

# Verbenaceae: Characters, Distribution and Types

In this article we will discuss about:-

1. Characters of Verbenaceae
2. Distribution of Verbenaceae
3. Economic Importance
4. Affinities
5. Important Type.

## **Characters of Verbenaceae:**

Plants herbs, shrubs or trees, leaves simple, exstipulate, opposite or whorled; inflorescence cymose, racemose or spike, flowers hermaphrodite, zygomorphic, hypogynous, calyx gamosepalous, persistent; corolla 5 lobed, gamopetalous sometimes 2 lipped, stamens four, didynamous, unequally paired, epipetalous; carpels two, syncarpous, superior, axile placentation, fruit drupe.

## **A. Vegetative characters:**

### **Habit:**

Mostly annual or perennial herbs, may be shrubs or trees (Tectona) or rarely woody climbers or halophyte (Avicennia) in tropical shores.

### **Root:**

Tap, branched, pneumatophore in Avicennia.

### **Stem:**

Erect, herbaceous or woody, young branches quadrangular, in some branches spiny.

**Leaves:**

Simple or palmately or pinnately (Peronema) compound, opposite or whorled, exstipulate, entire or divided.

**B. Floral characters:****Inflorescence:**

Cyme or racemose spikes often with an involucre of coloured bracts; cymose is usually dichasial (Clerodendron).

**Flower:**

Zygomorphic, hermaphrodite, rarely unisexual by abortion (Aegiphila), hypogynous, pentamerous or tetramerous (Physopsis), rarely actinomorphic (Physopsis) complete.

## ADVERTISEMENTS:

**Calyx:**

Sepals 5 lobed, gamosepalous, persistent, bell shaped or tubular, rarely 4 to 8 valvate, inferior.

**Corolla:**

Petals 5 or 4 lobed, gamopetalous petals unequal, tubular or cylindrical, bi-lipped, imbricate, inferior.

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**Androecium:**

Stamens 4, didynamous, fifth stamen may be staminode or absent rarely 5 present (Tectona), epipetalous, bithecous, filaments free, dorsifixed, introrse, dehiscence longitudinal.

**Gynoecium:**

Bicarpellary, syncarpous, rarely carpels 4 (Duranta) or 5 (Geunsia) superior in early stage bilocular but soon divided into 4 or many loculed by false septa, axile placentation or free central in Avicennia; style terminal, stigma entire or bilobed.

**Fruit:**

Drupe rarely schizocarpic capsule enclosed by persistent calyx.

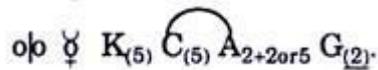
**Seed:**

Non-endospermic with a straight embryo.:

**Pollination:**

Entomophilous.

**Floral formula:**



**Distribution of Verbenaceae:**

The family is commonly called Verbena family. It includes 77 genera and 3,020 species, out of which 21 genera and 125 species occur in India. The members of family are inhabitants of tropical and subtropical regions, they also extend into temperate lands.

**Economic Importance of Verbenaceae:**

The family is of fairly great economic importance.

**1. Timber:**

The wood of *Tectona grandis* (Teak, H. Sagwan) is extremely hard and lasting. The wood is largely used in manufacturing of ships and good quality furniture. Teak is grown in forests of Burma, Madhya Pradesh and Assam. The wood of *Gmelina arborea* is used in making drums, sitars and other musical instruments.

**2. Medicinal:**

The roots of *Clerodendron* are used in asthma and cough. The decoction of leaves of *Lantana camara* is given in tetanus and rheumatism. The leave's juice of *Gmelina arborea* is used in gonorrhoea, cough and ulcers.

**3. Oils:**

*Lippia alba* produces a valuable oil.

**4. Tanning:**

The bark of *Avicennia* is used in tanning.

**5. Febrifuge:**

The leaves of *Vitex negundo* serve as febrifuge. The branches of this plant are kept over stored grains to keep off insects.

### **6. Ornamental:**

Lantana, *Verbena officinalis*, *Duranta*, *Congea tomentosa*, *Callicarpa*, *Clerodendron*, *Petrea* are cultivated in gardens.

### **Affinities of Verbenaceae:**

The family shows close relationship with Lamiaceae (Labiatae) in the bilabiate corolla, persistent calyx. It also bears some affinity with Boraginaceae in the nature of inflorescence, calyx and fruit. It bears relationship with Acanthaceae.

Bentham and Hooker included the family Verbenaceae in the Lamiales. Hallier retained Verbenaceae within Tubiflorae and sought its origin from the Scrophulariaceae. Hutchinson at first (1926) accepted it as belonging to his Lamiales, but later (1948, 1959) segregated it as the Verbenales and derived it from rubiaceous stocks.

Hutchinson (1969) in “Families of Flowering plants” treated Stibaceae, Chloranthaceae and Phrymataceae as separate families, which were tribes of Verbenaceae in Bentham and Hooker’s *Genera plantarum*. Thus the family is reduced to include five tribes only.

### **Common plants of the family:**

#### **1. *Avicennia alba* (White mangrove):**

A tree of Sunderban with long pneumatophore and viviparous seeds.

#### **2. *Callicarpa arborea* (H. Ghiwala):**

A tree with hard, light coloured wood.

#### **3. *Clerodendron* (H. Bharangi) (*Clerodendrum* L.):**

*Clerodendron inecme* – sea shore plant.

#### **4. *Duranta repens*:**

An erect shrubby hedge plant.

#### **5. *Lantana indica*:**

Lantana indica Weed.

**6. Tectona grandis (H. Sagwan):**

A deciduous tree yields timber teak for furniture.

**7. Verbana officinalis:**

Stem quadrangular, common on waste places.

**8. Vitex negundo:**

Vitex negundo (H. Indrani).

**Division of the family and chief genera:**

**Briquet divided the family into following:**

**Group-A:**

Inflorescence spike or raceme or head like spike, sometimes uniparous cyme, ovule basal, erect and anatropous.

**Tribe 1. Stilbeae:**

Seed endospermous, flower regular or slightly irregular, seldom fully zygomorphic e.g. Stilbe etc.

**Tribe 2. Verbeneae:**

Seed exendospermous. Other characters like above e.g., Verbena, Phyla, Lantana.

Group-B. Inflorescence cymose or cymose panicle or cymose umbel, rarely flowers are axillary solitary

**Tribe 3. Chloantheae:**

Ovule marginal. Fruit 4-10 celled drupe. Seed with endosperm, e.g. Chloanthes, etc.

**Tribe 4. Viliceae:**

As above but seed without endosperm, e.g. Tectona.

**Tribe 5. Caryopteridae:**

Fruit capsular 4-valved, valve separating from placental axis or not e.g. Caryopteris etc.

**Tribe 6. Symphoremidae:**

Ovule pendulous orthotropous, ovary completely 2 celled. Fruit dry 1 seeded, e.g. Symphorema etc.

**Tribe 7. Avicenniaceae:**

Ovary incompletely 4-celled, with central placental column. Fruit capsular, bivalved 1 seeded e.g. Avicennia.

**Important Type of Verbenaceae:**

***Duranta plumeri* (Fig. 86.1):**

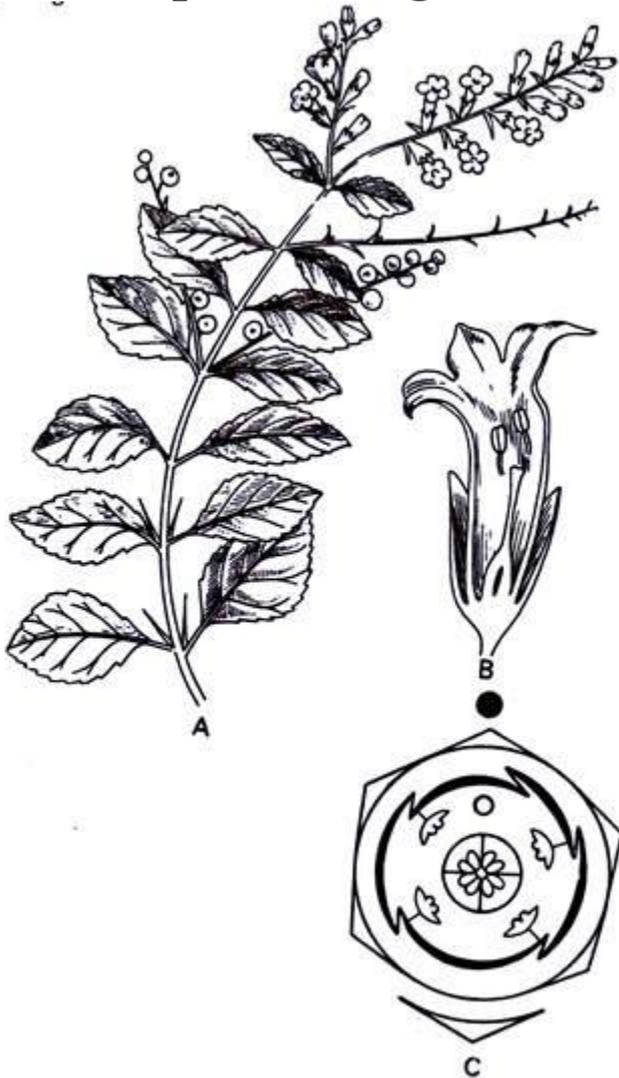


Fig. 86.1. *Duranta plumeri* Jacq.  
A. Part of the flowering twig. B. Flower in L.S. (enlarged). C. Floral diagram.

**Habit:**

Small shrub.

**Root:**

Tap, deep, branched.

**Stem:**

Herbaceous, woody below, erect, solid, branched, green when young.

**Leaf:**

Ramal and cauline, simple, opposite, petiolate, exstipulate, ovate, serrate, acute, uncostate reticulate venation.

**Inflorescence:**

Raceme.

**Flower:**

Pedicellate, bracteate, complete, hermaphrodite, zygomorphic, hypogynous, pentamerous, bluish-white.

**Calyx:**

Sepals 5, gamosepalous, tubular, valvate, persistent.

**Corolla:**

Petals 5, gamopetalous, tubular, lobes, unequal, three anterior lobes are larger, two posterior ones smaller, corolla slightly curved near apex, quincuncial aestivation.

**Androecium:**

Stamens 4, polyandrous, epipetalous, didynamous, posterior stamen absent, bitheous, introrse, basifixed.

**Gynoecium:**

Tetracarpellary, syncarpous, ovary superior, tetralocular, axile placentation, two ovules in each loculus; style simple, stigma simple or bifid.

**Fruit:**

Drupe.

**Floral formula:**

Br op ♂  $K_{(5)} \overset{\curvearrowright}{C_{(5)}} A_4 G^{(4)}$ .

**Related Articles:**

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## 2. Gentianaceae: Characters, Distribution and Types (With Diagram)