

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Third Year)

Subject: Botany

Paper Code: BOC 105

Paper Title: Biodiversity I (Microbes, Algae, Fungi and Bryophytes)

Unit: 2- Systematic position (Bentham and Hookers classification), diagnostic features and important ornamental/economical/medicinal species of the following families

Module Name: Rutaceae

Module No: 31

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Notes

FAMILY RUTACEAE

Division - Phanerogams

Class - Dicotyledones

Sub class - Polypetalae

Series - Disciflorae

Order - Geraniales

Family - Rutaceae

Diagnostic features

- Leaves gland-dotted.
- Flower Hermaphrodite, actinomorphic with a disc below ovary, stamens 10, obdiplostemonous
- Carpel 5 or many, ovary superior, axile placentation.

- Fruit a capsule or berry

Vegetative features

- Habit: shrubs (*Murraya*), trees (*Citrus*, *Aegle*) or herbs (*Ruta graveolens*).
- Root: tap root often branched
- Leaves: opposite or alternate, ex-stipulate, simple or compound, trifoliate (*Aegle*) or pinnately compound (*Murraya*).
- In *Citrus*, leaves are unifoliate compound with winged petioles. Leaves are gland-dotted.

Reproductive features

- Inflorescence: Racemose (*Atalantia*) or Cymose or the flower may be axillary or terminal solitary (*Triphasia*)

Flower: bracteate, complete, hermaphrodite (bisexual) or unisexual, actinomorphic (regular) rarely zygomorphic, pentamerous and hypogynous.

Floral features

- Calyx: 4 or 5 sepals, free or variously connate, aestivation imbricate, rarely valvate
- Corolla: 4 or 5 petals, free or rarely connate petals, aestivation valvate or imbricate
- Androecium: stamens (double the number of petals) or indefinite. When stamens are 10 they are obdiplostemonous (outer whorl opposite the sepals and inner whorl opposite the petals) and when 5, they are antisepalous (standing opposite to sepals: applied to stamens).
- In *Citrus*, stamens are numerous and polyadelphous (arranged in several bundles/groups).
- Anthers ditheous, extrose and dehiscing longitudinally.
- In *Atalantia*, monadelphous (united by the filaments into one group) is found.

- Gynoecium: 2, 4, 5 or indefinite number of carpels. Ovary superior, syncarpous, multilocular, each locule with 1 or 2 ovules with ventral raphe on axile placentation.
- Sometimes, carpels are free at the base and united above the style.
- Ovary in *Feronia* is unilocular with several parietal placentae.
- Fruit: In *Feronia* and *Aegle*, the fruit is amphisarca with woody rind.
- A capsule (*Ruta*) or a berry called hesperidium (*Citrus*).
- **Plants of Family Rutaceae**
- Distribution- The family has 162 genera and 1650 species in tropical and sub-tropical regions.
- In India, it is represented by many genera e.g., *Zanthoxylum*, *Murraya*, *Citrus*, *Aegle*, *Feronia*, *Atalantia* etc.

Important ornamental / economical / medicinal species of family Rutaceae

- *Murraya exotica* (orange jasmine) syn. *M. paniculata*: grown in gardens for their foliage and fragrant flowers.
- *Ruta graveolans* (common rue): grown for its ornamental value.
- *Citrus reticulata* (mandarin orange): vitamin C rich fruits of *Citrus*, eaten raw or after making their preparation in confectionaries, pickles, etc.
- *Aegle marmelos* (bael): used as drinks, good remedy for dysentery and other stomach disorders.
- *Toddalia asiatica*: root bark used in the treatment of malaria, cough and influenza.
- *Agathosma crenulata*: used as a medicinal herb.