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CAMELLIA SINENSIS HERBAL PRODUCTION THROUGH IN VITRO CULTURE OF CELL SUSPENSION

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Abstract

Leaf *Camellia sinensis* contains a wide variety of secondary metabolites that are very useful to improve the health of the body and also can be as an alternative in herbal treatment. However, to obtain secondary metabolites from plants grown in the garden, it is required a waiting time for about 5 to 10 years. The purpose of writing this paper is to empower herbs as complementary and alternative medicine treatments that can be integrated to produce it through in vitro culture. Method that is applied is in vitro culture by the cell suspension culture technique of *Camellia sinensis* leaves. The results of the analysis is expected to contain secondary metabolites that are very useful for increasing and improving the health of the body.

Key word: *Camellia sinensis*, cultured in vitro, cell suspension culture, secondary metabolite.

1. INTRODUCTION

Camellia sinensis leaves contain a variety of secondary metabolites including Epigallocatechin Gallate (Sutini, 2010). According to Ahmad et al., 1997. Epigallocatechin Gallate / EGCG can induce apoptosis and captures cancer cells in the human body. Brewed green tea's leaves using one cup of hot water, and let some time, approximately 10 minutes, drink while still warm, steeping the leaves of this herb can reduce cholesterol levels (Anonymous 2014). Besides the aforementioned, catechins found in green tea can burn fat so it can be as anti-obesity (Yuli 2014).

Problems to obtain a secondary metabolite of herbs harvested from the *Camellia sinensis* in the garden is that the waiting time until the age of the plant is more than five years old. The writing of this manuscript aims to address the problems of secondary metabolite production of herbal *Camellia sinensis* plants through in vitro culture by suspension culture techniques that can shorten the time of harvest.

2. LITERATURE REVIEW

Camellia sinensis plant is a perennial plant whose woody structure that if it is left growing high, its height will reach up to 25 meters. But in other case, it would grow low and easy to pluck with periodic maintenance and pruning bushes leaves

of *Camellia sinensis* plants began to be able to be plucked are

sustained after the age of 5 years. With good maintenance *Camellia sinensis* plant may result in a large enough tea leaves for 40 years. Tea gardens therefore need to continue to obtain regular fertilizing, pest-free plant diseases, pruning properly acquire, obtain adequate rainfall. Tea gardens need to be rejuvenated after the tea plants aged 40 years and over.

Camellia sinensis plant is not resistant to drought and requires a minimum rainfall of 1,200 mm which is evenly distributed throughout the year (Fery 2012).

With the suspension culture techniques, production can be integrated without waiting for the *Camellia sinensis* herbal harvest for five years. This suspension cultures is expected to produce secondary metabolites *Camellia sinensis* herb with a short time and produce the same type of herbs *Camellia sinensis* plant herbs grown on the farm / garden. It is expected that this suspension culture produced a very useful herb for enhancing and improving the health of the body. As the results of the study Rustanti 2009, that catechins compound is isolated from tea leaves (*Camellia sinensis*, L. Var *assamica*) is effective as antibacterial against bacteria *Micrococcus luteus* and *Pseudomonas fluorescens*.