ABSTRACT

Fitriyani, W. 2014. **The response of Stevia callus growth (*Stevia rebaudiana* B.) on MS Media by adding growth regulator element 2,4-D which is combined with coconut water**. Thesis. Biology Department, Science and Technology Faculty, Maulana Malik Ibrahim State Islamic University of Malang. Supervisors: Dr. Evika Sandi Savitri, M.P. The religion advisor: Ach. Nashichuddin, M.A.

Key words: *Callus, Stevia (Stevia rebaudiana* B.*), 2,4-D, coconut water.*

Stevia (*Stevia rebaudiana* B.) is the bush containing active compound of glycoside steviol diterpene such as Stevioside, Rebaudioside (A, B, C, D, E, F), Steviolbioside A, and Dulcoside A. The contents of Stevia secondary metabolite function as herb composition such as for hypoglycemia, bad digestion, teeth protection, etc. *In vitro culture* is a technique used to multiply plants and to obtain high secondary metabolite through callus culture. 2.4-D is the most frequently used to induce callus due to its stability compared to other type of arcsines. Coconut milk is used to mediate a combination because they have activities such as cytokinins which help cell splits, therefore, the combination between 2.4-D and coconut water is expected to be able to grow Stevia callus fast and optimally. This investigation is to get to know the concentration of combination between the growth regulator element *2,4-Dichlorophenoxyacetic Acid* (2,4-D) and coconut water applied to the most effective MS media as explants response derived from Stevia leaves to grow Stevia callus.

This research used RAL with two factors. The first factor is 2,4-D (0, 1, 2 and 3 mg/L) concentrations and the second one is coconut water concentrations (10, 15 dan 20%). The observed parameters are the callus explants appearance (day), callus percentage (%), wet weight (g), and callus morphology (callus color and textures). The quantitative data was examined by ANAVA *Two-Way*. To obtain the information of the significant differences, *Duncan Multiple Range Test* (DMRT) examination was conducted with significant level 5%. The qualitative data, on the one hand, was analyzed descriptively. The observation to the object was undertaken on daily, fortnightly and monthly basis after plantation (HST).

The ANAVA analysis shows that the treatment of interaction between 2,4-D and coconut water affects the day of callus explants appearance, callus percentage and wet weight. The combination of 1 mg/L 2,4-D + 10% coconut milk is the best and the most efficient combination to grow Stevia callus with callus percentage 78,21% during 3.89 days. It has wet weight 0.74 g. The phonology observation (callus colors and textures) demonstrates that the callus is yellowish green and the textures are compact so that they can be used in secondary metabolite productions.