

Diversity of butterflies and moths based on cytogenetics from J&K, India

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Butterflies and moths belong to order Lepidoptera which is the second largest order of insects. These insects are of great importance particularly in the larval stages as the majority of species demolish the foliage and shoots of trees and crops, bore into stems, attack underground parts and several species are injurious to timber. Diversity of ten species of butterflies have been undertaken in the present research work, as the phylogeny of Lepidoptera has presented many problems which the taxonomists have faced from time to time. Along with the diversity, the cytogenetic study of some species have also been made so as to reveal the cytological basis of diversity. It was revealed that the chromosomal polymorphism, to some extent, is responsible for the biodiversity occurring in various families at various levels.

Key words : Diversity, Cytogenetic, Polymorphism, Families

INTRODUCTION

The Lepidoptera (butterflies and moths) are the second most species rich order of insects, with about 1,70,000 recognized species and perhaps 3,00,000 still undescribed. Diversity of Lepidoptera at the species level with experts giving estimates of described and undescribed species numbers for all the major groups of Lepidoptera. Almost all Lepidoptera species are dependent on angiosperm plants as larval food plants. This association has long been known to be evolutionary conserved but fossil based age estimates suggest that Lepidoptera diversified long after their host plants diversified. Many of them are serious pests of agriculture. They can serve as model systems for studying the action of natural selection in the wild since we know much about their ecology, natural history, physiology and behaviour. They are large enough to study in the field yet small enough to grow easily in lab colonies.

MATERIALS AND METHODS

The larvae of Lepidopteran species were collected from their respective host plants from different regions of Jammu. Caterpillars were dissected, some were made to emerge as adults and some adults were collected directly and killed in killing bottle containing ethyl acetate and stretched on board for identification. Chromosomal preparations were made using somatic as well as germinal tissues. Gonads and brain ganglia from the larvae were given hypotonic treatment 0.7% NaCl (0.01% Colchicine) and sodium citrate solution for 30 minutes (Rishi *et al.*, 1997). The material was fixed in Carnoy's fixative,

subsequently dabbled and stained with 2% Giemsa and proceeded for slide preparation.

RESULTS AND DISCUSSION

The present study was undertaken with the objective to explore and document the collected species of Lepidoptera and to work out their chromosomal cytology. During the course of present study, ten species along with cytogenetic number were recorded from different locations of Jammu Province of Jammu & Kashmir state (Table 1) and (Fig. a-t). Besides, chromosomal studies of some species have also been investigated (Fig. 1, 2, 3, 4, 5, 6 and 7). Since Lepidoptera possesses immense potential in terms of biodiversity, the widespread discord in naming morphological features of different groups was seen as one reason behind the loss of interest in

