عنوان مقاله:

(.Importance of Hormonal Elicitors in Inducing Morphine Biosynthesis in the Cell Culture of (Papaver bracteatum Lindl

محل انتشار:

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خلاصه مقاله:

Plant cells have enough capacity to produce many of secondary metabolites, similar to the whole plants. Elicitation is one of the most significant methods to increase the synthesis of secondary metabolites in the medicinal plants. The purpose of this study was to investigate the effect of three different hormones on alkaloids production in suspension culture of Papaver bracteatum Lindl., in order to identify the relationship between the alkaloid biosynthesis and gene expression. Inducible factors initiate BenzylIsoquinoline Alkaloids (BIAs) biosynthesis in Opium poppy. The current study investigated the accumulation of alkaloids content and Tyrosine/DopadeCarboxilase (TYDC), Berberine Bridge Enzyme (BBE), Salutardinol Acetyl Transferase (SAT), and Codeinone Reductase (COR) gene transcripts in suspension culture of P. bracteatum. Indole-۳-Acetic Acid (IAA), Indole Butyric Acid (IBA) and Gibberellic Acid (GA) were used as hormonal elicitors in the suspension cultures with three different doses and two timings along with the control. This research showed the induction of morphine alkaloid in the suspension culture of P. bracteatum. Elicitation by ۲۰ mg L-۱ concentration of IAA after ۴۸ h indicated significant increase in morphine amount. Comparison among genes revealed that the expression levels of COR dramatically increased while TYDC, BBE and SAT had no significant difference compared to the control. After elicitation by IAA, IBA, and GA, the highest levels of morphine were measured as ۲۴۳.۲, ۲۰۷.۲, and ۱۷۸.۱ mg g-۱, respectively. The results demonstrated that timing had a significant effect on the hormonal elicitation: ۴۸ h treatment could induce more morphine alkaloids compared to ۲۴ hours treatments.

کلمات کلیدی:

.Elicitation, Gene expression, Gibberellic acid, Indole butyric acid, Indole-۳-acetic acid