SUMMARY

Curcuma is one of the largest genera in the *Zingiberaceae* family. Species in the genus *Curcuma* generally have similar morphological structures, especially in the leaves and rhizomes, making it quite difficult to distinguish and identify one species from another. Therefore, it is necessary to conduct more in-depth exploration and study of the diversity, abundance, and differences in morphological, anatomical and metabolite content characteristics of *Curcuma* rhizomes, especially the curcumin content between *Curcuma* varieties. This research aims to determine the differences in morphological characteristics, anatomical characteristics and curcumin content of the rhizome of three *Curcuma* species from Purwodadi Botanical Gardens (BRIN), East Java.

The aim of this study was to provide information related to the various morphological, anatomical characters and curcumin content analyzation of the rhizome of 3 *Curcuma* species in Purwodadi Botanical Garden that are expected to contribute additional scientific knowledge on *Curcuma* and support further scientific development. The variables observed were the dependent and independent variables. The dependent variables include characters of morphology, anatomy and curcumin content analysis of *Curcuma* rhizomes. Parameters of morphology observed include the length and width of the main rhizome, the length and width of the first and second side rhizomes, the color of the rhizome flesh, the diameter of the main rhizome, the width of the outer skin of the rhizome, the diameter of the first side rhizome, the color of the outer skin of the rhizome, the number of shoots on the rhizome, the aroma of the rhizome, the number of roots on the rhizome, the nature of the rhizome, the presence of stolons, the length between segments on the main rhizome, and the length between segments on the first side rhizome. The parameter of anatomy observed include the shape,type and size of starch (amylum). While, the parameter observed for curcumin analysis was the differentiation of curcumin content level for each rhizome. The independent variable is the variety of the *Curcuma* species. Morphological and anatomical data were analyzed descriptively, while the curcumin data were analyzed by the ANOVA test at the 95% confidence level using SPSS, and supposed to be continued with the Tukey-Test or Honestly Significant Difference (HSD) test at an error rate of 5%.

The research result showed that on the morphological and anatomical observations, there were distinct variations unique in a way used to distinguish between each of the *Curcuma* species. Furthermore, based on the curcumin content calculation, one-way ANOVA and Tukey HSD post-hoc test ($\alpha = 0.05$), each species possesses a distinct and significantly different concentration of curcumin. *C. mangga* was found to have the highest curcumin content among the tested samples, followed by *C. aeruginosa*, while *C. heyneana* contained the lowest amount.

Keywords: *anatomical, Curcuma, Curcumin, morphological, Zingiberaceae*