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Flowering plants of Agumbe region, central Western Ghats, Karnataka, India

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Abstract: Agumbe, the Cherrapunji of southern India, is a bastion of rich endemic flora. In the present study of random sampling, a total of 570 species of flowering plants were collected belonging to 370 genera and 105 families, including a few endemic and Red Listed medicinal plants such as Garcinia gummi-gutta (L.) Roxb., Dipterocarpus indicus Bedd., Dysoxylum malabaricum Bedd. ex C.DC., Elaeocarpus tuberculatus Roxb., Hopea canarensis Hole, Calophyllum apetalum Willd., Adenia hondala (Gaertn.) W.J.de Wilde, and Myristica dactyloides Gaertn. Family Leguminosae contributes the maximum number of species (47 species) followed by Rubiaceae (32 species) and Genera Ficus (9 species), Diospyros (8 species) and Syzygium (7 species) are the dominant genera. Trees (185 species) are the dominant species followed by herbs (162 species), climbers (117 species), shrubs (62 species), grasses and sedges (19 species), epiphytes (15 species) and parasites (10 species).

Keywords: Dipterocarpus, endemic, Red Listed medicinal plants.
INTRODUCTION

Taxonomic studies and floristic explorations can provide efficient and convenient information regarding the nomenclature, distribution and ecology, utility of various plants species, and about an ecosystem. It is estimated that the tropical forests harbor about 70% of living organisms of the whole world, of which roughly 20% of the total are confined as exclusively endemic throughout the tropical forests (Myers 1988).

India is one among 18 mega biodiversity nations harboring about 4,381 endemic species of flowering plants (Nayar, 1996; Shigwan et al. 2000; Singh et al. 2015). Among 35 global biodiversity hot spots (Mittermeier et al. 2011) identified, India has four; including the Western Ghats, which is the second largest endemic centers in India with 1,273 species (Nayar et al. 2014 a,b).

The Western Ghats is one of the two high diversity humid tropical forest tracks in India. The most outstanding feature of the Western Ghats is the formation of tropical rain forests along the windward side facing the Arabian Sea. The tropical climate complimented by heavy precipitation from the south-west monsoon and favorable edaphic factors create an ideal condition for the luxuriant growth of plant life, which can be seen only in a few parts of the world (Gadgil 1996). The tropical forests have received much attention in recent years because of their species richness, high standing biomass, and greater productivity (Denslow 1987). A rainforest is a dense, wet, and tropical evergreen ecosystem, high in its level of biodiversity. One among the tropical rainforests of the Western Ghats is found in the Agumbe region.

According to the Karnataka State Natural Disaster Monitoring Centre (KSNDMC), Hulikal (442m), located more than 244m below Agumbe (686m) area, has received heavy rainfall (more than 125mm) on an average of 4.6 times a year compared to twice a year in Agumbe during the past decade. The reason for the variation of rainfall in Hulikal is the construction of a reservoir, which has created an anthropogenic impact on the environment and the weather system and that has led to heavy rainfall. There has been a change in the temperature, humidity and soil moisture in Hulikal after the construction of the dam (Prabhu 2011).

Agumbe, the Cherrapunji of the south is famous for its endemic flora and medicinal plants (Sundararaghavan 1970). Hence, the present study was conducted with the intention to report the present status of the flowering plant diversity of this region, as there is no updated account available for this ecologically unique and important region.

MATERIALS AND METHODS

Study area

The study area is 568ha of tropical low-land evergreen forest of Agumbe (13.5087°N 75.0959°E) in Shivamogga district of Karnataka, India. Agumbe tropical rain forests are the heart of central Western Ghats with a wide range of species composition and floral distribution. These forests are classified as tropical wet evergreen forests of the Dipterocarpus indicus-Humboldtia brunonis-Poeciloneuron indicum type (Pascal 1988). The mean annual rainfall is 7,620mm (300 inches) and the average temperatures vary between 22.2°C and 23.6°C with an annual average temperature of 23.5°C. Agumbe lies in a hilly, wet region of the Western Ghats with an elevation of 643m (2,250ft), canopy cover of 80–85% and lies in a UNESCO World Heritage Site (UNESCO 2011). According to Champion & Seth’s (1968) classification, Agumbe is an area of “southern tropical wet evergreen forests”. The Agumbe Medicinal Plants Conservation Area (MPCA) was established in 1999 to protect the important medicinal plants of the region (Figure 1).

Methods

This study was carried out in all the climatic seasons covering Agumbe and Kundadri MPCA, Agumbe Reserve Forest and a few parts of Someshwara Wildlife Sanctuary between 2016 and 2018. The survey was conducted using random sampling methods (Cochran 1977). Plant specimens were collected and identified by using available regional floras (Saladnha & Nicolson 1976; Yoganarasimhan et al. 1981; Saldanha 1984; Gamble 1998; Ramaswamy et al. 2001; Punekar & Lakshminarasimhan 2011; Bhat 2014). Names and families of the plants were updated using The Plant List (www.theplantlist.org) and Herbarium JCB (Rao et al. 2012 [http://florakarnataka.ces.iisc.ac.in/hjcb2]). The herbarium specimens were deposited in the Herbarium, Department of Applied Botany, Kuvempu University, Shivamogga, Karnataka.

RESULTS

A total of 570 species of flowering plants belonging to 370 genera and 105 families occur in the present study area. Among all the flowering plants, trees (185
species) contribute the maximum number followed by herbs (162 species), climbers (117 species), shrubs (62 species), grasses & sedges (19 species), epiphytes (15 species), and parasites (10 species) (Figure 2, Image 1–24). Family Leguminosae (47 species) contributes the maximum number of species followed by Rubiaceae (32 species), Asteraceae (27 species), Acanthaceae (28 species), Apocynaceae (22 species) and so on.

Genus *Ficus* L., contributing 9 species followed by *Diospyros* L. with eight species, *Syzygium* R.Br. ex Gaertn. with seven species, *Impatiens* L., *Solanum* L. with six species each. *Acacia* Mart., *Blumea* DC., *Dendrobium* Sw., *Garcinia* L., *Phyllanthus* L. *Terminalia* L. and *Senna* Mill., with five species each (Figure 3).

Agumbe is the home for numerous endemic plants to the Western Ghats such as *Acronychia pedunculata* (L.) Miq, *Calophyllum apetalum* Willd., *Dipterocarpus indicus* Bedd., *Dysoxylum malabaricum* Bedd. ex C.DC., *Embelia ribes* Burm.f., *Hopea canarensis* Hole, *Garcinia gummi-gutta* (L.) Roxb., *Knema attenuata*, *Myristica malabarica*, *Persea macrantha*, *Poeciloneuron indicum*, and *Syzygium gardneri* were commonly found in the Agumbe rainforests.

The study revealed the presence of 162 herbaceous species, in which 160 were ground flora. Among them Asteraceae emerged as the dominant family with 27 species followed by Acanthaceae (19 species), Poaceae (17 species), Lamiaceae (11 species), and Leguminosae (11 species). Many of the herbs were used for various medicinal and edible purposes. Some rarely seen plants like *Epipogium roseum*, a saprophytic land orchid, shows its emergence for only 15 days in a year with beautiful flowers, but vegetative phases are not seen on the ground.

Due to the dense canopy, only a few numbers of shrubs were observed during the present study. A total of 62 shrubs belonging to 25 families and 52 genera were observed. Among them, Rubiaceae and Acanthaceae emerged as dominant families with 10 and seven individuals, respectively. Species like *Ardisia solanacea*, *Atalantia monophylla* (respiratory disorders), *Gnidia glauca* (mumps), *Ixora coccinea* (fever), *Memecylon malabaricum* (herpes), *Pavetta
Crassicaulis (wounds), and Thottea siliquosa (dysentry) have medicinal importance (Udaya 2003). Evergreen forests are also rich in diversity of climbers and the study revealed the presence of a greater diversity of climbers with 117 species belonging to 42 families. Among these Apocynaceae (14), Leguminosae (13), and Convolulaceae (9) were dominant. Most of the climbers occurred in the study area having medicinal value and Marsdenia raziana, Adenia hondala, and Salacia malabarica are listed under Red Listed plants (IUCN 2017). Only 15 species of epiphytes were found in the study area. The majority of the epiphytes belong to Orchidaceae (12), followed by Apocynaceae, Gentianaceae, Gesneriaceae, and Moraceae with one species each.

A total of 10 angiospermic parasites were observed and they were seen on varied host plants such as Terminalia paniculata, Terminalia tomentosa, Olea dioica, and Artocarpus hirsutus. Family Loranthaceae with eight species emerged as the dominant family, followed by Convolulaceae and Santalaceae with one species each (Annexure 1).

Among 570 flowering plants, 58 were considered threatened. Some species which are endangered need to be conserved for the future. These threatened species fall under 34 families, where Leguminosae and Dipterocarpaceae have five species each, followed by Lauraceae with four species and are the dominant families (https://www.iucnredlist.org) (Annexure 2).

**DISCUSSION**

A comparative analysis of tree diversity in the tropical lowland evergreen forests of Agumbe in three one hectare plots displayed the presence of 3,202 live stems representing 125 species of trees in 92 genera and 42 families (Srinivas & Parthasarathy 2000), whereas in the current study, 195 species of trees belonging to 54 families and 137 genera were observed in all the areas of the rain forests of Agumbe.

Species diversity and density of all woody climbers (lianas) inventoried in three one-hectare plots in the tropical lowland evergreen forest of Agumbe yielded a total of 1,138 lianas belonging to 40 species (Padaki & Parthasarathy 2000). In the current study, a total of 117 species of climbers were found to occur, of which 59 species were lianas.

A floristic survey carried out in Agumbe MPCA by the FRLHT botanical team reported 371 plant species of which 182 are medicinal. Adenia hondala, Celastrus paniculatus, Garcinia gummi-gutta, Myristica dactyloides, Persia macrantha, and Vateria indica are a few threatened species recorded from this area (Nayar & Sastry 1990). The study also revealed the Agumbe MPCA is a genuine storehouse of floristic diversity. The presence of pure stands of Poeciloneuron indicum is a significant character of this forest (Udayan 2003). But, in the current study the whole area of Agumbe rainforest was enumerated and yielded more momentous results than the other studies.

Bhat (2014) explored the floristic wealth of Dakshina Kannada district, observed 1,888 species of flowering plants belonging to 928 genera and 166 families and classified plants according to Angiosperm Phylogeny Group (APG) III. Among 1,273 species of flowering plants endemic to the Western Ghats (Nayar et al. 2014a,b), 195 species and five infra-specific categories occur in the surrounding areas of Dakshina Kannada and Udupi districts. Whereas in our study, we observed 570 flowering plants belonging to 370 genera and 105 families and we classified plants according to APG IV system of classification. The present study revealed the presence of 84 endemic species and 58 threatened plants distributed in the Agumbe region.

Major threats that are intimidating the diversity
and distribution of flowering plants in Agumbe are the
illegal collection of non-timber forest products (NTFP)
such as: fruits of Garcinia gummi-gutta, G. indica, G.
xanthochymus, Elaeocarpus tuberculatus, Diospyros
ssp., Phyllanthus emblica, Myristica dactyloides,
M. malabarica, Syzygium spp., Ficus racemosa, and
Strychnos nux-vomica; leaves and bark of Cinnamomum
verum, Alstonia scholaris, Saraca asoca and many
other species for their therapeutic and marketing value. Even
though the forest department is undertaking many
conservation efforts, many threatened and endemic
plants need more specific conservation plans.

Very few pockets in the Western Ghats have a
combination of high rainfall and luxuriant evergreen
forests as do the Ghats forests of Agumbe. Some rarely
seen plants like Epipogium roseum, a saprophytic land
orchid and Marsdenia razi ana, Adenia hondala, and
Salacia malabarica which are listed as threatened were
seen in the present study. Many of the herbs, shrubs,
climbers, and trees are used for various medicinal and
edible purposes. Medicinal plants and other endemic
plants available in the Agumbe region are conserved in
the Agumbe and Kundadri MPCAs, Agumbe Reserve
Forest and some parts of the Someshwara Wildlife
Sanctuary. All these rare plants should be given top
priority for their conservation.

REFERENCES

Bhat, K.G. (2014). Flora of South Kanara (Dakshina Kannada and Udupi
Districts of Karnataka). Taxonomy Research Centre, Department of
Botany, Poorna Prajna College, Udupi.

Champion, H.G. & S.K. Seth (1968). A Revised Survey of the Forest
Types of India. Government of India Press, New Delhi.

Cochran, W. (1977). Sampling Techniques, 3rd Edition. Wiley, New York.

Denslow, J.S. (1987). Tropical rainfall gaps and tree species diversity.
Annual Review of Ecology and Systematics 18: 431.

Gadgil, M. (1996). Western Ghats: a lifespan. Journal of the Indian
Institute of Sciences. 76: 495–504.

Gamble, J.S. (1998). Flora of the Presidency of Madras. The Authority of
the Secretary of State for India in Council. Vol. 1, 2 and 3.

IUCN (2017). The IUCN Red List of Threatened Species. Version 2017.1.
International Union for Conservation of Nature. accessed at http://
www.iucnredlist.org.

Mittermeier, R.A., W.R. Turner, F.W. Larsen, T.M. Brooks & C. Gascon
(2011). Global biodiversity conservation: the critical role of hot
spots. In: Zachos, F.E. & J.C. Habel (eds.). Biodiversity Hot Spots:
Distribution and Protection of Conservation Priority Areas. Springer,
Heidelberg.

Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. Fonseca &
J. Kent (2000). Biodiversity hotspots for conservation priorities.
Nature 403: 853–858.

Nayar, M.P. (1980). Endesim and patterns of distribution of endemic
genera. Journal of Economic and Taxonomic Botany 1: 99–110.

Nayar, M.P. & A.R.K. Sastry (1990). Red Data Book of Indian Plants.
Vol. 1-3. Botanical Survey of India, Calcutta.

Nayar, M.P. (1996). Hot Spots of Endemic Plants of India, Nepal and
Bhutan. TBGRI, Thrivunanthapuram, 252pp.

Nayar, T.S., A.R. Beegam & M. Sibi (2014a). Flowering Plants of the
Western Ghats, India - Volume 1 Dicots. Jawaharlal Nehru Tropical
Botanic Garden and Research Institute, Thrivunanthapuram, 934pp.

Nayar, T.S., A.R. Beegam & M. Sibi (2014b). Flowering Plants of the
Western Ghats, India - Volume 2 Monocots. Jawaharlal Nehru Tropical
Botanic Garden and Research Institute, Thrivunanthapuram, 935–
1683pp.

Padaki, A. & N. Parthasarathy (2000). Abundance and distribution of
lianas in tropical lowland evergreen forest of Agumbe, central
Western Ghats, India. Tropical Ecology 41(2): 143–154.

Pascal, J. (1988). Wet Evergreen forests of the Western Ghats of
India-Ecology, Structure, Floristic composition, and Succession. Sri
Aurobindo Ashram press. Pondicherry, 345pp.

Prabh, N. (2011). Huilik in Shimoga district is wettess in state. The
Hindu, November 08, 2011.

Punekar, A.S. & P. Lakshminarasimhan (2011). Flora of Anshi National
Park, Western Ghats – Karnataka. Biospheres Publication, Lakshmi
Nagar, Parvati, Pune, Maharashtra, India, 772pp.

Ramaswam, S.N. Rao & G.D. Arekal (2001). Flora of Shimoga District.
Prasaraanga, University of Mysore, Mysore, 719pp.

Rao, K.S., A.N. Sringeswara, D. Kumar, S. Pulla & R. Sukumar (2012).
Digital herbarium for flora of Karnataka. Current Science 102(9):
1268–1271.

Saldanha, C.J. & D. Nicholson (1976). Flora of Hassan District, Karnataka,
India. Oxford and IBH Publishing Co., New Delhi.

Saldanha, C.J. (1984). Flora of Karnataka, Vol. 1 & 2. Oxford and IBH,
New Delhi.

Shetty, B.V., K.M. Kaveriappa & K.G. Bhat (2002). Plant Resources of
Western Ghats and Lowlands of Dakshina Kannada and Udupi
Districts. Piilkula Nisarga Dharma Society, Moodushedde, Mangalore.

Shigwan, B. K., Kulkarni, A., Vijayan, S., Choudhary, R. K., & M. N.
Datar (2020). An assessment of the local endemicity of flowering
plants in the northern Western Ghats and Konkan regions of
India: checklist, habitat characteristics, distribution, and
conservation. Phytotaxa 440(1): 25–54.

Singh, P., Karthigeyan, K., Lakshminarasimhan, P. & S.S. Dash (2015).
Endemic vascular plants of India. Botanical Survey of India, Kolkata,
399pp.

Srinivas, V. & N. Parthasarathy (2000). Comparative Analysis of Tree
diversity and Dispersion in the Tropical Lowland Evergreen forest of
Agumbe, Central Western Ghats. Tropical Biodiversity 7(1): 45–60.

Sundararaghavan, R. (1970). The Flora of Agumbe and Tirthahalli
areas in Shimoga District, Mysore State (Doctoral dissertation, PhD
Thesis. Madras University, Madras, [Unpublished])

Sundararaghavan, R. (1981). “Notes on Vegetation and Flora of
Agumbe.” Nelumbo 23.(1-2): 82–89.

The Plant List. (2013). Version 1.1. (http://www.theplantlist.org/)

Udaya, P. S. (2003). Floristic inventory in the Seven Medicinal Plants
Conservation Areas (MPCAs) of Karnataka, India. Ph.D Thesis,
Bharathiar University, Coimbatore, Tamil Nadu.

UNESCO (2011). Decisions adopted by the world heritage committee
at its 35th session. 7 July 2011.

Yogananasingham, S.N., K. Subramanyan & B.A. Razi (1982). Flora of
Chikmagalure District, Karnataka, India. International Book
Distributors, Dehradun.
Image 1–12. 1—Archidendron bigemium | 2—Elaeocarpus serratus | 3—Elephantopus scaber | 4—Pittosporum dasycaulon | 5—Marsdenia raiana | 6—Connarus wightii | 7—Erythrina suberosa | 8—Pavetta crassicaulis | 9—Anodendron paniculatum | 10—Olea dioica | 11—Genianthus laurifolius | 12—Elaeocarpus tuberculatus. © G.S. Adithya Rao.
Image 13–24. 13—Hemidesmus indicus | 14—Garcinia morella | 15—Adenia hondala | 16—Antidesma montanum | 17—Ardisia solonacea | 18—Bauhinia phoenica | 19—Dendrobium barbotulum | 20—Casearia tomentosa | 21—Erycibe paniculata | 22—Flemingia strobilifera | 23—Salacia malabarica | 24—Hoya wightii. © G.S. Adithya Rao.
Flowering plants enumerated in Agumbe region of central Western Ghats, Karnataka.

| Botanical name | Family | Habit |
|----------------|--------|-------|
| 1 Acacia auriculiformis (Benth. *) | Leguminosae | T |
| 2 Acacia caesia (L.) Willd. | Leguminosae | C |
| 3 Acacia mangium Willd. * | Leguminosae | T |
| 4 Acacia pennata (L.) Willd. | Leguminosae | C |
| 5 Acacia sinuata (Lour.) Merr. | Leguminosae | C |
| 6 Aclepis ornata (Talbot) H.Rob. & Skvarla | Asteraceae | H |
| 7 Acmelia oleracea (L.) R.K.Jansen * | Asteraceae | H |
| 8 Acmelia radicans (Jacq.) R.K.Jansen | Asteraceae | H |
| 9 Acmelia uliginosa (Sw.) Cass. | Asteraceae | H |
| 10 Acronychia pedunculata (L.) Miq. | Rutaceae | T |
| 11 Actinodaphne hookeri Meisn. | Lauraceae | T |
| 12 Actinodaphne wightiana (Kuntze) Nolte | Lauraceae | T |
| 13 Adenia hondala (Gaertn.) W.I.d. Wilde | Passioreaee | C |
| 14 Adenosetum lavenia (L.) Kuntze | Asteraceae | H |
| 15 Aeginetia indica L. | Orobancaneae | H |
| 16 Aerides maculosa Lindl. | Orchidaceae | E |
| 17 Aeschynanthus perrottetii A. DC. | Gesneriaceae | E |
| 18 Ageratum conyzoides (L.) L. | Asteraceae | H |
| 19 Aglaia anamallayana (Bedd.) Koster. | Meliaceae | T |
| 20 Aglaia elastogynoida (A.Juss.) Benth. | Meliaceae | T |
| 21 Aglaia lawii (Wight) C.J.Saldanha | Meliaceae | T |
| 22 Agrostistachys indica Dalzell | Euphorbiaceae | S |
| 23 Alianthus triphyesa (Dennst.) Alston | Simaroubaceae | T |
| 24 Albizia chinensis (Osbeck) Merr. * | Leguminosae | T |
| 25 Albizia lebbeck (L.) Benth. | Leguminosae | T |
| 26 Albizia odoratissima (L.) Benth. | Leguminosae | T |
| 27 Albizia saman (Jacq.) Merr. * | Leguminosae | T |
| 28 Allamanda cathartica L. | Apocynaceae | C |
| 29 Allophylus cabbe (L.) Raesch. | Sapindaceae | C |
| 30 Alocasia macrorrhizos (L.) G.Don | Araceae | H |
| 31 Alpinia galanga (L.) Willd. | Zingberaceae | H |
| 32 Alpinia malaccensis (Burm.f) Roscoe | Zingberaceae | H |
| 33 Alstonia scholaris (L.) R. Br. | Apocynaceae | T |
| 34 Alternanthera ficoidae (L.) S. | Amaranthaceae | H |
| 35 Alternanthera sessilis (L) R. Br. ex DC. | Amaranthaceae | H |
| 36 Amorphophallus paeonifolius (Dennst.) Nicolson | Araceae | H |
| 37 Ampelocissus indica (L.) Planch. | Vitaceae | C |
| 38 Ancardium occidentale L. * | Anacardiaceae | T |
| 39 Ancistrocladus heynmannus Wall. ex J.Graham | Ancistrocladaceae | C |
| 40 Anisomeles indica (L.) Kuntze | Lamiaceae | H |
| 41 Anodendron paniculatum A.D.C. | Apocynaceae | C |
| 42 Anogeissus latifolia (Roxb. ex DC.) Wall. ex Bedd. | Combretaceae | T |
| 43 Antidesma montanum Blume | Phyllanthaceae | T |
| 44 Antigonon leptopus Hook. & Arn. | Polygonaceae | C |
| 45 Aporosa cardiosperma (Gaertn.) Merr. | Phyllanthaceae | T |
| 46 Archidendron bigeminum (L.) I.C.Nielsen | Leguminosae | T |
| 47 Ardisia paniculata Roxb. | Primulaceae | S |
| 48 Ardisia solanacea (Poir.) Roxb. | Primulaceae | S |
| 49 Arenga wightii Griff. | Arecaceae | T |
| 50 Argyrea eliptica Arn. ex Choisy | Convolvulaceae | C |
| 51 Argyrea nervosa (Burm. f.) Bojer | Convolvulaceae | C |
| 52 Argyrea pilosa Wight & Arn. | Convolvulaceae | C |
| 53 Argyrea populinfolia Choisy | Convolvulaceae | C |
| 54 Aristoloia ringens Vahl | Aristoloichiaceae | C |
| 55 Aristoloia tagala Cham. | Aristoloichiaceae | C |
| 56 Artabotrys zeylanicus Hook.f. & Thomson | Annonaceae | C |
| 57 Artocarpus heterophyllus Lam. | Moraceae | T |
| 58 Artocarpus hirsutus Lam. | Moraceae | T |
| 59 Arundinella pumila (Hochst.) Steud. | Poaceae | G |
| 60 Arundinella purpurea Hochst. ex Steud. | Poaceae | G |
| 61 Asparagus gonocondatus Baker | Asparagaceae | C |
| 62 Asparagus racemosus Willd. | Asparagaceae | C |
| 63 Atalanta monophylla DC. | Rutaceae | S |
| 64 Bombusa bambos (L.) Voss | Poaceae | G |
| 65 Bombusa vulgaris Schrad. * | Poaceae | G |
| 66 Barringtonia racemosa (L.) Spreng. * | Lecythisaceae | T |
| 67 Bauhinia phoenicea Wight & Arn. | Leguminosae | C |
| 68 Bawhinia purpurea L. | Leguminosae | T |
| 69 Begonia crenata Dryand. | Begoniaceae | H |
| 70 Begonia malabarica Lam. | Begoniaceae | H |
| 71 Beilschmeda dalzellii (Meisn.) Kosterm. | Lauraceae | T |
| 72 Biphtyrum sensitivum (L.) DC. | Oxalidaceae | H |
| 73 Blachia andamcanica subsp. denudata (Benth.) N.P.Balakr. & Chakrab. | Euphorbiaceae | T |
| 74 Blumea axillaris (Lam.) DC. | Asteraceae | H |
| 75 Blumea lacerata (Burm.f.) DC. | Asteraceae | H |
| 76 Blumea lanceolaria (Roxb.) Druce | Asteraceae | H |
| 77 Blumea oxydonta DC. | Asteraceae | H |
| 78 Blumea vires DC. | Asteraceae | H |
| 79 Boehmeria glomerulifera Miq. | Urticaceae | S |
| 80 Bombax ceiba L. | Malvaceae | T |
| 81 Breynia retusa (Dennst.) Alston | Phyllanthaceae | S |
| 82 Breynia vitis-idea (Burm.f.) C.E.C.Fisch. | Phyllanthaceae | S |
| Botanical name | Family | Habit |
|---------------|-------|-------|
| Bridelia stipularis (L.) Blume | Phyllanthaceae | C |
| Brugmansia suaveolens (Humb. & Bonpl. ex Willd.) Bercht. & J.Presl | Solanaceae | S |
| Buphthalmum pinnatum (Lam.) Oken | Crassulaceae | H |
| Buchanania cochinchnensis (Lour.) M.R.Almeida | Anacardiaceae | T |
| Buphthalmum sterile (Lam.) Suresh | Orchidaceae | E |
| Butera monosperma (Lam.) Taub. | Leguminosae | T |
| Coelocanthis lineatus (Wight & Arn.) Maesen | Leguminosae | S |
| Colocanthis grandiflorus (Dazl.) Radk. | Acanthaceae | S |
| Colomus dransfeldii Renault | Arecales | C |
| Colomus thwaitesii Becc. | Arecales | C |
| Colicarpia tomentosa (L.) L. | Lamiales | T |
| Colophyllum apetalum Wild. | Clusiaceae | T |
| Colyptocarpus vialis Less. | Asteraceae | H |
| Concora diffusa (Vahl) R.Br. ex Roem. & Schult. | Gentianaceae | H |
| Concora perfloreta Lam. | Gentianaceae | H |
| Contium ruthel DC. | Rubiaceae | C |
| Capililium hugelii (Hack.) A.Camus | Poaceae | G |
| Capparis boudouca L. | Capparaceae | S |
| Capparis moonii Wight | Capparaceae | C |
| Caralla brachiata (Lour) Merr. | Rhizophoraceae | T |
| Cardiospermum halicacabum L. | Sapindaceae | C |
| Coreya arbores Roxb. | Lecythidaceae | T |
| Corissa spinarum L. | Apocynaceae | C |
| Costaceae (L.) Lippold | Apocynaceae | S |
| Casearia rubescens Dalzell | Salicaceae | T |
| Casearia tomentosae Roxb. | Salicaceae | T |
| Cassia fistula L. | Leguminosae | T |
| Cassine glauca (Rottb.) kuntze | Calceolariaceae | T |
| Catharanthus roseus (L.) G.Don | Apocynaceae | H |
| Cotunaregam spinosa (Thomb.) Tinev. | Rubiaceae | T |
| Cayratia mollissima (Planch.) Gagnep. | Vitaceae | C |
| Cayratia trifolia (L.) Domin | Vitaceae | C |
| Celastrus paniculatus Wild. | Calceolariaceae | C |
| Celtis timorensis Span. | Cannabaceae | T |
| Centella asiatica (L.) Urb. | Apiaceae | H |
| Centipeda minima (L.) A.Braun & Asch. | Asteraceae | H |
| Centocephalium lappaceae (L.) Desv. | Poaceae | H |
| Chassalia curviflora (Wall.) Thwaites | Rubiaceae | S |
| Chionanthus malai-erengi (Dennst.) P.S.Green | Oleaceae | T |
| Chomomerpha fragrans (Moon) Alston | Apocynaceae | C |
| Chrysophyllum flexuosum Mart. | Sapotaceae | T |
| Chrysopagan accuratus (Retz.) Trin. | Poaceae | G |
| Cinnamomum cassia (L.) J.Presl | Lauraceae | T |
| Cinnamomum malabatrum (Burm.f.) J.Presl | Lauraceae | T |
| Cissus dombia - sanse (Dennst.) Mabb. | Vitaceae | C |
| Cissus javana DC. | Vitaceae | C |
| Coleus dentata (Willd.) Roem. | Rutaceae | T |
| Clematis gouriana Roxb. ex DC. | Ranunculaceae | C |
| Clerodendron infortunatum Geart. | Lamiaceae | S |
| Clerodendron paniculatum L. | Lamiaceae | S |
| Clerodendrum speciosum L. | Lamiaceae | S |
| Combretum indicum (L.) DeFilipps | Combretaceae | C |
| Combretum latfolium Blume | Combretaceae | C |
| Commelina benghalensis L. | Commelinaceae | H |
| Connarass wighti Hook.f. | Convolvulaceae | C |
| Crossocephalum crepidioides (Benth.) S.Moore | Asteraceae | H |
| Croto edulis G.Forst. | Capparaceae | T |
| Croton flavesens (Benth.) Roem. & Schult. | Euphorbiaceae | S |
| Croton gouriana | Combretaceae | C |
| Croton repens | Euphorbiaceae | S |
| Cryptocoryne lawsonii | Acanthaceae | T |
| Curculigo orchidea | Hypoxidaceae | H |
| Curcuma olitoria Trimen. | Zingiberaceae | H |
| Cuscuta reflexa Roxb. | Convolvulaceae | P |
| Cyathocline purpurea | Asteraceae | H |
| Cyathula praestra (L.) Blume | Amaryllidaceae | H |
| Cycles peltata (Lam.) Hook.f. & Thomson | Menispermaceae | C |
| Cynarospermum arundinaceum (Nees) Vollesen | Acanthaceae | H |
| Cynodon dactylon (L.) Pers. | Poaceae | G |
| Cynodon dactylon | Poaceae | G |
| Cynoglossum zeylanicum (Vahl) Brand | Boraginaceae | H |
| Cynometra irapa Kostel. | Leguminosae | T |
| Cupressus difformis (Dennst.) Mabb. | Cupressaceae | H |
| Dalbergia horrida (Dennst.) Mabb. | Leguminosae | C |
| Dalbergia latifolia Roxb. | Leguminosae | T |
| Dalbergia rubiginosa Roxb. | Leguminosae | C |
| Botanical name                     | Family             | Habit  |
|-----------------------------------|--------------------|--------|
| Dalbergia volubilis Roxb.         | Leguminosae        | C      |
| Datura stramonium L.              | Solanaceae         | H      |
| Derbaresia longifolia (Burm.f.)   | Urticaceae         | S      |
| Dendrobium barbatulum Lindl.      | Orchidaceae        | E      |
| Dendrobium herbaceum Lindl.       | Orchidaceae        | E      |
| Dendrobium heyneanum Lindl.       | Orchidaceae        | E      |
| Dendrobium macrostachyum Lindl.   | Orchidaceae        | E      |
| Dendrobium ovatum (L.) Kraenzl.    | Orchidaceae        | E      |
| Dendrocalamus strictus (Roxb.) Nees| Poaceae            | G      |
| Dendrocalambia unguiculare (Retz.)Schindl.| Leguminosae | S      |
| Dendrophthoe coccinea (Jack) G.Don| Loranthaceae       | P      |
| Dendrophthoe falcata (L.) Ettingh.| Loranthaceae       | P      |
| Derris benthamii (Thwaites) Thwaites| Leguminosae        | C      |
| Desmodium triflorum (L.) DC.      | Leguminosae        | H      |
| Desmos chinensis Lour.            | Annonaceae         | C      |
| Dichopetalum gelonioides (Roxb.) Engl.| Dichopetalaceae | S      |
| Dichrocephala integrifolia (L.)   | Asteraceae         | H      |
| Dicliptera chinesis (L.) Juss.     | Acanthaceae        | H      |
| Dillenia pentagyna Roxb.          | Dilleniaceae       | T      |
| Dimocarpus longan Lour.           | Sapindaceae        | T      |
| Dioscorea bulbifera L.            | Dioscoreaceae      | C      |
| Dioscorea oppositifolia L.        | Dioscoreaceae      | C      |
| Dioscorea pentaphylla L.          | Dioscoreaceae      | C      |
| Diospyros buxifolia (Blume) Hiern| Ebenaceae          | T      |
| Diospyros candollea Wight         | Ebenaceae          | T      |
| Diospyros ebenum J.Koenig ex Retz.| Ebenaceae          | T      |
| Diospyros melanoxylon Roxb.       | Ebenaceae          | T      |
| Diospyros montana Roxb.           | Ebenaceae          | T      |
| Diospyros ococarpa Thwaites       | Ebenaceae          | T      |
| Diospyros paniculata Dalzell      | Ebenaceae          | T      |
| Diospyros salidiana Kosterm.      | Ebenaceae          | T      |
| Diploclisia glaucescens (Blume) Diels| Menispermaceae    | C      |
| Dipterocanthus prostratus (Poir.) Nees| Acanthaceae      | H      |
| Diplocarpus indicus Bedd.          | Dipterocarpaceae   | T      |
| Dombeya wallichii (Lindl.) K.Schum.*| Malvaceae          | T      |
| Drosera burmanni Vahl             | Droseraceae        | H      |
| Drosera indica L.                 | Droseraceae        | H      |
| Duabanga grandiflora (DC.) Walp.*| Lythraceae         | T      |
| Duranta erecta L.                 | Verbenaceae        | S      |
| Dyssoxyium malabaricum Bedd. ex C..DC.| Meliaceae          | T      |
| Ebellum ligustrinum (Vahl) Vollesen| Acanthaceae        | H      |
| Eclipta prostrata (L.) L.          | Asteraceae         | H      |
| Elaeagnus conferta Roxb.          | Elaeagnaceae       | C      |
| Elaeocarpus serrataes L.          | Elaeocarpaceae     | T      |
| Elaeocarpus tuberculatus Roxb.     | Elaeocarpaceae     | T      |
| Elatostema lineolatum Wight       | Urticaceae         | H      |
| Elephantopus scaber L.            | Asteraceae         | H      |
| Elytranthe parasitica (L.) Danser | Loranthaceae       | P      |
| Embela ribes Burm.f.              | Primulaceae        | C      |
| Embela tajeriam-cattam (Roem. & Schult.) A.DC. | Primulaceae | C      |
| Epipogium rosemum (D.Don) Lindl.  | Orchidaceae        | H      |
| Eranthemum copense L.             | Acanthaceae        | S      |
| Eriocaulon cinereum R.Br.         | Eriocaulaceae      | H      |
| Eriocaulon heteropelis Steud.     | Eriocaulaceae      | H      |
| Erycibe paniculata Roxb.          | Convolvulaceae     | C      |
| Eryngium foetidum L.              | Apiaceae           | H      |
| Erythrina suberosa Roxb.          | Leguminosae        | T      |
| Erythrina variegata L. *          | Leguminosae        | T      |
| Erythrostilum scandens Blume      | Olaceae            | C      |
| Eugenia phillyraeoides Trimen    | Myrtaceae          | S      |
| Eugenia roxburghii DC.            | Myrtaceae          | T      |
| Euonymus indicus B.Heyne ex Wall. | Celastraceae       | T      |
| Euphoria hirta L.                 | Euphorbiaceae      | H      |
| Euphoria pulcherrima Willd. ex Klotzsch | Euphorbiaceae     | S      |
| Euphoria thymifolia L.            | Euphorbiaceae      | H      |
| Eurya nitida Korth.              | Pentaphylacaceae   | T      |
| Fagraea celtanica Thurb.          | Gentianaceae       | E      |
| Falconeria insignis Royle         | Euphorbiaceae      | T      |
| Ficus bengalensis L.              | Moraceae           | T      |
| Ficus benjamina L.                | Moraceae           | T      |
| Ficus drupacea Thurb.             | Moraceae           | T      |
| Ficus microcarpa L.f.             | Moraceae           | T      |
| Ficus nervosa B.Heyne ex Roth     | Moraceae           | T      |
| Ficus racemosa L.                 | Moraceae           | T      |
| Ficus religiosa L.                | Moraceae           | T      |
| Ficus tsjehelia Burm. F.          | Moraceae           | T      |
| Ficus virens Aiton                | Moraceae           | T      |
| Flacourtia montana J.Graham       | Salicaceae         | T      |
| Flemingia strobilifera (L.) W.T.Aiton | Leguminosae       | S      |
| Galinsoga parviflora Cav.         | Asteraceae         | H      |
| Garcinia gymmi-gutta (L.) Roeh.    | Clusiaceae         | T      |
| Garcinia indica (Thuars) Choisy   | Clusiaceae         | T      |
| Garcinia morella (Gaertn.) Desr.  | Clusiaceae         | T      |
| Garcinia talbotii Raizada ex Santapau | Clusiaceae       | T      |
| Botanical name | Family | Habit |
|----------------|--------|-------|
| Gnidia glauca   | Apocynaceae | C     |
| Glycosmis pentaphylla | Apocynaceae | C     |
| Glochidion ellipticum | Apocynaceae | C     |
| Girardinia diversifolia (Link) Friss | Apocynaceae | C     |
| Gillicidia sepium (Jacq.) Walp. | Apocynaceae | C     |
| Glochidion zeylanicum (Gaertn.) A.Juss. | Apocynaceae | C     |
| Glycosmis pentaphylla (Retz.) DC. | Rutaceae | S     |
| Gymelina arborea Roxb. | Lamiaceae | T     |
| Gnidia glauca (Fresen.) Gilg | Thymelaeaceae | S     |
| Gondonia obtusa Wall. ex Wight | Theaceae | T     |
| Gouania microcarpa DC. | Rhamnaceae | C     |
| Girishia heterotricha Mast. | Malvaceae | C     |
| Girishia triloba Vahl | Malvaceae | T     |
| Girishia umbellifora Bedd. | Malvaceae | C     |
| Gymnema sylvestre (Retz.) R.Br. ex Sm. | Apocynaceae | C     |
| Gymnostachyum lottiflorum T.Anderson | Acanthaceae | H     |
| Gymnostachyum polyanthum Wight | Acanthaceae | H     |
| Haldina cordifolia (Roxb.) Ridsdale | Rubiaceae | T     |
| Harpullia arborea (Blanco) Radlk. | Sapindaceae | T     |
| Helicostrobus elegans (Desr.) Danser | Loranthaceae | P     |
| Helicostrobus elegans Bedd. | Proteaceae | T     |
| Helicteres isora L. | Malvaceae | S     |
| Helicteres wallichiana Danser | Loranthaceae | P     |
| Hemidesmus indicus (L.) R. Br. ex Schult. | Apocynaceae | C     |
| Hemigraphis lateriflora (Roth) Nees | Acanthaceae | H     |
| Heynea trijuga Roxb. ex Sims | Meliaceae | T     |
| Hibiscus hispidissimus Griff. | Malvaceae | C     |
| Hibiscus rosa-sinensis L. * | Malvaceae | S     |
| Hibiscus roslinensis L. * | Malvaceae | C     |
| Hibiscus rostratus Guill. & Perr. | Malvaceae | C     |
| Hippeastrum puniceum (Lam.) Voss | Amaryllidaceae | H     |
| Holarrhena pubescens Wall. ex G.Don | Apocynaceae | T     |
| Holigarna amathota Hook.f. | Anacardiaceae | T     |
| Holigarna grahamii (Wight) Kurz | Anacardiaceae | T     |
| Homalium ceylanicum (Gardner) Benth. | Salicaceae | T     |
| Homononia riparia Lour. | Euphorbiaceae | S     |
| Hopea canarensis Hole | Dipterocarpaceae | T     |
| Hopea parviflora Bedd. | Dipterocarpaceae | T     |
| Hopea ponga (Dennst.) Mabb. | Dipterocarpaceae | T     |
| Hoya wightii Hook.f. | Apocynaceae | E     |
### Flowering plants of Agumbe region, Western Ghats

| Botanical name | Family | Habit |
|----------------|--------|-------|
| Lepidagathis incurva Buch.-Ham. ex D. Don | Acanthaceae | H |
| Leucas aspera (Willd.) Link | Lamiales | H |
| Leucas biflora (Vahl) Sm. | Lamiales | H |
| Leucas marrubioides Desf. | Lamiales | H |
| Leucas stelligera Wall. ex Benth. | Lamiales | H |
| Lipasium perrottetii A.D.C. | Oleaceae | S |
| Limnophila indica (L.) Druce | Plantaginaceae | H |
| Limnophila repens (Benth.) Benth. | Plantaginaceae | H |
| Lindernia ciliata (Colsm.) Pennell | Linderniaceae | H |
| Lindernia crustacea (L.) F.Muell. | Linderniaceae | H |
| Lilium floribundum Gold. | Lauraceae | T |
| Lilisea ghatica Saldanha | Lauraceae | S |
| Lilseya laevigata Gold. | Lauraceae | T |
| Lobelia alsiloides Lam. | Complanulaceae | H |
| Loeseneriella avata (Lam.) M.R.Almeida | Celastraceae | C |
| Lophopetalum wightianum Arn. | Celastraceae | T |
| Loranthus globosus Roxb. | Loranthaceae | P |
| Ludwigia hyssopifolia (G.Don) Exell | Onagraceae | H |
| Luwanga digitata Kurz | Rutaceae | C |
| Lycianthes laevis (Dunis) Bittr. | Solanaceae | S |
| Macaranga peplata (Roxb.) Müll. Arg. | Euphorbiaceae | T |
| Mackenziea integrifolia (Dalzell) Brenek. | Acanthaceae | S |
| Madhuca neriifolia (Moon) H.J.Lam | Sapotaceae | T |
| Moesa indica (Roxb.) A. DC. | Primulaceae | S |
| Magnolia champaica (L.) Baill. ex Pierre | Magnoliaceae | T |
| Mallotus nudiflorus (L.) Kulju & Bold. | Euphorbiaceae | T |
| Mallotus philippinensis (Lam.) Müll.Arg. | Euphorbiaceae | T |
| Mallotus tetracoccus (Roxb.) Kurz | Euphorbiaceae | T |
| Mangifera indica L. | Anacardiaceae | T |
| Mangifera micrantha (Wight) Airy Shaw | Phyllanthaceae | T |
| Marsdenia razana Yogan. & Subr. | Apocynaceae | C |
| Mastexia arborea (Wight) C.B.Clarke | Cornaceae | T |
| Maytenus rotundifolia (Wight) Subr. | Celastraceae | S |
| Meccardina procumbens (Mill.) Small | Plantaginaceae | H |
| Memecylon malabaricum (C.B.Clarke) Cogn. | Melastomataceae | S |
| Memecylon talbotianum Brandis | Melastomataceae | T |
| Memecylon terminalis Dalzell | Melastomataceae | S |
| Memecylon umbellatum Burm. f. | Melastomataceae | T |
| Merremia umbellata (L.) Hallier f. | Convolvulaceae | C |
| Mesua ferrea L. | Calophyllaceae | T |
| Mikania micrantha Kunth | Asteraceae | C |
| Mimosa pudica L. | Leguminosae | H |
| Mimusops elengi L. | Sapotaceae | T |
| Mirabilis jalapa L. * | Nyctagineae | H |
| Mitragyna parviflora (Roxb.) Korth. | Rubiaceae | T |
| Moullova spinata (Dalzell) Nicolson. | Leguminosae | C |
| Mucuna monosperma Wright | Leguminosae | C |
| Mukuia maderaspatana (L.) M.Roem. | Cucurbitaceae | C |
| Munronia pinnata (Wall.) W.Theob. | Meliaceae | H |
| Murdannia simplex (Vahl) Brenan | Commelinaceae | H |
| Mussaeoa globiflora (Hook.f.) Hutch. ex Gamble | Rubiaceae | C |
| Mussaeoa laxa (Hook.f.) Hutch. ex Gamble | Rubiaceae | C |
| Myristica dactyloides Roxb. | Myristicaceae | T |
| Myristica malabarica Lam | Myristicaceae | T |
| Naravelia zeylanica (L.) DC. | Menispermaeae | C |
| Naregamia alata Wight & Arn. | Meliaceae | H |
| Neolamarckia cadamba (Roxb.) Bosser * | Rubiaceae | T |
| Nilgiriandus ciliatus (Nees) Brenek. | Acanthaceae | S |
| Nilgiriandus heyneanus (Nees) Brenek. | Acanthaceae | H |
| Nilgiriandus lupulinus (Nees) Brenek. | Acanthaceae | S |
| Notaphydes nimmoniana (J.Graham) Malb. | Icacinaceae | T |
| Notothea baldiome Gamble | Anacardiaceae | T |
| Notothea racemosa (Dalzell) Ramamoorthy | Anacardiaceae | T |
| Oberaia brunonia Wight | Orchidaceae | E |
| Oberaia falconeri Hook.f. | Orchidaceae | E |
| Ochlandra scriptoria (Dennst.) C.E.C.Fisch. | Poaceae | G |
| Oicium basilicum L. | Lamiaceae | H |
| Oldenlandia auriculata (L.) K.Schum. | Rubiaceae | H |
| Oldenlandia corymbosa L. | Rubiaceae | H |
| Oldenlandia diffusa (Willd.) Roxb. | Rubiaceae | H |
| Oldenlandia herbacea (L.) Roxb. | Rubiaceae | H |
| Olea dioica Roxb. | Oleaceae | T |
| Ophiopogon mungos L. | Rubiaceae | H |
| Opismenus compressus (L.) P.Beauv. | Poaceae | G |
| Osbeckia cupularis D. Don ex Wight & Arn. | Melastomataceae | S |
| Osbeckia parvifolia Arn. | Melastomataceae | H |
| Osteospermum laceraeostum Hochst. & Steud. | Santalaceae | S |
| Oxalis corniculata L. | Oxalidaceae | H |
| Botanical name               | Family       | Habit |
|-----------------------------|--------------|-------|
| 413 Oxyecros rugulosus      | Rubiaceae    | C     |
| 414 Pogostemon decocmeos    | Lamiaceae    | H     |
| 415 Pogostemon peniculatus  | Lamiaceae    | H     |
| 416 Polyalthia fragrans     | Apocynaceae  | C     |
| 417 Pavetta hispidula       | Rubiaceae    | S     |
| 418 Pavetta indica L.       | Rubiaceae    | S     |
| 419 Pavetta odorata Wild.   | Malvaceae    | H     |
| 420 Persea macroantha       | Lauraceae    | T     |
| 421 Persicaria chinensis    | Polygonaceae | H     |
| 422 Persicaria glabra       | Polygonaceae | H     |
| 423 Phaulopsis imbricate    | Acanthaceae  | H     |
| 424 Phyllanthus amarus      | Phyllanthaceae| H   |
| 425 Phyllanthus emblica L.  | Phyllanthaceae| T   |
| 426 Phyllanthus reticulatus | Phyllanthaceae| S   |
| 427 Philodendron hederaceum | Araceae      | C     |
| 428 Phyllocophalum scabridum| Asteraceae   | H     |
| 429 Physalis minima L.      | Solanaceae   | H     |
| 430 Pilea microphylla L.    | Urticaceae   | H     |
| 431 Pimpinella huayannana   | Apiaceae     | H     |
| 432 Piper hookeri Miq.      | Piperaceae   | C     |
| 433 Piper myrinniphum (Miq.)| Piperaceae   | C     |
| 434 Pittosporum dasycaulum | Piperaceae   | C     |
| 435 Pittosporum diversifolium| Pittosporaceae| T   |
| 436 Plectranthus miltis (Alston)| Lamiaceae | H     |
| 437 Plumbago zeylanica L.   | Plumbaginaceae| H   |
| 438 Poeciloneuron indicum  | Calophyllaceae| T   |
| 439 Pogostemon benghalensis | Lamiaceae    | H     |
| 440 Pogostemon deccanensis  | Lamiaceae    | H     |
| 441 Pogostemon pendulatus (Wild.) Benth. | Lamiaceae H |
| 442 Polyalthia fragrans (Dalzell) Benth. & Hook. f. | Lamiaceae H |
| 443 Polytrees indica (Houtt.) Veldkamp | Poaceae | G   |
| 444 Premna coriacea C.B.Clarke | Lamiaceae | C     |
| 445 Pimlynum ceylanica (Wight) Miq. | Rosaceae | T     |
| 446 Pterospermum diversifolium Blume | Sterculiaceae | T     |
| 447 Pterocarpus marsupium Roxb. | Leguminosae | T     |
| 448 Pseuderanthemum subsp. | Euphorbiaceae| T     |
| 449 Pseuderanthemum malabaricum (Thwaites) N.P.Balakr. & Chakrab. | Bignoniaceae | T     |
| 450 Pseuderanthemum malabaricum (Thwaites) N.P.Balakr. & Chakrab. | Bignoniaceae | T     |
| Botanical name | Family             | Habit |
|----------------|--------------------|-------|
| Spermacoce articulatis l.f. | Rubiaceae | H     |
| Spermacoce exilis (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor | Rubiaceae | H     |
| Spermacoce hispida L. | Rubiaceae | H     |
| Spermacoce ocyoides Burm.f. | Rubiaceae | H     |
| Sphaeroanthus indicus L. | Asteraceae | H     |
| Sphenoctis trifolata (L.) Pruski | Asteraceae | H     |
| Stachytophera indica (L.) Vahl | Verbenaceae | H     |
| Staurage zeylanica Kunte | Acanthaceae | H     |
| Stephanis japonica (Thunb.) Miers | Menispermaceae | C     |
| Sterculia guttata Roxb. ex G.Don | Malvaceae | T     |
| Stereospermum tetragonum DC. | Bignoniaceae | T     |
| Streblus asper Lour. | Moraceae | T     |
| Syzygium colunbina L. | Loganiaceae | C     |
| Syzygium nux-vomica L. | Menispermaeae | T     |
| Symplocos cachinensis (L.) Moore | Symplcaceae | T     |
| Symplocos racemosa Roxb. | Symplcaceae | T     |
| Syzygium cumin (L.) Skeels | Myrtaceae | T     |
| Syzygium gardneri Thwaites | Myrtaceae | T     |
| Syzygium hemisphericum (Wight) Alston | Myrtaceae | T     |
| Syzygium jambos (L.) Alston * | Myrtaceae | T     |
| Syzygium jambos (L.) Alston * | Myrtaceae | T     |
| Syzygium latum (Buch.-Ham.) Gandhi | Myrtaceae | T     |
| Syzygium zeylanicum (L.) DC. | Myrtaceae | T     |
| Tabernaemontana alternifolia L. | Apocynaceae | T     |
| Tabernaemontana divaricata L. | Apocynaceae | S     |
| Tadepalli trinquetrum (L.) H.Dhadi | Leguminosae | H     |
| Tamindia uliginosa (Retz.) Tirveng. & Sastre | Rubiaceae | T     |
| Taxillus ferrugineus (Jack) Bân | Loranthaceae | P     |
| Tectona grandis L.f. * | Verbenaceae | T     |
| Terminalia bellirica (Gaertn.) Roxb. | Combretaceae | T     |
| Terminalia catappa L. * | Combretaceae | T     |
| Terminalia chebula Retz. | Combretaceae | T     |
| Terminalia paniculata Roth | Combretaceae | T     |
| Terminalia tomentosa Wight & Arn. | Combretaceae | T     |
| Tetrastigma gamblei B.V.Shyetty & P.Singh | Vitaceae | C     |
| Tetrastigma sulcatum (P. Lawson) Gamble | Vitaceae | C     |
| Thelephora exsiccataphala (Benth.) Breneck. | Acanthaceae | S     |
| Themeda nadu (Nees ex Steud.) Hack. | Poaceae | G     |

T—Trees | H—Herb | S—Shrub | E—Epiphyte | C—Climber | P—Parasite | G—Grass | *—introduced to the Agumbe region
## Annexure 2. Threatened plants of Agumbe region of central Western Ghats, Karnataka (IUCN 2017).

| Botanical Name                  | Family               | Habit | RET status |
|---------------------------------|----------------------|-------|------------|
| 1. Actinodaphne wightiana      | Lauraceae            | T     | NT         |
| 2. Adenia changal (Gaertn.)    | Passifloraceae       | C     | EN         |
| 3. Aglaia lowii (Wight)         | Meliaceae            | T     | R          |
| 4. Ampelocissus indica (L.)    | Vitaceae             | C     | VU         |
| 5. Arenga wightii Griff.        | Arecaceae            | T     | VU         |
| 6. Aristolochia tagala Cham.    | Aristolochiaceae     | C     | NT         |
| 7. Artocarpus hirsutus Lam.    | Moraceae             | T     | VU         |
| 8. Beilschmiedia dasteelli     | Lauraceae            | T     | NT         |
| 9. Casearia rubescens Dalzell.  | Salicaceae           | T     | NE         |
| 10. Celastrus paniculatus Wild. | Celastraceae         | C     | NT         |
| 11. Chonemorpha fragrans      | Apocynaceae          | C     | NE         |
| 12. Cinnamomum malabatrum      | Lauraceae            | T     | NE         |
| 13. Dalbergia horrida          | Leguminosae          | C     | NE         |
| 14. Dalbergia latifolia Roxb.  | Leguminosae          | T     | VU         |
| 15. Dennis benthamii           | Leguminosae          | C     | NT         |
| 16. Diospyros candleaena Wight | Ebenaceae            | T     | VU         |
| 17. Diospyros paniculata Dalzell| Ebenaceae            | T     | NT         |
| 18. Diospyros saldanae Kosterm. | Ebenaceae            | T     | NE         |
| 19. Dipertocarpace indus Bedd. | Dipertocarpaceae     | T     | EN         |
| 20. Drosena indica L.          | Drosaceae            | H     | LC         |
| 21. Embelia tsijram-cottam (Roem. & Schlcht.) A.DC. | Primulaceae | C | VU |
| 22. Epigpogium roseum (D.Don) Lindl | Orchidaceae | H | NE |
| 23. Garcinia gymnigutta (L.) Roxb. | Clusiaceae | T | NT |
| 24. Garcinia indica (Thouars) Choisy | Clusiaceae | T | NE |
| 25. Garcinia morella (Gaertn.) Desr. | Clusiaceae | T | NE |
| 26. Glachidion zeylanicum (Gaertn.) A.Juss. | Phyllanthaceae | T | NE |
| 27. Grewia heterotricha Mast.  | Malvaceae            | C     | NE         |
| 28. Holigarna grahamii (Wight) Kurz | Anacardiaceae | T | NE |
| 29. Hopea canarensis Hole     | Dipterocarpaceae     | T     | EN         |
| 30. Hopea parviflora Bedd.     | Dipterocarpaceae     | T     | EN         |
| 31. Hopea ponga (Dennst.) Mabb. | Dipterocarpaceae     | T     | EN         |
| 32. Hydrocarpus pentandrus (Buch.-Ham.) Oken | Achariaceae | T | LC |
| 33. Impatien aculis Arn.        | Balsaminaceae        | H     | LC         |
| 34. Knema attenuata Warb.      | Myristicaceae        | T     | LC         |
| 35. Kunsteria keralensis       | Leguminosace         | C     | EN         |
| 36. Madhuca neriifolia (Moon)  | Sapotaceae           | T     | EN         |
| 37. Mansinea razyana Yogan. & Subr. | Apocynaceae | C | R |
| 38. Memecylon malabaricum (C.B.Clarke) Cogn. | Melastomataceae | S | R |
| 39. Mesua ferrea L.            | Calophyllaceae       | T     | NT         |
| 40. Mimusops elengi L.         | Sapotaceae           | T     | NT         |
| 41. Myristica dactyloides Gaertts. | Myristicaceae | T | NT |
| 42. Myristica malabarica Lam.  | Myristicaceae        | T     | VU         |
| 43. Nigianthus ciliatus (Nees) Bremek | Acanthaceae | S | NE |
| 44. Nothofagia beddomei Gamble | Anacardiaceae        | T     | NT         |
| 45. Persea macrantha (Nees) Kosterm. | Lauraceae | T | VU |
| 46. Pittosporum dasycaulon Ming. | Pittosporaceae | T | NT |
| 47. Salacia malabarica Gamble  | Celastraceae         | C     | EN         |
| 48. Salacia oblonga Wall.      | Celastraceae         | C     | VU         |
| 49. Santalum album L.          | Santalaceae          | T     | VU         |
| 50. Saraca asoca (Roxb.) Willd. | Leguminosace         | T     | VU         |
| 51. Smilax zeylanica L.        | Smilaceae            | C     | LC         |
| 52. Symplocus cochinchenensis (Lour.) S.Moore | Symplocaceae | T | NT |
| 53. Tabernanoma alternifolia L. | Apocynaceae          | T     | NE         |
| 54. Thatteia siliqua (Lam.) Ding Hou | Aristolochiaceae | S | NT |
| 55. Tinospora binennis (Lour.) Merr. | Menispermaceae | C | NE |
| 56. Vateria indica L.          | Dipterocarpaceae     | T     | CR         |
| 57. Vepris bilocularis Engl.    | Rutaceae             | T     | NT         |
| 58. Vitex leucocyan Lf.         | Malvaceae            | C     | NE         |

CR—Critically Endangered | EN—Endangered | VU—Vulnareble | NT—Near Threatened | R—Rare | LC—Least concern | NE—Not Evaluated.
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