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IN VITRO PRODUCTION OF SECONDARY METABOLITES FROM GYNURA PSEUDOCHINA (Lour.) D.C.

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Abstract : *Gynura pseudochina* (Lour.) D.C., or commonly called "Daun Dewa" in Indonesian language, is a local medicinal plant believed to be able to treat cancer and some other diseases. Many researchers have been studying its secondary metabolites and some compounds have been identified. From the production point of view, it is also interesting to consider whether or not its *in vitro* culture will give the same spectrum of secondary metabolite. Growth curve of *in vitro* *Gynura pseudochina* (Lour.) D.C. showed that exponential phase was achieved after three weeks while stationer phase has been started right four weeks (MS media + BA 3%) after inoculation. Samples were, therefore, taken after three and four weeks, respectively, to study the profile of their secondary metabolite. Extraction was carried over some degree of solvent polarities and separated compounds were visualized using UV light at 254 and 365 nm. Additionally, qualitative analysis of the compounds was performed using specific spray reagents for flavonoids, terpenoids and alkaloids, respectively. While terpenoid content seemed to be very similar between that produced by *in vitro* and external plant, there were some evidence on differences of flavonoids and alkaloids content between *in vitro* plant and external one. In general, *in vitro* culture has been observed to produce higher amount and variety of secondary metabolites both in three week- and four week-samples.

Keywords : *in vitro* *Gynura pseudochina* (Lour.) D.C., secondary metabolite.

INTRODUCTION

Higher plants contain a variety of substances which are useful medicines, food additives, perfumes, etc. However, decreased plant resources, increases in labour cost and other problems in obtaining these high-value added substances from natural plants have pointed toward the use of plant cell culture for production of the products. Because *in vitro* plant cell culture is not affected by changes in such environmental conditions such as climate or natural depredation, improved production may be available in any place or season. Therefore, studies on the production of useful metabolite by plant cell culture have been carried out on an increasing scale since the end of the 1950's. Plant cell culture is viewed as a potential means of producing useful plant products such that conventional agriculture, with all its attendant problems and variables, can be circumvented. These problems include: environmental factors (drought, floods, etc.), disease, political and labour instabilities in the producing countries, uncontrollable variations in the crop quality, inability of authorities to prevent crop adulteration, losses in storage and handling. Thus, the production of useful and valuable secondary metabolites in large bioreactors located in the consuming country is very attractive. Additional advantages of such processes include: controlled production according to demand and a reduced and requirement. However, this technology is still being developed and despite the advantages outlined above, it should be verified, whether or not the culture will produce the same metabolites as the external plant. *Gynura pseudochina* (Lour.) D.C., or commonly called "Daun Dewa" in Indonesian language, is a local medicinal plant believed to be able to treat cancer and some other diseases. Many researchers have been studying its secondary metabolites and some compounds have been identified [15-22].