

A NOTE ON THE ODD PETAL IN ANGIOSPERMS

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Flowers of the Dicotyledons are generally 5-merous and those of the Monocotyledons are 3-merous. In the Dicotyledons, the common arrangement of petals is in such a way that the odd petal is anterior in position and the remaining four petals form two lateral pairs. The reverse of this arrangement is seen in a few groups of Dicotyledons such as the Fabaceae and the Malvales and so on. In these taxa the odd petal is posterior in position. The significance of this reversal of arrangement of the odd petal is not understood. However, the odd petal in Fabaceae, which is called the vexillum or standard, is the most attractive part of the flower and is the most significant of the five petals in attracting insect pollinators.

In most of the Monocotyledons, the odd petal is posterior in position and this arrangement is one of the striking differences between Monocotyledons and Dicotyledons. The reason for the posterior position of the odd petal in the Monocotyledons is mysterious since the odd petal generally is identical in form with the other two petals. It is a known fact that monocotyledonous taxa at the family level are well defined with no interemediate forms. However the Dicotyledons have many intergrading groups such as the Verbenaceae, Lamiaceae and Boraginaceae complex, the Magnolian complex, and so on. The occurrence of posterior odd petals in most of the families of the Monocotyledons is very significant in tracing the inter-relationships of the families. Orchidaceae is a noted exception to the posterior arrangement of the odd petal in Monocotyledons. In this family, the odd petal is called the labellum and is the most attractive part of the flower. As the

labellum is initiated, it is posterior in position in the developing bud, but it becomes anterior in position due to the twisting of the ovary by 180° during the development of the bud. Since the labellum in the Zingiberales group is of staminal origin, it is not homologous to the orchidaceous labellum.

The family Orchidaceae and the family Asclepiadaceae are generally compared because of the presence of pollinia and gynostegia in both families. This condition is considered to be an example of parallel evolution that has taken place in Monocotyledons and Dicotyledons. The role played by the vexillum (Fabaceae) and the labellum (Orchidaceae) in promoting entomophily may also be compared as to the unusual positions occupied by the vexillum (posterior) and the labellum (anterior) for their respective classes. This similarity in function is very striking since the Orchidaceae represents the culmination of lines of evolution in the Monocotyledons, but the Fabaceae occupies only the middle position in the evolutionary trends of Dicotyledons. The occurrence of the posterior odd petal in most of the monocotyledonous taxa and also in the Fabaceae and the Malvales can only be accounted for as another example of parallel evolution since the Monocotyledons are not directly linked to these two dicotyledonous taxa.



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