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EFFECT OF HYDROGEN PEROXIDE ON CELL GROWTH, ANTIOXIDANT POTENTIAL AND SOME SECONDARY METABOLITES PRODUCTION IN *NIGELLA SATIVA* L. CELL CULTURE

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Black cumin (Nigella sativa) has been widely used for centuries in the treatment of various ailments throughout the world [1]. It is an important drug in the Iranian traditional system. Plant cell culture in addition to various other applications is highly regarded in the field of pharmaceutical active ingredients [2]. Using elicitors in cell culture is of the basic strategies for induction of valuable plant metabolites [3]. For this purpose, cell culture of black cumin estabilished and the effect of hydrogen peroxide concentrations (0, 0.25, 0.5 and 1 mM) in a completely randomized design with three replications were studied. Cell response in relation to the growth and some biochemical parameters were evaluated. Results showed that the effect of hydrogen peroxide on cell growth was not significant. But the production of anthocyanins, phenols, flavonoids, antioxidant potential and polyphenol oxidase activity was significantly increased by increasing concentrations of hydrogen peroxide. Terpenoids analysis by GC-MS showed that the quantity and quality of them were affected. The amount of terpenoids such as beta-myrcene, limonene, pulegon, caryophyllene oxide, beta-selinene, chavicole and menthol increased in treated cultures with hydrogen peroxide compared to control cultures. According to the findings of this study, black cumin cell culture can be a promising source for producing valuable compounds.

References

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