

Ardiyani. Fitria. 2020. Induksi dan Perkembangan Embrio Somatik Kopi Liberika (*C. liberica*) pada Beberapa Perlakuan Zat Pengatur Tumbuh. Tesis ini dibawah bimbingan: Prof. Edy Setiti Wida Utami, M.S dan Prof. Hery Purnobasuki, M.Si, PhD, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

Abstrak

Penelitian bertujuan untuk mengetahui pengaruh pemberian hormon BAP dan 2,4-D terhadap keberhasilan pembentukan embrio somatik *C. liberica*, mengetahui pola perkembangan dan struktur anatomi embrio somatik *C. liberica* dan mengetahui pengaruh pemberian kombinasi BAP, IAA dan NAA terhadap perkecambahan *C. liberica*. Pada tahap pembentukan embrio somatik terdapat 5 perlakuan media tanam yaitu media MS dengan penambahan 1 mg/L BAP + 0,5 mg/L 2,4-D, 1 mg/L BAP + 1 mg/L 2,4-D, 1 mg/L BAP + 1,5 mg/L 2,4-D, 1 mg/L BAP + 2 mg/L 2,4-D dan 1 mg/L BAP tanpa 2,4-D. Pada pengamatan pola perkembangan diperoleh informasi bahwa embrio somatik *C. liberica* berkembang melalui beberapa tahapan yaitu tahap globular, hati, torpedo dan kotiledon. Masing-masing tahapan tersebut memiliki ukuran, bentuk, warna dan jaringan penyusun yang spesifik. Sedangkan pada tahap perkecambahan, terdapat 5 perlakuan media tanam, yaitu media MS dengan penambahan 0,5 mg/L BAP, MS + 0,5 mg/L IAA, MS + 0,5 mg/L NAA, MS + 0,5 mg/L BAP + 0,5 mg/L NAA dan MS + 0,5 mg/L BAP + 0,5 mg/L IAA. Hasil penelitian menunjukkan bahwa embrio somatik *C. liberica* tumbuh pada seluruh media perlakuan. Akan tetapi embrio somatik *C. liberica* tumbuh optimal pada media MS + 1 mg/L BAP tanpa 2,4-D, dengan menghasilkan 20,2 embrio somatik, panjang 3,85 milimeter dan lebar 0,9 milimeter. Sedangkan pada tahapan perkecambahan, media MS dengan penambahan 0,5 mg/L BAP menghasilkan kecambah dengan panjang 5,2 mm dan jumlah daun sebesar 2,6. Media MS dengan penambahan 0,5 mg/L NAA menghasilkan daun dengan ukuran 2,05 mm. Media MS dengan penambahan 0,5 mg/L NAA menghasilkan akar sebanyak 1,8 dengan panjang 3,13 mm. Berat kering kecambah maksimal diperoleh pada media MS dengan penambahan 0,5 mg/L BAP yaitu 1,86 mg.

Kata kunci : Embrio somatik, Auksin, Sitokinin, Pertumbuhan, Perkembangan, Perkecambahan

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ABSTRACT

The aims of this research is to observed the effect of 2,4-D and BAP adding on several combinations and its effect on development *C. liberica* embryos somatic. This study also observed developmental patterns and anatomical structure of *C. liberica* embryos. Moreover, this research studied the effect of addition BAP, IAA and NAA combination to *C. liberica* germination. In embryo somatic development stage, medium culture consist of 5 treatments, such as MS medium containing of addition 1 mg/L BAP + 0,5 mg/L 2,4-D, 1 mg/L BAP + 1 mg/L 2,4-D, 1 mg/L BAP + 1,5 mg/L 2,4-D, 1 mg/L BAP + 2 mg/L 2,4-D and MS medium containing 1 mg/L BAP individually. While in germination stage, there are 5 treatments medium culture, such as MS medium with addition of 0,5 mg/L BAP, MS + 0,5 mg/L IAA, MS + 0,5 mg/L NAA, MS + 0,5 mg/L BAP + 0,5 mg/L NAA and MS + 0,5 mg/L BAP + 0,5 mg/L IAA. The results of this research indicated that in development stage embryos somatic *C. liberica* could grow in all medium treatments but embryo somatic growth optimally on MS +1 mg/L BAP without 2,4-D, by producing 20,2 somatic embryo, with a length of 3,85 milimeter, and width 0,9 milimeter. Observation in developmental patterns and anatomical structure of embryo somatic *C. liberica* consisted of globular stage, heart stage, torpedo stage and cotyledonary stage. Each stages of embryo somatic had a different size, shape, color and cell tissues composed. In germination stage, the result showed that in MS medium with addition of 0,5 mg/L BAP had 5,2 mm height and significantly different from the other treatments. Germination embryo in MS medium with addition of 0,5 mg/L BAP produced 2,6 number of leaves. MS medium with addition of 0,5 mg/L NAA also resulted 2,05 mm leaves width. Whereas, MS medium with addition of 0,5 mg/L NAA resulted 1,8 number and 3,13 mm of root germination embryo. In dry weight variable, MS medium with 0,5 mg/L BAP produced 1,86 mg of germinating embryo..

Keywords : *Embryo somatic, Auxin, Cytokinins, Growth, Development, Germination*