	0,004	antibiotic
Epipremnum aureum (Linden& ndré).S.Bunting	sirih gading	H	8	0,0029	-5,845	0,016	cough, tonic
Epipremnum pinnatum (L.) Engl.	ikuh naga	H	3	0,0011	-6,826	0,006	rheumatism, cough cancer, hypertension, fracture
Philodendron bipinnatifidum Schott ex Endl.	philo	H	7	0,0025	-5,979	0,014	air purification
Philodendron burlemarxii G.M.Barroso	pilo brekele	H	17	0,0062	-5,091	0,035	air purification
Philodendron martianum Engl.	philo katak	H	2	0,0007	-7,231	0,004	headache
Monstera adansonii Schott	monstera	H	17	0,0062	-5,091	0,035	air purification

Spathiphyllum floribundum Schott	lili kuning	H	5	0,0018	-6,315	0,01	air purification
Syngonium podophyllum Schott	syngonium	H	5	0,0018	-6,315	0,01	dermatosis, stomachache
Syngonium auritum (L.) Schott	syngonium	H	88	0,0318	-3,447	0,179	dermatosis, stomachache
Zamioculcas zamiifolia (G.Lodd.) Engl.	don dollar	H	21	0,0076	-4,88	0,043	wound, arthritis, dermatosis
Araliaceae							
Osmoxylon lineare (Merr.) Philipson	ararea	S	29	0,0105	-4,557	0,059	wound, diarrhea
Polyscias balfouriana (André) L.H.Bailey	mangkokan kecil	S	33	0,0119	-4,428	0,067	anti-bacterial, cancer
Polyscias scutellaria (Burm.f.) Fosberg	mangkokan	S	25	0,009	-4,706	0,051	anti-bacterial, cancer
Polyscias fruticosa (L.) Harms.	kedondong laut	H	3	0,0011	-6,826	0,006	hemorrhoids, antihistamines antiinflammatory, cancer
Schefflera grandiflora (A.C.Sm.) Frodin	kayu tulak	S	2	0,0007	-7,231	0,004	chicken pox, diarrhea, hypertension
Arecaceae							
Adonidia merrillii (Becc.)Becc.	palm putri	T	18	0,0065	-5,034	0,037	wound, antioksidant, cancer, antivirus
Cocos nucifera var. eburnea	nyuh gading	T	10	0,0036	-5,622	0,02	stomatitis, cough
Dypsis lutescens (H.Wendl.) Beentje & J.Dransf.	palem kuning	T	55	0,0199	-3,917	0,112	antioksidant, cancer,
Wodyetia bifurcata	palem	T	20	0,0072	-4,929	0,041	hepatoprotektif, antifungal, antibacterial, cancer
Ptychosperma macarthurii (H.Wendl. ex H.J.Veitch)	palem jepang	T	9	0,0033	-5,727	0,018	air purification
Rhapis excelsa (Thunb.) A.Henry	bregu	T	42	0,0152	-4,187	0,085	antiinflamatory, anti mutagenic, anti mikroba, analgesic
Asphodelaceae							
Aloe vera (L.) Burm.f.	lidah buaya	H	8	0,0029	-5,845	0,016	burn, antidiabetic, gerd frostbite
Aspleniaceae							

Asplenium nidus L.	paku sarang burung	H	21	0,0076	-4,88	0,043	sprain, dysentery, cancer
Asparagaceae.							
Arthropodium cirrhatum (G. Forst.) R. Br.	rock-lily	H	13	0,0047	-5,359	0,026	boil, edema
Chlorophytum capense (L.) Voss	kanjut kuda	H	16	0,0058	-5,152	0,033	bronchitis, fractures, burns. therapeutic
Chlorophytum comosum (Thunb.) Jacques	lili paris	H	15	0,0054	-5,216	0,031	antiinflamatory
Cordyline fruticosa (L.) A.Chev.	andong barak	S	77	0,0279	-3,581	0,157	tuberculosis, dysentery, hemorrhoids
Dracaena fragrans (L.) Ker Gawl.	sri gading	S	10	0,0036	-5,622	0,02	air purification
Dracaena reflexa Lam.	bambu rejeki	S	11	0,004	-5,527	0,022	hemoptysis, toothache cancer
Dracaena draco L	punyan naga	T	10	0,0036	-5,622	0,02	diarrhea, dysentery
Dracaena marginata var. tricolor	tricolor	H	3	0,0011	-6,826	0,006	air purification
Dracaena stuckyi (God.-Leb.) Byng & Christenh.	gading gajah	H	18	0,0065	-5,034	0,037	
Dracaena trifasciata (Prain) Mabb.	lidah mertua	H	111	0,0402	-3,215	0,226	cough, bronchitis, antidiabetic, dermatitis
Furcraea foetida (L.) Haw.	lidah naga	S	11	0,004	-5,527	0,022	rheumatism, syphilis, back pain
Yucca aloifolia L	bayonet spanyol	S	6	0,0022	-6,133	0,012	colitis, osteoarthritis, hypertension, headache
Asteraceae							
Chrysanthemum × morifolium (Ramat.) Hemsl.	seroni	S	9	0,0033	-5,727	0,018	fever, hypertension, osteoporosis
Bignoniaceae							
Podranea ricasoliana (Tanfani) Sprague	cekomaria	H	15	0,0054	-5,216	0,031	fever, headaches, stomach ache.
Spathodea campanulata P.Beauv.	kembang kecrutan	T	1	0,0004	-7,924	0,002	malaria, antidiabetic, kidney disease
Bromeliaceae							
Nidularium fulgens Lem.	bromelia	H	27	0,0098	-4,629	0,055	worm
Cactaceae							
Careus hildmannianus K.Schum.	dui belatung	S	8	0,0029	-5,845	0,016	antidiabetic, cancer

Careus hexagonus (L.) Mill.	dui belatung lengis	S	8	0,0029	-5,845	0,016	antidiabetic, cancer
Opuntia cochenillifera (L.) Mill.	dui belatung	S	5	0,0018	-6,315	0,01	rheumatism, diarrhea, toothache, antidiabetic, cancer
Canellaceae							
Warburgia ugandensis Sprague	warburgia	T	2	0,0007	-7,231	0,004	diarrhea, toothache, malaria, jaundice
Caricaceae							
Carica papaya L.	gedang	H	3	0,0011	-6,826	0,006	antidengue, anticancer, antidiabetic, neuroprotective, anti-inflammatory
Cnidoscolus aconitifolius (Mill.) I.M.Johnst.	gedang jepang	S	23	0,0083	-4,789	0,047	constipation, anemia, hypertension, antidiabetic
Combretaceae							
Terminalia catappa L.	ketapang	T	3	0,0011	-6,826	0,006	dermatosis, hepatitis, antidiabetic, osteoarthritis
Commelinaceae.							
Callisia repens (Jacq.) L.	pucuk ungu	S	3	0,0011	-6,826	0,006	antiinflamatory, cough, antimikroba
Tradescantia spathacea Sw.	manas kerang	H	28	0,0101	-4,592	0,057	cough, diarrhea, bronchitis
Costaceae							
Costus spiralis (Jacq) Roscoe	temu tiying	H	5	0,0018	-6,315	0,01	muscle spasms, antifertilitas
Hellenia speciosa (J.Koenig) S.R.Dutta	pacing	H	6	0,0022	-6,133	0,012	asthma, wound, kidney disease, liver, afrodisiak.
Crassulaceae							
Kalanchoe daigremontiana Raym-Hamet & H.Perrier	cocor bebek	H	1	0,0004	-7,924	0,002	cough, asthma, fever, dyspepsia, antidiabetic
Cupressaceae							
Juniperus chinensis L.	cemara	T	10	0,0036	-5,622	0,02	antidiabetic, dermatitis
Euphorbiaceae							
Acalypha siamensis Oliv. Ex Gage	teh-tehan	S	83	0,03	-3,506	0,169	fever, diuretic, kidney disease
Codiaeum variegatum (L.) Rumph. Ex A.Juss.	kayu mas	S	59	0,0213	-3,847	0,12	diarrhea, fever, sifilis
Euphorbia milii Des Moul.	pakis giwang	S	10	0,0036	-5,622	0,02	antioksidan, antibacterial, imunomodulator.

Excoecaria cochinchinensis Lour.	sambang darah	S	58	0,021	-3,864	0,118	itchy, bleeding, dysentery,
Jatropha multifida L.	jarak tintir	S	3	0,0011	-6,826	0,006	wound, colic,
Pedilanthus tithymaloides (L.) Poit.	zigzag	S	101	0,0365	-3,309	0,205	antiinflamatory, hemostatic, fracture
Fabaceae							
Caesalpinia pulcerrima	merak	S	3	0,0011	-6,826	0,006	itchy, cough
Leucaena leucocephala (Lam.) de Wit	lamtoro	S	5	0,0018	-6,315	0,01	antidiabetic, constipation, worms, kidney disease, fracture
Senna surattensis (Burm.f.) H.S.Irwin & Barneby	kembang kuning	S	3	0,0011	-6,826	0,006	constipation, hemorrhoids, varicose vein
Heliconiaceae							
Heliconia psittacorum L.f.	pisang-pisangan	H	52	0,0188	-3,973	0,106	stomachache
Iridaceae							
Trimezia martinicensis (Jacq) Herb	iris kuning	H	5	0,0018	-6,315	0,01	wound, sprain, back pain
Lamiaceae							
Coleus scutellarioides (L.) Benth.	miana	H	5	0,0018	-6,315	0,01	konjungtivitis, cough, stomatitis, asthma, hemorrhoids
Orthosiphon aristatus	kumis kucing	H	4	0,0014	-6,538	0,008	nephrolithiasis, gout
Vitex trifolia L.	liligundi	S	3	0,0011	-6,826	0,006	lumbago
Lythraceae							
Cuphea hyssopifolia Kunth	taiwan beauty	S	122	0,0441	-3,12	0,248	cough, dermatitis, sprain, rheumatism
Magnoliaceae							
Michelia champaca L.	cempaka	T	1	0,0004	-7,924	0,002	stomatitis, bronchitis, leocorrhea, prostatitis, fever
Malvaceae							
Durio zibethinus L.	duren	T	1	0,0004	-7,924	0,002	fever, wound, jaundice, malaria
Pachira glabra Pasq	pachira	T	5	0,0018	-6,315	0,01	cardiovascular disease, hypertension
Hibiscus fragilis DC.	pucuk	S	21	0,0076	-4,88	0,043	fever, stomatitis, urinary tract infection, antidiabetic
Hibiscus rosa-sinensis L.	pucuk bang	S	25	0,009	-4,706	0,051	fever, stomatitis, urinary tract infection, antidiabetic
Melastomaceae							
Medinilla magnifica Lindl.	parijata	S	1	0,0004	-7,924	0,002	hiperlipidemia, antidiabetic insomnia, stomatitis, diarrhea
Marantaceae							

Calathea lutea (Aubl.) E.Mey. ex Schult.	kalatea pisang	S	6	0,0022	-6,133	0,012	antibacterial
Goeppertia picturata (K.Koch & Linden) Borchs. & S.Suárez	meranti irut	S	17	0,0062	-5,091	0,035	air purification
Moraceae							
Ficus lyrata Hance	ketapang biola	T	7	0,0025	-5,979	0,014	asthma, cough, colic, pharyngitis
Ficus elastica Roxb. ex Hornem.	karet kebo	T	3	0,0011	-6,826	0,006	hypertension, stroke, arthritis, diarrhea, rheumatism
Myrtaceae							
Eugenia brasiliensis Lam.	eugenia	S	2	0,0007	-7,231	0,004	toothache, hypertension
Psidium guajava L.	nyambu sotong	T	1	0,0004	-7,924	0,002	diarrhea, cough, antidiabetic, dengue fever
Syzygium paniculatum Gaertn	pucuk merah	T	58	0,021	-3,864	0,118	antidiabetic, stomachache, irritable bowel syndrome
Syzygium malaccense (L.) Merr. & L.M.Perry	nyambu bol	T	6	0,0022	-6,133	0,012	inflammatory, stomatitis, antidiabetic, diarrhea
Syzygium samarangense (Blume) Merr	nyambu er	T	1	0,0004	-7,924	0,002	antidiabetic, diarrhea, antihiperglikemik, cancer
Nyctaginaceae							
Bougainvillea spectabilis Willd.	bunga kertas	S	22	0,008	-4,833	0,045	wound, diarrhea, cough, fever, toothache
Ochnaceae							
Ochna integerrima (Lour.) Merr.	buah ajaib	S	1	0,0004	-7,924	0,002	tuberculosis, cough, antidiabetic, cancer, asthma epilepsy, hypertension,
Orchidaceae							
Cattleya warscewiczii Rchb.f.	anggrek catelya	H	28	0,0101	-4,592	0,057	fever, burn
Dendrobium nobile Lindl.	anggrek citra	H	4	0,0014	-6,538	0,008	fever, burn
Oncidium sphacelatum Lindl.	anggrek golden shower	H	3	0,0011	-6,826	0,006	fever, headache, and digestive issues.
Phalaenopsis amabilis (L.) Blume	anggrek bulan	H	20	0,0072	-4,929	0,041	headache, backache, chest pain,

Phalaenopsis × singuliflora J.J.Sm.	anggrek ngengat	H	3	0,0011	-6,826	0,006	alergies, asthma, dysentery
Oleaceae							
Jasminum sambac (L.) Aiton	melati	S	3	0,0011	-6,826	0,006	diarrhea, antidiabetic, cardiovascular disease
Ligustrum japonicum Thunb.	privet jepang	S	1	0,0004	-7,924	0,002	antibiotic, inflammatory
Oxalidaceae							
Averrhoa carambola L.	belimbing besi	T	1	0,0004	-7,924	0,002	cough, fever, dyspepsia
Averrhoa bilimbi L.	belimbing buluh	T	1	0,0004	-7,924	0,002	cough
Petiveriaceae							
Rivina humilis L.	getih-getihan	S	53	0,0192	-3,954	0,108	wound, diarrhea, gonorhoe, jaundice
Piperaceae							
Piper betle L.	base	H	2	0,0007	-7,231	0,004	vertigo, nausea, fever, deoxygenated blood, epistaxis, dyspepsia, asthma, smallpox, dysuria, wound, tumor
Phyllathaceae							
Antidesma bunius (L.) Spreng.	boni	T	1	0,0004	-7,924	0,002	wound, anemia, syphilis, cardiovascular disease, antidiabetic
Breynia androgyna (L.) Chakrab. &N.PBalakr.	don kayu manis	S	13	0,0047	-5,359	0,026	anemia, wound, diabetes mellitus, osteoporosis
Breynia disticha J.R.Forst.& G.Forst.	ambal	S	10	0,0036	-5,622	0,02	jaundice, fever, dermatitis
Poaceae							
Bambusa vulgaris Schrad	tiying gading	H	3	0,0011	-6,826	0,006	liver
Imperata cylindrica L.	ambengan	H	33	0,0119	-4,428	0,067	leprosy, kidney disease, wound, dyspepsia, cancer
Pseudosasa japonica (Siebold & Zucc. ex Steud.) Makino ex Nakai	tiying jepang	S	20	0,0072	-4,929	0,041	anthelmintic, asthma, coughs, gallbladder disorders, ophthalmia, toothache
Polypodiaceae							
Nephrolepis cordifolia (L.) C.Presl	paku pipid	H	15	0,0054	-5,216	0,031	dyspepsia, cough, amnesia, chest congestion, anorexia, rheumatism
Phymatosorus scolopendria	paku wangi	H	12	0,0043	-5,44	0,024	wounds, boils, abscesses, headache,

(Burm.f.) Pic.Serm.							filariasis, diarrhea, arthritis
Platycerium bifurcatum (Cav,) C.Chr	simbar menjangan	H	43	0,0156	-4,163	0,087	ulcers, coughs, hypertension
Rosaceae							
Rhaphiolepis umbellata (Thunb.)	sakura jepang	S	23	0,0083	-4,789	0,047	antiinflamatory, antioksidant, astringent
Rosa indica L.	mawar	S	3	0,0011	-6,826	0,006	infections, inflammation, constipation, premenstrual syndrome, dermatosis, headache, konjungtivitis
Rubiaceae							
Gardenia jasminoides J.Ellis	jempiring	S	26	0,0094	-4,666	0,053	toothache, stomatitis, constipation, antidiabetic
Ixora chinensis L.	soka jepang	S	8	0,0029	-5,845	0,016	headache, stomachache, wound, hypertension, tuberculosis, hemorrhage, amenorrhea, diarrhea
Ixora coccinea L.	soka	S	26	0,0094	-4,666	0,053	wound, tuberculosis, menorrhagia, dysentery, hemorrhoids
Morinda citrifolia L.	tibah	S	1	0,0004	-7,924	0,002	anthelminthic, antidiabetic, gastritis, skin diseases, respiratory infections, menstrual, urinary tract disorders, fever, venereal diseases
Rutaceae							
Citrus× amblycarpa (Hassk.) Ochse	limo	T	1	0,0004	-7,924	0,002	antidiabetic, antiinflamatory, kidney disease, cancer
Citrus× aurantiifolia (Christm.) Swingle	juuk lengis	T	3	0,0011	-6,826	0,006	dyspepsia, arthritis, cough, liver, menstrual disorders, bladder calculi, rheumatism
Sapindaceae							
Dimocarpus longan Lour.	kelengkeng	T	2	0,0007	-7,231	0,004	amnesia, anemia, cancer, insomnia,

							neural pain, parkinson, osteoporosis
Sapotaceae							
Manilkara kauki (L.) Dubard	sawo kecik	T	2	0,0007	-7,231	0,004	diarrhea, fever, anthelmintic, antileprotik
Manilkara zapota (L.) P.Royen	saba	T	3	0,0011	-6,826	0,006	antidiabetic, fever, diarrhea, hepatoprotektor
Solanaceae							
Capsicum annuum L	tabia	S	1	0,0004	-7,924	0,002	toothache, boil, fever, fibromyalgia, osteoarthritis, shingles, rheumatoid arthritis
Capsicum frutescens L.	tabia	S	2	0,0007	-7,231	0,004	toothache antidiabetic, fever, wound, psoriasis, antihistamine, rheumatism
Urticaceae							
Pilea nummulariifolia (Sw.) Wedd.	pilea	S	4	0,0014	-6,538	0,008	diuretic, anti-inflammatory
Verbenaceae							
Duranta erecta L.	sinyo nakal	S	32	0,0116	-4,459	0,065	fever,itchy, infertility, intestinal worms, kidney stone, pneumonia, malaria
Lantana montevidensis (Spreng.) Briq.	lantana merayap	S	39	0,0141	-4,261	0,079	bleeding, itchy, fever, cancer, respiratory infections, rheumatism
Vitaceae							
Leea indica (Burm.f.) Merr.	girang	S	18	0,0065	-5,034	0,037	asthma, wounds, headache, dermatosis, fever, sprain, dysentery, arthralgia, antidiabetic, fracture, rheumatism
Zingiberaceae							
Elettaria cardamomum (L.) Maton	kapulaga	H	21	0,0076	-4,88	0,043	bronchitis, cancer, cough, rheumatism, nauseous, alzheimer, antiemetic
Alpinia galanga (L) Willd	isen	H	3	0,0011	-6,826	0,006	cough, menstrual disorders, stomachache, rheumatism

Zingiber zerumbet (L) Roscoe ex Sm.	gamongan	H	18	0,0065	-5,034	0,037	anti-inflammatory, fever, chicken pox, smallpox,gastritis, lumbago

Where: H=herbs; S=shrubs; T=tree

Classification by Family

Most of the Araceae family of herbs, including Syngonium auritum, Dieffenbachia seguine, Caladium bicolor, Alocasia cucullata, Anthurium clarinervium Matuda, Zamioculcas zamiifolia. The Asparagaceae family is a beautiful leafy ornamental plant. Members of the Asparagaceae family include Dracaena trifasciata, Dracaena fragrans, Cordyline fruticose, Chlorophytum capense. Meanwhile, the Acanthaceae family is a beautiful flowering shrub plant, namely Asystasia gangetica, Crossandra infundibuliformis, Justicia pectoralis, Pseuderanthemum maculatum, Ruellia simplex, Thunbergia grandiflora.

Classification Based on Plant Life Forms

Based on the life forms of plants found on the UNMAS Denpasar Campus, they vary from herbaceous, shrub and tree habitus. Grouping plants based on their stature was the first grouping carried out by experts at the beginning of the development of botany (Tjitrosoedirdjo & Chikmawati, 2014). The shrub level category is the highest (64 = 41.55%), followed by herbs (57 = 37.01%) and trees (33 = 21.42%). Ornamental shrubs planted in the UNMAS campus environment consist of beautiful flowering plants such as Michelia champaca, Plumeria rubra, Chrysanthemum × morifolium. In contrast, beautiful leafy plants include Excoecaria cochinchinensis, Calathea lutea, and Cordyline fruticosa. Shrubs are often chosen as ornamental plants because they are easy to care for. Most herbaceous plants are ornamental plants with beautiful leaves and flowers. Ornamental plants in the form of trees function as shade plants planted around campus buildings. Shade trees are very important on campus because they can reduce the light intensity due to the hot weather in Denpasar.

Diversity Index Value

The diversity index value at each of the life forms of plant level includes shrubs in the high category, namely 3.52, herbs in the high category (3.383), and trees in the medium category (2.759). The largest species was dominated by Hymenocallis littoralis (Jacq.) Salisb. (144) with a diversity index value of 0.293. Meanwhile, the overall diversity index is 5.622, including the high category. This finding is higher than the diversity index on the Gorontalo State University Bone Bolango campus, namely 3.11 (Mokodompit et al., 2022). If H'>3, then the diversity index is high, in line with what Fachrul (2007) stated. This is caused by a community with more than one species where productivity is high, and ecosystem conditions are good. The high or low diversity index of a plant community's depends on the number of species and species richness or the number of individuals of each species. According to Indriyanto (2006), species diversity can be used to explain community structure.

Species diversity can also be used to measure community stability, namely the ability of a community to maintain stability despite a disturbance to its components. The overall diversity index of plants on the campus of UNMAS Denpasar has a value of 5,622 (Table 1). This value indicates that the number of species among the individuals is high. The high or low value of the diversity index of a species is influenced by the number of species and the number of individuals identified. According to Destaranti et al. (2017), the more species found, the higher the diversity index value, and the higher the diversity value, the more stable the community.

The diversity index value for plants on the campus of UNMAS Denpasar is categorized as high, with a value of H'= 5.622. This shows that the level of plant diversity on the campus of UNMAS Denpasar is still very good, as evidenced by the number of very diverse species found and the number of individuals of each species, which varies greatly. The higher the diversity value of an area, the more stable the community (Wirakusumah, 2003).

Implications and Potential

Plants in the campus environment of UNMAS Denpasar that have been identified and appropriately inventoried have enormous potential. When a plant is correctly identified and given a scientific name, it has the potential to open the door to much information about every plant on earth (Rifai, 1973). Both written and online literature searches can describe the various disciplines humans have discovered related to the plant. As many as 94.8% of medicinal plant species are found in the UNMAS Denpasar campus environment. This finding is expected to support the supporting facilities of the UNMAS campus as a learning medium (biopharmaceuticals), considering that UNMAS Denpasar has two faculties and two study programs that focus on the health field, namely the Faculty of Pharmacy, Faculty of Dentistry, Undergraduate Medical Study Program and Professional Doctor Education. Plant biodiversity and green open spaces are a means for the academic community to learn about plant diversity and make it a learning medium so that awareness grows to preserve it.

In addition, clinic and hospitals facilities that are widely visited by the general public can provide it a comfortable place with clean and fresh air. The diversity of plant species, green open spaces, and beauty are very important to understanding their functions and maintaining their existence. Biodiversity conservation is a significant effort to create a sustainable campus and city.

CONCLUSION AND RECOMMENDATIONS

The results documented 154 species, 122 genera spread across 54 families. The largest families are Araceae (21), Asparagaceae (12), and Acanthaceae (8). As many as 146 species (94.8%) of 154 species were found to be medicinal plants. The largest species was dominated by Hymenocallis littoralis (Jacq.) Salisb. The shrub level category was the highest (64), followed by herbs (57) and trees (33). The diversity index value of H' = 5.622, which is included in the high category. The diversity index values at each level include shrubs = 3.52 (high), herbs = 3.383 (high), and trees = 2.759 (medium). This finding is expected to support the supporting facilities of the campus as a learning medium (biopharmaceuticals).

The diversity of plant species, green open spaces, and beauty are very important to understanding their functions and maintaining their existence. Biodiversity conservation is a significant effort to create a sustainable campus and city.

ADVANCED RESEARCH

The research conducted is limited to identifying diversity and diversity index. Therefore, further research is needed on ethnobotany and the chemical content of medicinal plants, especially endemic plant species. Ethnobotany is needed to determine other uses for medicinal plants besides treatment. Meanwhile, the chemical content of endemic medicinal plants serves as basic information about the role of these plants in traditional medicine.

ACKNOWLEDGEMENTS

This research was fully funded by Universitas Mahasaraswati Denpasar. The authors are grateful to all people in the studied area, especially colleagues and biology students class of 2024, for their kind hospitality and participation.

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