

MOLECULAR IDENTIFICATION, AUTHENTICATION & PHYLOGENETIC ANALYSIS OF *NEUROTHEMIS INTERMEDIA* (ODONATA: LIBELLULIDAE) USING CYTOCHROME OXIDASE I GENE

Dr. Jisha Krishnan B.K., Assistant Professor, Department of Zoology, MESKEVEEDYAM College
Vandalanchery, sajishakrishna22@gmail.com

Abstract

Neurothemis intermedia is a species of dragonfly in the family Libellulidae. This family displays remarkable diversity in behaviour, morphology and consequently focused on studies of comparative population ecology, sexual selection, phylogeography and the evolution of mating behaviour. This species has a broad basal amber yellow marking at base of all wings and it is common at sea level all along the coast but scarce rare in hilly areas. The present study investigated to authenticate the taxonomic position of *Neurothemis intermedia* and to infer its phylogenetic relationship using cytochrome oxidase I gene. Molecular identification revealed the authenticity of this species as *Neurothemis intermedia* and phylogeny revealed its close relative is *Neurothemis fluctuans*.

Key words: Libellulidae, *Neurothemis intermedia*, DNA barcoding.

INTRODUCTION

The Libellulidae (skimmers) family is a large group of dragonflies, consisting of many large and colourful species often seen around water bodies. Most skimmers are rather robust bodied with fairly thick abdomen, patterned wings and bright colours on the thorax and abdomen. Their body length varies from as small as 20mm to as long as 75mm and prefers to live in lentic water bodies like ponds and lakes. These are sexually dimorphic species with clear differences in size, colour and markings in both the sexes (Jisha Krishnan & Sebastian C.D, 2016).

Neurothemis intermedia is a Libellulidae member having rusty brown thorax, reddish brown legs and reddish brown face. Their wings are transparent and have yellow patch in all four wings with a reddish brown spot and a bright red colour abdomen. This libellulidae member commonly observed in streams and also besides paddy fields. This species is known to be widely distributed in Asian countries (Subramanian, 2010).

DNA barcoding is a new genomic technology for recognizing and ordering species. The utility of mitochondrial genes for resolving genus level phylogenetic relationships are well known (Simon, 1994). The main advantage of molecular phylogeny is that it can be performed at low cost without the involvement expert taxonomist in a group.

MATERIALS AND METHODS

1. Sample Collection and Preservation

Dragonflies belongs to Libellulidae family were collected from Kozhikode (Figure 1). Collections were made by hand sweep netting and random field sampling method was done to cover the entire study area. Identification was done by observing wing venation, colour pattern and genitalia, described in available keys/identification guides. Additional information regarding date of collection, locality etc., about each specimen was also recorded. Each specimen was then placed in a separate collecting bottle, assigned a code number and stored in 70% ethanol until further use. One or more legs were removed for DNA isolation and kept in ethanol until further use.