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EFFECT OF DROUGHT STRESS INDUCED BY POLYETHYLENE GLYCOL (PEG6000) ON CALLUS OF *HELIANTHUS ANNUS* L. CV. BERASTAGI

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Abstract: Callus culture of sunflower (*Helianthus annus* L. cv Berastagi) were established from hypocotyl and cotyledone in MS solid medium supplemented with 1.0 mg.L^{-1} NAA and 1 mg.L^{-1} BAP and 1 mg.L^{-1} NAA and 1 mg.L^{-1} kinetin respectively. PEG with molecular weight of 6000 (PEG6000) was used as a drought stimulator and five level (0%, 5%, 10%, 15% and 20%) were developed. Selection of callus which was tolerant to PEG6000 was based on growth of callus parameter (fresh weight), protein profile and total protein content. The results showed that increasing of the concentration of PEG6000 could decrease callus growth from both hypocotyl and cotyledone explants. Hypocotyl explants had better response than cotyledone explants. It was showed by the fresh weight of callus from hypocotyl explants higher than from cotyledone explants. Concentration of PEG until 20% did not cause death of callus. Beside there were no differences on protein profile between callus from hypocotyl and cotyledone explants, but various concentration of PEG6000 could decrease total protein content of callus, especially in PEG6000 more than 5%.

Keywords: *Helianthus annus* L., drought stress, polyethylene glycol, callus

INTRODUCTION

Sunflower (*Helianthus annus* L.) is one of the most edible oil producing crops in the world. This plant has known by everyone in the world including in Indonesia. However, cultivation of its plant was still limited because of many factors. Many regions in Indonesia, especially in the East were drought area, so the drought stress was barrier in the production of crops. Breeding for water stress tolerance by the traditional methods is time consuming procedure [1]. Using somaclonalvariation method that followed in vitro selection at plant breeding program could be used as alternative method to create drought tolerant plant. In vitro selection could be done with apply polyethylene glycol (PEG).