

ABSTRACT

Farras Khirzi Khanifah. 24020122420009. Biological Characteristics and Nutritional Index of *Troides helena* L. (Lepidoptera: Papilionidae) on *Piper tagala* as Natural Feed, and Artificial Diets Based on Wheat Flour and Soybean Flour. Under the Guidance of Rully Rahadian and Sri Isdadiyanto.

Troides helena is a butterfly species that is protected under CITES and the Regulation of the Ministry of Environment and Forestry No. P106 of 2018 due to high market demand, which poses a threat to its sustainability. The limited availability of its host plant, *Aristolochia tagala*, the primary larval food source, necessitated the development of artificial diets as a solution. This study aimed to analyze the effects of artificial diets based on wheat flour and soybean flour on the biological characteristics and nutritional indices of *T. helena*. The research was conducted over 75 days at Borobudur Butterfly Edu in Magelang Regency, using 90 larvae of *T. helena*. The observed parameters included larval period duration, larval survival rate, pupal length, pupal period duration, pupal survival rate, eclosion rate, and fecundity. These parameters were used to calculate nutritional indices, namely *Relative Consumption Rate* (RCR), *Relative Growth Rate* (RGR), *Approximate digestibility* (AD), *Efficiency of Conversion of Ingested Food* (ECI), and *Efficiency of Conversion of Digested Food* (ECD). Data were analyzed for normality using the Shapiro-Wilk test to ensure normal distribution. Once the data met the normality assumption, further analysis was performed using one-way ANOVA with a 95% confidence level, utilizing SPSS® version 22. Significant differences were followed by post hoc analysis using Duncan's test. The artificial diet based on wheat flour showed no significant differences compared to the natural diet (*A. tagala*) in terms of biological characteristics of *T. helena*, such as larval period duration, pupal length, eclosion rate, fecundity, and nutritional indices (RGR, AD, ECI, and ECD). In contrast, the soybean-based diet exhibited statistically significant differences compared to the natural diet for all biological characteristics and nutritional indices, except for the ECD index. The artificial diet made primarily from wheat flour and soybean flour had a positive effect on the biological characteristics and nutritional index of *T. helena*. The artificial diet based on wheat flour had better potential as an alternative feed for the maintenance of *T. helena*, as its performance closely resembled that of the natural feed, *A. tagala* leaves.

Keywords : *Aristolochia tagala*, wheat flour, soybean flour, artificial diet, *Troides helena*