

ABSTRACT

Sholikhah, Luluk. L. 2014. **The Influence of Fe^{2+} on MS Medium by Additional 2,4-D that Combined with Coconut Water about Development and Secondary Metabolite of Asiaticoside and Madecasoside Callus Pennywort (*Centella asiatica* L.Urban).** Thesis. Department of Biology, Faculty of Science and Technology, Maulana Malik Ibrahim State Islamic University of Malang. Supervisor: Dr. Evika Sandi Savitri, M.P and Supervisor of Religion: Ach. Nashichuddin, M.A.

Kata kunci: *Elicitation, metal Ion of Fe^{2+} , Pennywort *Centella asiatica*), Asiaticoside and Madecassoside*

Pennywort (*Centella asiatica* L. Urban) is one of medicinal plants that contain a variety of secondary metabolites content including asiaticoside and madecasoside. Secondary metabolites content from pennywort plant has benefits for memory, burns, nerve disease, hypertension, asthma, bronchitis and urenitic. Secondary metabolites content can be improved by elicitation using elicitor of metal ion of Fe^{2+} . The administering of the metal ion Fe^{2+} on subculture medium will cause the existing of stress so production of secondary metabolites increased.

This research used method of RAL with one factor, namely concentration of Fe^{2+} . Research was begun by callus induction during 46 days, then callus was made subculture into medium treatment by concentration of Fe^{2+} (0, 90, 100, 110 μM). The observed parameters namely callus morphology (color and texture callus), callus weight and secondary metabolites content of asiaticoside and madecassoside. Morphological observation of callus was done visually weekly, while on fourth weeks callus weight was weighed using scales, and secondary metabolites content was analyzed by HPLC (High Performance Liquid Chromatography). The qualitative data was tested using ANOVA one way and analyzed by descriptive.

Test results of ANOVA showed that administering Fe^{2+} give effect on color and secondary metabolites content of asiaticoside and madecacosside, but has no real effect on texture and weight of callus. Ever higher the concentration of Fe^{2+} that added treatment medium makes color callus more concentrated, that indicate secondary metabolites content is ever higher. The highest weight is obtained at the treatment of Fe^{2+} concentration 110 μM , is 0,283 g. The highest secondary metabolites content of asiaticoside and madecacosside is in treatment with the addition of Fe^{2+} concentration in 100 μM is 3,792 g/100g and 4,423 g/100g. The optimum concentration of Fe^{2+} for development of secondary metabolites content of asiaticoside and madecacosside is on the concentration of 100 μM .