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Effect of Different Colchicine Concentrations and Durations on Shoot Regeneration from Callus of *Exacum ritigalensis* (Binara)

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Abstract

The mitotic inhibitors, colchicine and oryzalin, can be used for callus formation, adventitious bud production, and tetraploid plant initiation in floriculture industry. The callus from *Exacum ritigalensis* (0.5 cm^2) explants were introduced to Murashige and Skoog basal medium (MS) containing 2 mgL^{-1} 6-Benzylaminopurine (BAP) with different colchicine concentrations (0, 10, 20, 30, 40 and 50 mgL^{-1}) and durations of 0, 12, 24, 36 and 48 hours. After treatments, they were transferred to MS basal medium containing 2 mgL^{-1} BAP without colchicine. All treatments in the experiments were arranged in Completely Randomized Design (CRD) with five replicates. Numbers of days to shoot formation, number of shoots per callus and mean height of shoot (cm) were recorded after eight weeks. Statistical analysis was carried out using Duncan's multiple range test of SAS software (version 9.1.3). The results showed that the calluses exposed to all colchicine concentrations for longer durations (48 hours) turned to brown colour after three to four days without regeneration of shoots. The treatment of 24 hours in 40 mgL^{-1}, 36 hours in 30 mgL^{-1} and 40 mgL^{-1} colchicine did not produce shoots. Except the time duration of 12 hours in 10 mgL^{-1} colchicine and the control, other treatments took more than 22±1 days for shoot regeneration. The results revealed that increased colchicine concentration and duration of exposure, significantly decreased the shoot regeneration ability from the callus of Binara

Key words: *callus, colchicine, Exacum ritigalensis, regeneration ability*

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