

First record of headless mutant in *Zaprionus indianus* (Diptera: Drosophilidae)

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Short Report

Keywords: Zaprionus indianus, Head less mutant

Posted Date: August 26th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-842062/v1>

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Abstract

In this work, we are reporting headless mutant in *Zaprionus indianus* in month of February from (Punjab), India in 2021 for the first time.

Main Text

Several morphological mutants are evidenced in *Drosophila*, which are commonly used to know the proper function of any gene. Mutations are neither good nor bad: some can be beneficial to the body; others can be fatal. With the creation of new versions of genes, mutations are the driving force behind the evolutionary changes that sometimes lead to new species. Headless flies produced by mutations in the paralogous Pax6 genes *eyeless* and *twins of eyeless* (Kronhamn et al., 2002) Moderate levels of Ey protein are adequate to rescue the headless phenotype, whereas high level of *eyeless* protein are required to rescue the *eyeless* phenotype. Ey protein required to inhibit cell death and to promote eye development whereas Toy protein is required for the activation of the Ey gene, Headless mutants are results of strong mutant of *twins of eyeless* or of *eyeless* (Kronhamn et al., 2002). *Zaprionus indianus* native to Africa and was first recorded from India (Gupta, 1970). In this work, we are reporting headless mutant in *Zaprionus indianus* in month of February from (Punjab), India in 2021 for the first time (Fig. 1). The wild collected flies showed normal phenotype as well as three headless mutant male only.

We took the stereo zoom microscopic image of headless mutant fly to check the modified head region (Fig. 2).

Simultaneously, we took the scanning electron microscopic image of normal and mutant *Zaprionus indianus* (Fig. 3) for clear observations.

The headless mutants were able to survive in laboratory condition for 24 hours only after that they died. When we reared the wild caught flies of *Zaprionus indianus* at 25°C in laboratory conditions than 100% of them were of normal phenotype. These headless mutants can be used for comparison of developmental studies in nature of normal phenotype and mutant phenotypes.

Declarations

The authors declare no competing interests.

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Figures



Figure 1

Headless mutant of *Zaprionus indianus* found in collection. February collection of *Zaprionus indianus* having normal phenotypic flies and headless mutant fly.



Figure 2

Stereo-zoom microscopic image of *Zaprionus indianus* from frontal side. Frontal view of headless mutant of *Zaprionus indianus* to monitor modified region of head.

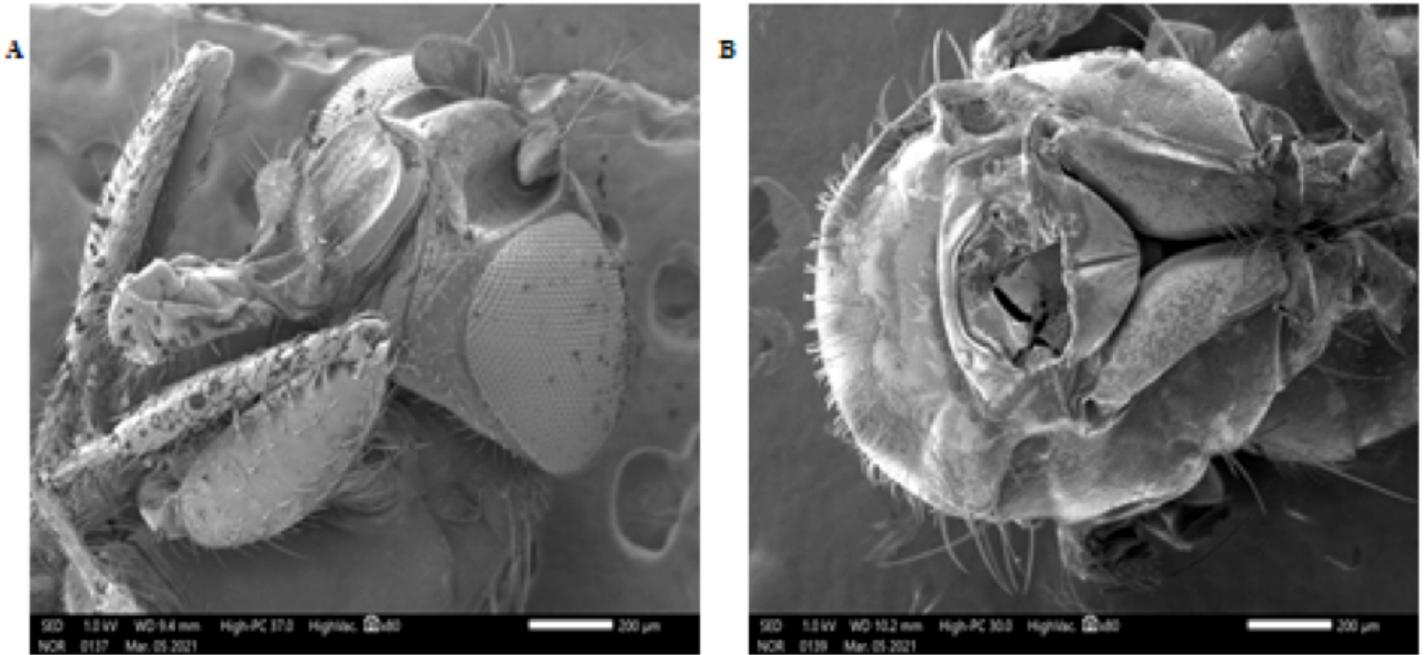


Figure 3

Scanning Electron Microscopic image of *Zaprionus indianus*. SEM (scanning electron microscopic) images of *Zaprionus indianus* normal phenotype (A) and headless mutant phenotype (B).