

Production Of Active Compounds By Plant Mesophyll Cells Suspension Culture

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Extraction process to obtain active compounds from plants need lots of plants and should be done continuously. Efforts to address sustainability of materials for the supply of active compounds is by culture in vitro, one of which is by cell suspension culture. With this culture can produce the active compound is needed and with good engineering in the engineering, media and the environment can produce a higher compound concentration. *Centella asiatica* (L.) is a medicinal plant that is widely used in herbal medicine industry in Indonesia. Cell suspension culture of mesophyll of *Centella asiatica* L. Urban leaves were done in three steps: isolation, purification and cell culture. The aim of this research is to investigate the effect of leaves position (age of leaves) and addition of macerozyme R-10 for cell growth and production of asiaticoside. Isolation and purification of mesophyll cell have been performed using factorial completely randomized design. The first factor was leaf position (age of leaf), and the second factor was addition of macerozyme. Data collected were analyzed using Anova and Duncan's test at 0.05. Sucrose was added in the production medium at the concentration of 0.0-2.5-5.0 and 7.5 percent respectively. Qualitative analysis of asiaticoside by thin layer chromatography were carried out by using thin layer chromatography. The result revealed that mesophyll cell could be used as explant for suspension culture. The highest biomass produced with highest asiaticoside were found in cell isolated from second leaves with 0.1 % macerozyme (1.49.10⁷ cell/ml). In suspension culture, addition of sucrose to the production medium gave pcv 8.5%, 2.5% sucrose pcv 21.5% and 7.5% pcv 15.75%. the production not only depended on sucrose concentration, but also use in 0% sucrose it was detected too.

Keywords: suspension cells of leaves mesophyll, plant cell isolation, cell purification

INTRODUCTION

One method to obtain active compounds from plants is by direct extraction. Extraction process requires lots of plants and should be available continuously. Efforts to address sustainability of materials for the supply of active compounds is by culture in vitro, one of which is by cell suspension cultures. With this culture can produce the active compound is needed and with good engineering in the engineering, media and the environment can produce a higher compound concentration. Cell suspension culture is a way of cells culture in the undifferentiated state that performed in sterile conditions and can be performed continuously. This method is mostly done as an alternative to agricultural production e.g in pharmaceutical and industrial fields. This is because the cell population is relatively more uniform, easier addition of chemicals from outside and setting environmental factors. Suspension cultures showed the production of active compounds which are characteristic of these plants. In some studies to produce a higher content of active compounds from plants taken directly from the plants. According [1] for the production of active compounds on a large scale callus cultures less profitable due to relatively slower growth than cell suspension culture. *Centella asiatica* L. Urban is a medicinal plant that is widely used in herbal medicine industry in Indonesia. *Centella asiatica*, among others, as diuresis (urinary laxative), anti-hypertension. In addition, extract from *C. asiatica* are used in industries such as medicine to keloids (which occurs because the tissue scarring), and ulcers. In *C. asiatica* found many secondary metabolites. [2] states there are 3 chemical groups have been detected in extracts of the herb gotu kola: flavonoid and phenolic groups, contains a glycoside, asiaticosida, thankusida, madekasosida, brahminosida, brahmic acid, adasiatik acid, meiosisitol, sentelosa, and tannic substances. To get the product gotu kola plant secondary metabolites can