

## ABSTRACT

Andita Saffanah Rana. 24020119130114. **Morphological Variation and Leaf Tannin Content of the Genus *Tithonia* at Different Altitudes in Semarang Region.** Under the guidance of Lilih Khotimperwati dan Jumari.

The genus *Tithonia* is a member of the Asteraceae family that possesses various potential benefits, particularly in pharmacology and animal science fields. One of the example is the tannin compounds found in *Tithonia*, which serve as antioxidants. Variations of environmental factors, including altitude, may influence the morphological variations and leaf tannin content. This study aims to determine the morphological variations and leaf tannin content of the *Tithonia* genus growing at different altitudes in the Semarang Region. Research samples were collected from three locations with different elevations: the Universitas Diponegoro area in Tembalang District  $\pm 200$  masl, Beji Village in East Ungaran District  $\pm 500$  masl, and Candi Village in Bandungan District  $\pm 1000$  masl. Morphological variations were observed based on stem, leaf, flower, and achene characters; population clustering was analyzed using MVSP (*MultiVariate Statistical Package*) 3.1 software. The total leaf tannin content results obtained from UV-Vis spectrophotometry were analyzed using the One-Way ANOVA test. The results showed that two species of *Tithonia* were found, namely *Tithonia rotundifolia* and *Tithonia diversifolia*. *T. diversifolia* was found in every location, whereas *T. rotundifolia* was only found in Tembalang District. These two species exhibit clear morphological differences including stem, leaf, flower, and achene characters. *Tithonia diversifolia* collected from the Bandungan station had smaller leaf length and width compared to samples taken from East Ungaran and Tembalang. Leaf tannin content varied across species and altitudes. The leaf tannin content in *T. rotundifolia* were higher and a concentrated blackish-green (4.1341 mgTAE/g), while tannins in *T. diversifolia* from Tembalang were blackish-green (4.0262 mgTAE/g). Furthermore, variations in *T. diversifolia* leaf tannins based on altitude at stations 2 and 3 were blackish-green (4.3289 mgTAE/g) and blackish-blue (6.6455 mgTAE/g). These differences are presumably related to variations in environmental conditions at each station including temperature, air humidity, light intensity, soil pH, and wind speed.

**Keywords:** *Tithonia*, morphological variation, leaf tannin content, altitude, Semarang