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Production Bioactive Catechol by Camellia sinesis Culture Suspense for Anti-Inflamasi –Oxidant Material Candidate

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ABSTRACT

Population explosion problem becoming a trigger of farm transformation to be public resident than farm becoming narrow and reduced. Natural disaster also fragmented farm and plantation. One of effort to reduce these problem were using in vitro technique culture for plantation. The Objective of these paper were to produce bioactive Catechol by *Camellia sinesis* culture suspense for Anti: Inflamasi – Oxidant. Method that be used in it that were integrated in *Vitro culture* with cell suspension technique culture from cammelia sinensis leaf. Produce of these technique prospected give bioactive catechol that was usefull to improve body healt and wellness.

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INTRODUCTION

Catechol was a bioactive component that contained in a plant as such of uncaria gambir Roxb (Yulia, S.R., 2008). In camellia sinensis catechol was polifenol compound that had bioactive effect to simulated bud of flower, influence some enzyme, anti oxidation and anti-virus (Melak, F., 2013). Catechol was a naturally colored compound used as precursors of organic chemical commodities for essences, perfume, and pesticides production. Connected with anti oxidant activity catechol was as catecin decrease that had atoms/ molecule that had un-pair electron on outer orbit that will be easier to capture free radical atoms that could desolate primer & prior cells (Fredisetyawan, 2013).

Problems faced in bioactive catechol production for instance narrow landfill for farming because of housing program as result of population booming and landfill fragmentation (Arifin, M., 2014). By of these case bioactive catechol production by using integrated method culture in vitro by suspension cells culture technique from cammelia sinensis leaves. These technique had positive excess that doesn't need wide landfill farming and had a short time for harvest compared with in landfill cultivication. Bioactive catechol exist by mean in vitro culture can be intensive by elisitor or precursors dosing (Sutini, 2008; Sutini, 2010).

The objective of this research were bioactive catechol production by culture suspension of cammelia sinensis as candidate material for anti inflammation and anti oxidant

Methodology:

Material used for this research are; stem of leaf camellia sinensis taken one until third as explants (Sutini , 2014). Murashoge and Skoog Media in form solid or suspension used as induction. Growing control supplement used are Benzyl Amino Purin (BAP), 2.4-dichlorofenoxy Acetat (2.4D), for disinfectant used ethanol, sterilize aquadest, Na-Hypochloride, Bnelate solution 3%. Extraction culture using Chloroform, Ethyl Acetate, Formiat Acid, Aquadest. For analizy using High Perform Liquid Chromatography (HPLC)

Research Method:

Explant stem of Camellia Sinensis soaked in Benlate 3% solution for 25 minutes. Continued by soaked in Na-Hypochloride, than flush in laminar flow with aquadest three times in sterilize condition. Sterilize Explant cut in 1 cm wide than planted/inducted in MS media and incubated to find callus. Callus formed cut and metered for 500 mgr,

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inducted in Erlenmeyer/glass with suspension media covered with aluminium foil. Than shake in 80~120 rpm speed. Observed growth of suspension cultur than harvest & analyze as needed.

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RESULTS AND DISCUSSION

Induction Callus of Tea:

After three-forth week on callus induction period, callus seem growth started from the edge that had been cut than expand to all surface of leaves. Result induction callus of tea with subtract MS added with 2,4-D 1 ppm , BAP 1 ppm shown in Figure 1.

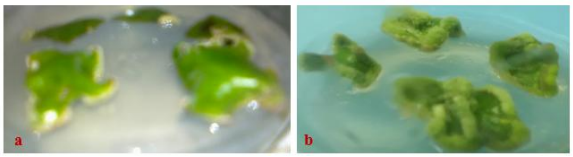

Fig. 1: Callus that grown in substrat MS plus 2,4-D 1 ppm + BAP 1 ppm on age 3-4 week. Callus growth start on surface cut on edge (a) than growth to all surface of explants (b).

On figure 1 seem morphology change of leaves that step by step change to callus form, these could occurred , cell on surface cut taking nutrition from MS substrat to cover wound on surface of edgethan will cover all surface to form callus. These research relevan with sheran (Sheran, T.H., K.H. Regama, 1999) research that callus induction with culture anther of leaves could be harvest after 6 week

Induction in tea suspension media:

Callus that formed in solid phase, cut and metering for 500 mgr than insert into liquid MS medium , and then to be shake. Suspension culture growth could be seen in Figure 2

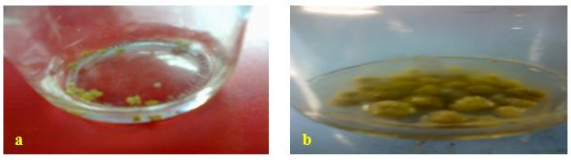

Fig. 2: Suspension culture growth with Fenilalanin precursors . (a) First induction with 500 mgr weight of callus. (b) Callus growth weight achieve 2000 mgr after 30 days (Sutini, 2014).

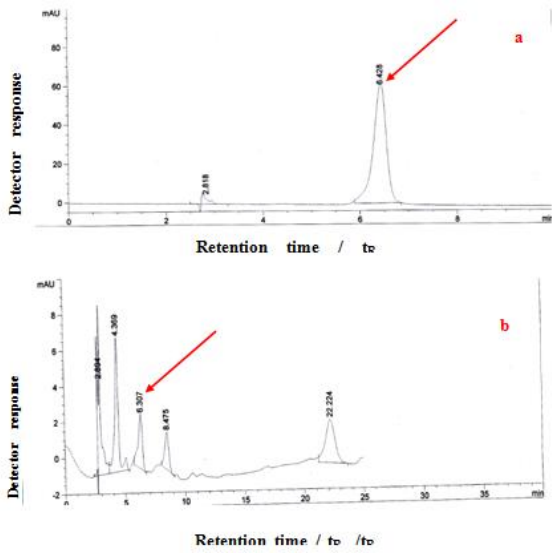

Fig. 3: Chromatogram : (a) Observation Chromatogram Catechol standart, (b) Observation of Chromatogram suspension culture Catechol.

Qualitative analyze Suspension Culture:

Suspension Culture Anayze of Catechol using High Performance Liquid Chromatography. Analyze result qualitative suspension culture Catechol using chromatogram give time retention standart for 6.42 minutes and Suspension culture Catechol form for 6.30 long, could be seen in Figure 3

On Figure 2 shown morphology of suspension culture becoming culture mass with higher cross section, these could be happen because of cell from suspension more collapse by oxygen aeration from shaking effect. On Figure 3 shown Chromatogram standar with suspension culture that had time retention mostly same with 6 minutes, than could be conclude that Suspension Culture can produce Catechol

Summary:

Anti inflamasi and anti Oxidant material candidate Bioactive Catechol from *Camellia sinesis* could be produce from Suspension Culture *Camellia Sinensis* that can be harvest in 4-8 week after induction

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