

## عنوان مقاله:

Improvement of friable callus induction of *Crocus sativus* L. and establishment of a cell suspension culture system with high biomass

## محل انتشار:

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## خلاصه مقاله:

**Purpose:** This study aims to explore the potential of in vitro culture as a method for scaling up the production of saffron based medicinal compounds, the most expensive spice renowned. Emphasis is placed on the critical role of friable callus (FC) formation as a prerequisite for successful suspension culture. **Research method:** The research primarily investigates FC formation, focusing on the impact of varying strengths of Murashige and Skoog (MS) medium as well as combinations of NAA or ۲,۴-D and BA or Kin on compact callus. Subsequently, the study involves supplementing the MS medium with different concentrations of ۲,۴-D, kin, zeatin, glutamine, sucrose, and nitrogen to establish a cell suspension culture. **Findings:** The highest FC yield was achieved on a solid medium containing ۲,۴-D (۱ mg l<sup>-1</sup>)+Kin (۰.۲ mg l<sup>-1</sup>), resulting in a fresh weight (FW) of ۰.۴۱۳ g. Furthermore, MS combined with ۲,۴-D (۱ mg l<sup>-1</sup>)+Kin (۰.۲ mg l<sup>-1</sup>)+glutamine (۱۰ mg l<sup>-1</sup>), as well as MS+۲,۴-D (۰.۵ mg l<sup>-1</sup>)+zeatin (۰.۳ mg l<sup>-1</sup>)+glutamine (۱۰ mg l<sup>-1</sup>), demonstrated the highest FW under suspension conditions. The study also identified that ۳۰ g l<sup>-1</sup> sucrose and ۳۰ μM were optimal for inducing maximum FW. **Research limitations:** Cell biomass is influenced by several factors that should to be optimized. **Originality/Value:** This research concludes that a cell suspension system holds promise for rapidly generating sufficient cell biomass to produce valuable secondary metabolites within a limited timeframe and space. Notably, the system successfully increased biomass from ۰.۲ to ۱.۲ g, underscoring its potential for efficient saffron-based product development.

## کلمات کلیدی:

Callogenesis, Glutamine, MS medium, Saffron, Solid medium

## لینک ثابت مقاله در پایگاه سیویلیکا:

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