

琉球大学学術リポジトリ

ヤマトシジミ *Zizeeria maha*
における内部被曝の影響と *Zizeeria* および *Zizina* (鱗翅目: シジミチョウ科) の比較形態分析

メタデータ	言語: 出版者: 琉球大学 公開日: 2017-11-16 キーワード (Ja): キーワード (En): 作成者: Gurung, Raj Deep, グルン, ラジ ディープ メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/37407

Abstract

Title

Effects of internal irradiation in the pale grass blue butterfly *Zizeeria maha* and comparative morphological analysis of the grass blue butterflies *Zizeeria* and *Zizina* (Lepidoptera: Lycaenidae)

Lycaenid butterflies like *Zizeeria* and *Zizina* are mainly distributed in African, Asian and Australian continents. With wing spans of 20 ~ 30 mm and low flight ability these butterflies are easy to rear at table top rearing space under laboratory conditions. Additionally, their simple wing patterns and their responses to various changes in environmental temperature and chemicals factors make them candidates as environmental indicators.

To expand the lycaenid model system additional rearing of three *Zizina* species (*Zizina otis labradus*, *Zizina otis riukuensis*, *Zizina emelina*) and one *Zizeeria* species (*Zizeeria karsandra*) under laboratory conditions was successfully performed. Immature stages of these butterflies were compared together and a morphological-trait database of immature stages of these butterflies was established. Such system will not only help us to identify these organisms at early stages but will be equally helpful to observe the response to certain environmental factors.

Recently, Japanese pale grass blue butterfly *Zizeeria maha* use as an environmental indicator is on the rise after Fukushima Nuclear Power Plant fallout. Reports have shown that these butterflies exhibit various degrees of morphological abnormalities when fed with radioactive Cs-137 irradiated diets.

In this study, an efficient artificial diet was formulated which was then used to feed radioactive Cs-137 to *Zizeeria maha* larvae. Furthermore, non-radioactive cesium chloride was also fed to these larvae to observe toxicity effects. Results showed that under laboratory conditions these larvae are highly tolerant to both radioactive and non-radioactive cesium. The high tolerance of both chemical and radioactive cesium also suggests that morphological abnormalities in the grass blue butterflies could be the outcome of combinations of various factors and not of the Cs-137 activity alone.