Devagiri Journal of Science 6(1), 29-31
© 2020 St. Joseph's College (Autonomous), Devagiri
www.devagirijournals.com
ISSN 2454-2091

Studies on the *Leptosia nina* (Fabricius, 1793) interactions on *Cardamine hirsuta* L.

Abhilash E.S.* and Arunima

Department of Botany, Sree Narayana Guru College, Chelannur, Kozhikode, Kerala

Received: 16.09.2019

Revised and Accepted: 20.10.2020

Key words: Butterfly, *Leptosia nina*,Host plant, *Cardamine hirsuta* L.

Abstract

Butterflies are beautiful insects that are very specific to host plants. Butterflies use Cardamine as a host plant to lay eggs and the developing caterpillar is enormously feeding the leaves and stems of Cardamine plants. In the life cycle, psyche butterflies in caterpillar to the pupal stage are only depending on the Cardamine plant. When it becomes a butterfly it will fly away to their favourite nectar-feeding plants. Psyche butterflies select cleome plants as their favourite nectar plant.

1. Introduction

Cardamine is a large genus of flowering plants belonging to the mustard family, Brassicaceae. Cardamine is an alternative of Arabidopsis which is a powerful model system. *Arabidopsis thaliana* is considered as the primary model organism for plant science (Hay & Tsiantis, 2016) and it is an edible plant also. *Cardamine hirsuta* is commonly seen in a moist area and available all over the country. It has some slightly hairy nature so it is called hairy bitter case. Their seeds are arranged in the seed pods as the seeds attain maturity it will burst out. It take 40-45 days to complete their life cycle.

The Cardamine grow with rosette of leaves at the base of the stem, while there may be leaves on the upright stem, most of the leaves will be part of the basal rosette.

The compound leaves in this rosette are pinnately divided into 8–15 leaflets which have short stems connecting them to the petiole. Flowers are white usually seen in a group on the top of the vertical stem. All the flowers reach the same level due to the elongation of pedicels of the older flower. Flowers have 4 sepals and 4 petals. There are four stages in the metamorphosis of butterflies that are egg, larva, pupa and adult. Butterflies are attracted to different flowers to take nectar and they also help in pollination.

Leptosia nina, the psyche, is a small butterfly belonging to the family Pieridae. The only recorded local host plant, *Cleome rutidosperma*, is a common herbaceous weed with violet-blue to pink flowers (Annon, 2020).The caterpillars of the Psyche feed on the relatively young to middle-aged leaves and young/ tender stems. Locally, Psyche shares the same host plant with striped Albatross and Cabbage White.

Three cardamine plant were collected from Munnar during field

*Corresponding author
E-mail: abhies@gmail.com

trip. Munnar is a high altitude region situated at around 1,600 metres (5,200 ft) above mean sea level, in the Western Ghats mountain range.

Cardamine plants from Munnar was introduced into a low altitude region of Kozhikode and started to maintain to make the population of Cardamine. A study has been attempted to know the interaction between Cardamine plants and butterflies.

2. Materials and Methods

Cardamine plants, caterpillars of butterflies, glass bowls and empty glass aquarium tank to see the development of butterflies. Caterpillars along with Cardamine plants were kept it in glass bowls for observation of different stages of butterfly.

3. Results and Discussion

In the caterpillar stage(Larva) they are busy with eating the leaves and stem of Cardamine plant and it is wandering through the whole plant, frequently putting excreta(Figure.1)

.On the third day this caterpillar changed to pupa structure hanging in the stem of plant. They were in the state of rest not eating any food.

Colour of the pupa was green, on the 6th day the wing formed (Figure. 2) and on 8th day it become a butterfly. In the life cycle of psyche butterflies only in caterpillar to the pupal stage, it is depending on the Cardamine plant, after that it becomes a butterfly and fly away to their favourite nectar-feeding plant. Psyche butterflies use cleome plants as their favourite nectar plant. Their life cycle includes egg, larva, and pupa and then it becomes a butterfly.

Figure.1

Figure. 2

Figure. 3

In order to know the nectar feeding specificity, different nectar feeding flowers including the cardamine plant were kept in a glass box; psyche butterfly is only attracted to the cleome plant (Figure. 3). *Cleome rutidosperma*, commonly known as fringed spider flower or purple cleome, psyche butterfly is depending this plant for nectar feeding and also to lay eggs. Cleome is locally available host plant having violet blue to pink flowers. Nithin et al., (2018) carried out

elaborative documentation of host plants of butterflies of Western Ghats.

Several researchers reported the host plants of psyche butterfly as ; *Capparis baducca* (Wynter-Blyth 1957; Kunte 2000; Robinson et al. 2010), *Capparis spinosa* (Wynter-Blyth 1957; Kunte 2000), *Capparis zeylanica* (Kunte 2006), *Crateva adansonii* (Wynter-Blyth 1957; Kunte 2000), *Crateva religiosa* (Robinson et al. 2010; Wynter-Blyth 1957), *Cleome rutidosperma var.burmannii* (Kalesh & Prakash 2015), *Cleome viscosa* (Wynter-Blyth 1957; Kunte 2000.

4. Conclusion

Major findings of this study are psyche butterflies use cardamine as a host plant to lay their eggs and later form caterpillars.These caterpillars eat the leaves and stems of cardamine plants and change to pupal stage. Only this period they depend this cardamine plant. When it becomes a butterfly they go to their favourite nectar feeding plants like *Cleome rutidosperma*.

5. Acknowledgements

The authors are extremely thankful to Dr. Devipriya. V., Principal, Sree Narayana Guru College, Chelannur for giving permission to conduct the study and support.

6. References

Annon (2020). Butterfly of the Month July2020. https://butterflycircle.blogspot.com/2020/07/butterfly-of-month-july-2020.html

Hay, A., & Tsiantis, M. (2016). Cardamine hirsuta: a comparative view. *Current opinion in genetics & development*, *39*: 1–7.

Kalesh, S. & S.K. Prakash (2015). Additions to the larval host plants of butterflies of the Western Ghats, Kerala, South India (Rhopalocera, Lepidoptera): Part 2. *Journal of Bombay Natural History Society*, **112:** 111-114.

Kunte, K. (2000). *Butterflies of Peninsular India*. Universities Press (Hyderabad) and Indian Academy of Sciences (Bangalore), 254pp.

Kunte, K. (2006). Additions to known larval host plants of Indian butterflies. *Journal of the Bombay Natural History Society*.103: 119–122.

Nithin Ravikanthachari, Balakrishnan.V.C., Pareesh Viswanath Churi and Kalesh.S. (2018). Larval host plants of the butterflies of the Western Ghats of India. *Journal of Threatened Taxa*.**10(4):**11495-11550

Robinson, G.S., P.R. Ackery, I.J. Kitching, G.W. Beccaloni & L.M. Hernández (2010). HOSTS - A Database of the World's Lepidopteran Hostplants. Natural History Museum, London. http://www.nhm.ac.uk/hosts. Electronic version accessed on 18 August 2010.

Wynter-Blyth, M.A. (1957). Butterflies of the Indian region. Oxford-Bombay Natural History Society, Bombay, 523pp.