

Oviposition mistake in plain tiger butterfly, *Danaus chrysippus* L.

Kunal Ankola

Insect oviposition (egg laying) is an important reproductive behaviour, essential for the establishment of healthy offspring for the next generation. In herbivorous insects, such as butterflies, the sensory system plays a vital role in this process, helping females to find a suitable host plant for egg laying. This phenomenon is best explained by the preference-efficiency hypothesis (PPH), which speaks of the natural selection of only those females with the ability to choose ideal host plants that further support the growth and development of their offspring. Here, ideal host plants referred to plants of high nutritional value with limited or reduced defence mechanisms against herbivorous insects. Choosing the right host plant is highly recommended, especially when neonatal larvae are sensitive and less mobile than adults. Hence, PPH is also known as ‘mother-knows-best’ hypothesis. However, appropriate selection of host plant is a challenging task for the females that depends on both external and internal stimuli and is influenced by a series of fluctuating environmental parameters.

A butterfly choosing its host plant is a dramatic episode in which the female uses visual and olfactory cues and get attracted towards their host plants. Generally, butterflies are oligophagous specialist insects prefers

a specific group of plants for their larval feeding. These specific groups of plants impart specific chemical signals that are identified by the females prior to oviposition. Mostly, these chemical signals are the secondary metabolites (alkaloids, glycosides etc.) that are identified by the female through a unique method. For instance, few butterflies use their first pair of tarsal claws to scratch the surface of the leaf. This releases the chemical stimulus from the leaf which is conveniently diagnosed by the females. Despite of being specialized to comprehend these chemical stimuli, the females commit some major mistakes during egg laying. Such mistakes are also known as oviposition mistakes, that adversely affects the survivability of the newly hatched larvae.

One of the oviposition mistakes made by the Plain Tiger butterfly (*Danaus chrysippus*) has been documented in this article. The female plain tiger butterfly was spotted ovipositioning on the leaves of its host plant (*Calotropis* spp.) in the Jnana Bharathi campus, Bangalore University. It is extremely uncommon to see a plain tiger butterfly make any sort of oviposition error, but this butterfly’s action was remarkable since the female was attempting to lay her eggs on leaves that had fallen away from the plant body.



Fig. 1. Plain Tiger butterfly (*Danaus chrysippus*)



Fig. 2. Plain Tiger (*D. chrysippus*) butterfly trying to identify the chemical cues from Calotropis leaves that are fallen away from the plants



Fig. 3. Oviposition of the Plain Tiger (*D. chrysippus*) butterfly on Calotropis leaves that are fallen away from the plants

D. chrysippus, is a member of the family Nymphalidae, which is widespread throughout southern India. The butterfly is categorised as milkweed butterfly due to its larval feeding habit on toxic milkweed plants. Like any other butterflies, the oviposition of plain tiger is depending on the specific chemical cues imparted by the milkweed plants. Generally, the female wander around its host plant to examine and select appropriate leaves for ovipositioning and lays

10 to 12 eggs individually on different leaves within 5 to 6 minutes. Although these butterflies are experts at picking up the chemical stimuli of the leaves, they cannot identify the location of the leaves. In some cases, the females lay eggs on the leaves of their host plants that have fallen out of the plant body. This is one of the serious mistakes in oviposition that might risk the hatchability of eggs and also influence the survivability of newly hatched caterpillar. The eggs

laid on the fallen leaves could be damaged or predated by other animals. Conversely, by the time the egg hatches, the fallen leaf may have dried and the new born larvae are very unlikely to migrate in search of their host plant. Such new born non migratory larvae would become easy prey for other insects or may die from starvation.

AUTHOR

Kunal Ankola

Department of Studies in Sericulture Science,
Manasagangothri, University of Mysore, Mysuru

Email: drkunalankola@gmail.com
