



## COMPARATIVE CULTURE RESPONSE OF THREE *Coleus blumei* Benth. VARIETIES AS BASIS FOR EXPLANT SELECTION FOR CALLUS INDUCTION

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**ABSTRACT** – Callus was induced from three locally available *Coleus blumei* Benth. varieties; ‘Defiance,’ ‘Shocking Pink,’ and ‘Small Leaf.’ The objective is to determine the most suitable variety to use as explant source for *in vitro* studies of *Coleus* species for rosmarinic acid production. Ease of explant sterilization, culture responsiveness, as well as initial rosmarinic acid content were the key factors considered. Based on thin layer chromatography, ‘Small Leaf’ has the highest amount of rosmarinic acid. When leaf explants were inoculated on culture media for callus induction, ‘Small Leaf’ had the highest percent of contamination at 81.4% compared to ‘Defiance’ at 75.0%, and ‘Shocking Pink’ at 20.0%. Morpho-anatomical observations of the leaf of each variety showed ‘Defiance’ to have the longest trichomes (0.254 mm) while ‘Small Leaf’ has the highest density of trichomes (200 trichomes per mm<sup>2</sup>). Trichome characteristics could be one of the contributing factors affecting the effectiveness of explant sterilization method. All explants were surface sterilized using water and detergent, dipped in 95% ethanol for 30 sec. and immersed in 5% calcium hypochlorite with surfactant for 5-10 mins. In terms of culture response, ‘Small Leaf’ explant grown on MS medium with 1.0 mg l<sup>-1</sup> BAP and 6.0 mg l<sup>-1</sup> 2,4-D, was the most responsive; producing white friable calli on green explant tissue at three weeks after inoculation. ‘Shocking Pink’ produced brown friable calli with extensive tissue browning due to phenolic oxidation 4 weeks after inoculation. ‘Defiance’ did not produce any callus in culture even at 8 weeks after inoculation. Although explant sterilization was a problem due to high density of trichomes, ‘Small Leaf’ proved to be the most promising to use as source of explant for *C. blumei* tissue culture for rosmarinic acid production.

*Keywords: callus induction, Coleus blumei, culture response, rosmarinic acid*



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