

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Third Year)

Subject: Botany

Course Code: BOC 105

Course Title: Classical Taxonomy and Phylogeny

Unit: Systematic position (Bentham and Hookers classification), diagnostic features and important ornamental/ economical/ medicinal species

Module Name: Family- Brassicaceae

Module No: 29

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Notes

Brassicaceae (Mustard family)

Class: Dicotyledonae

Sub-class: Polypetalae

Series: Thalamiflorae

Order: Paritales

Family: Brassicaceae

Genera about 380 with 3000 species.

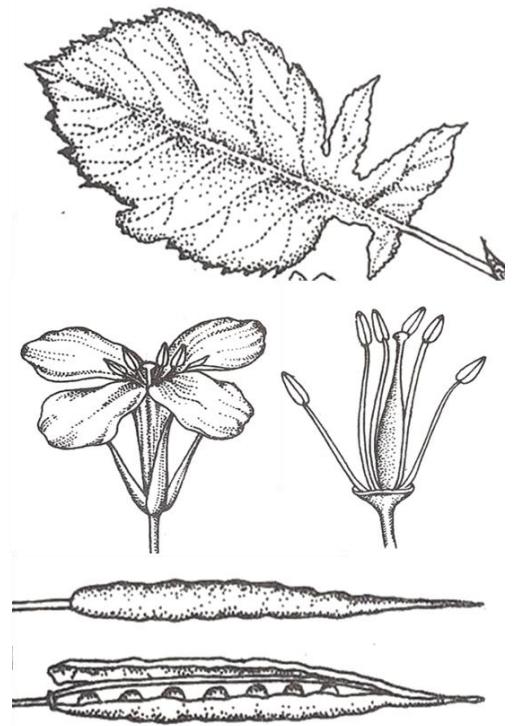
The species of this family are distributed throughout the world but are abundant in north temperate zone with mediterranean as major center.

In India this family is represented by about 51 genera and 138 species.

Diagnostic characters

- Annual, biennial or perennial herbs with watery sap.
- Leaves exstipulate, simple, entire, lyrate.

- Flowers bisexual and actinomorphic in racemes.
- Sepals 4 (2+2), petals 4, placed diagonally in the form of cross (Cruciform corolla).
- Stamens 6 (2+4), tetradynamous.
- Carpels 2, united in superior one chambered ovary.
- Placentation parietal. Fruit usually a silique.



General characters

Habitat: Members of this family are mostly mesophytes.

Habit: They are primarily herbaceous. These herbs may be mostly annual or perennial or rarely biennials

Stem: Stem is usually soft, slender covered with branched stellate, unicellular hairs.

These plants are often known to contain pungent smelling watery juice.

Leaf: Leaves are simple, entire, pinnate, exstipulate and pinnatifid or pinnatisect. The leaves may be cauline or radicle. Cauline leaves alternate or rarely opposite arrangement.

Floral characters

Inflorescence: It is usually racemose or corymb type. It may be simple or sometimes branched. In corymb (*Iberis*) inflorescence the bracts and bracteoles are usually suppressed.

Flower: The flowers complete, hermaphrodite, actinomorphic or sometimes zygomorphic (*Iberis*). Flowers may be tetramerous and hypogynous.

Calyx: The calyx consists of 4 sepals which are free and imbricate in nature. The two outer lateral sepals are often larger and saccate at the base whereas the inner two sepals are usually slimmer.

Corolla: The corolla consists of 4 distinct, diagonally placed petals. Petals are usually long-clawed.

Androecium: Stamens are six in number which are tetradynamous. The filaments of the two inner pairs of stamens are occasionally connate.

Gynoecium: bicarpellary, syncarpous, superior ovary. Ovary has two parietal placentae each with one or many ovules. A false septum extending from one parietal placenta to the other divides the cavity of the ovary into two locules. Style is simple or absent. Stigma two lobed or discoid.

Pollination: The members of this family are both self-pollinated and insect pollinated. As the flowers are very small, the nectar is not easy available. So the flowers can only be visited by few small insects.

Fruit: The fruit is a pod which dehisces by two valves, break away from below upwards. Seeds remain attached to the persistent placentae. If the pod is cylindrical it is called siliqua (*Brassica* spp.) and if the pod is short and broad it is called silicula (*Alyssum*). The fruits of this family have importance in taxonomic and systematic studies.

Important plants of Brassicaceae

The following is a list of some important members of family Brassicaceae, arranged alphabetically.

- *Alyssum* (Basket of gold)
- *Brassica campestris* (Mustard)
- *Brassica alba* (White mustard)
- *Brassica juncea* (Indian mustard)
- *Brassica napus* (Rape seed)
- *Brassica nigra* (Black mustard)
- *Brassica rapa* (Turnip)
- *Brassica oleracea gongylodes* (Knol-khol)
- *Brassica oleracea capitata* (Cabbage)
- *Brassica oleracea gemmifera* (Brussels sprouts)
- *Brassica oleracea botrytis* (Cauliflower)
- *Raphanus sativus* (Radish)

Important medicinal species

- *Cheiranthus cheiri*, known as wallflower belonging to family Brassicaceae. It is a medicinal plant used in the treatment of deafness, Wisdom teeth pain.
- Mustard oil is used as base for hair oils.
- The glucosinolates found in vegetables of this family have anti-cancer potential. Also have an antibiotic-like effect in intestine.
