

Induction and Microscopic Characterization of Globular Callus from Stem Explant of *Labisia pumila* var. *alata*

Abstract

Labisia pumila (BI.) F. Vill (Myrsinaceae) also known as Kacip Fatimah is a medicinal plant with an enormous therapeutics value and used widely for herbal industries in Malaysia. This study reports the induction of globular calli from stem explants of *L. pumila* var. *alata*. The embryogenic characteristics of the globular calli were further confirmed by the morphological and histological analyses using the light microscope of sectioned material and scanning electron microscope. Globular callus was induced from stem explants that were pre-treated/un-pretreated with thidiazuron (TDZ) on Murashige and Skoog (MS) medium supplemented with 20 μ M 2,4-dichlorophenoxyacetic acid (2,4-D) and various amino acids (glutamine, arginine, proline and leucine) at the concentrations of 0.05, 0.1, 0.25 and 0.5 mM. After six weeks of incubation, explants pre-treated with TDZ induced 100% of globular callus while only friable calli were observed on un-pretreated explants. The addition of amino acids at concentrations between 0.05-0.25 mM enhanced the induction of globular callus. Off all, 0.25 mM leucine provided the highest callus score (5.93 ± 0.12) which produced 31 to 40 globular callus per explant. Double staining test shows the positive reaction to aceto-carmine red (0.5%) in the globular callus indicating the existence of embryogenic nature. Analysis under SEM and histological evaluation has confirmed the embryogenic characteristics with the appearance of isodiametric clump cells containing prominent nuclei. The globular callus is further regenerated to shoot clump, thus, it is suggested that the use of TDZ-pretreatment method with addition of 20 μ M 2,4-D and 0.25mM leucine successfully induced embryogenic callus from stem explant of *L. pumila* var. *alata*. Copyright © 2015 Penerbit Akademia Baru - All rights reserved

