Morphology of carpel

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Gynoecium:

The gynoecium or pistil is the central or the topmost whorl of the flower usually terminating the thalamus. It is composed of one or more carpels or megasporophylls. When there is a single carpel the pistil is monocarpellary which is not very common although it is a characteristic of the large families of Leguminosae and Gramaneae. Compound or polycarpellary gynoeciums are much more common than the simple type. In such a gynoecium, the different carpels may remain completely free from one another when it is termed apocarpous or the carpels may unite with each other, wholly or partially, forming syncarpous gynoecium.

Style and Stigma:

The style connects the ovary with the stigma and usually arises from the top or the summit of the ovary, i.e., it is apical. In some cases, however, the ovary apex itself may be deflected so that the style may appear to originate from near the base (basillar) or from the side (lateral) as in Alchemilla and mango. The style is usually deciduous, dropping off after fertilization. But, in some cases, as in Naravelia zeylanica, Clematis, Digitalis, etc., it may be persistent . The style of Carina , Iris, etc., is petaloid. The base of the style in the family Umbelliferae is swollen forming what is known as the stylopodium.

The stigma is usually placed on the style. Sometimes, there may be no style, the stigma being placed on the top of the ovary as in Sambucus , Berberit, lotus, etc. Then it is termed sessile. The stigma top is usually rough, papillose or even hairy and somewhat sticky due to secretions. This shows a receptive surface where the pollens alight and germinate. In a syncarpous ovary there may be separate stigmas as in china-rose or the stigma may be lobed when it is described as bifid (e.g., Compositae), trifid, etc. Usually, the number of lobes correspond to the number of carpels but, monocarpellary flowers of Graminaceae show bifid feathery stigmas. The stigma of poppies (Papaver) is sessile as well as striate showing a star like radiate appearance .

Ovary

Ovary is the most important part of the carpel as it contains the ovules which develop into seeds. A carpel without a functional ovary is sterile. The foliar origin of the ovary is rather clear in the simple ovary of pea. It is even clearer in the inflated ovary of its relative *Colutea arborescens*. One may easily realise that a leaf like carpel, i.e., a

megasporophyll as seen in the Gymnosperms, is folded about its midrib and forms a chamber by the fusion of the margins. There is a special tissue called placenta along the margin and the marginal line along which the carpel fuses is called the ventral suture, the midrib being the dorsal suture . Ovules develop from this placental tissue and remain within the ovary chamber.