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EVALUATION OF CELL GROWTH RATE AND THYMOQUINONE PRODUCTION IN CELL SUSPENSION CULTURE OF *NIGELLA SATIVA*

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Pharmaceutical monoterpenes compound production in plants has been appreciated over the years. These compounds found in the plant as secondary metabolites are characterized as compounds that are generally manufactured in the response of plants to stressful situations. Nigella sativa produces Some valuable monoterpene such as thymoquinone. Many pharmacological effect of *Nigella sativa* is because of the presence of TQ (Schneider-Stock *et al*,. 2014) and it was released and purified from *Nigella sativa* in 1963(Canonica *et al*, 1963). Tissue culture and cell culture are good ways for the production of secondary metabolites from the plant and were been more considered these years (Moscatiello *et al*, 2013).the antibacterial and antifungal effect of the callus of *Nigella sativa* has been reported (Chaudhry *et al*, 2014) and the studies show that callus cell can produce TQ more than seeds (Alemi *et al*, 2013). we evaluated the production of TQ in callus and suspension cell of *Nigella sativa* in this study. The callus induction was from leaf explant on MS media and after several subcultures in 14 days after subculture, the cells moved into liquid media. after several subcultures of suspension cell, the cell growth rate and TQ production were measured in 7, 8 and 9 days after subculture. The cell growth rate in the 8th and 9th day were significantly different from the 7th day. TQ was measured by HPLC and based on the results, TQ production increased after three days and the amount of TQ in 7th, 8th and 9th day were respectively 21.6, 32.48 and 53.59 mg/l. The TQ of callus cells also measured in 14 days after subculture and it was 120 mg/l that shows callus cell are more available for TQ production.

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