

In Vitro Propagation of *Astragalus* Species from Romania

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Abstract: The accelerated loss of plant genetic resources poses a significant threat to global biodiversity and undermines progress toward sustainable development goals. In response, in vitro conservation has emerged as a vital ex situ strategy for safeguarding rare, endangered, and ecologically significant species. This study focuses on the in vitro preservation of three autochthonous *Astragalus* species (*A. australis*, *A. peterfii*, *A. roemerii*), highlighting their morphological responses to different phytohormonal treatments and emphasizing the method's potential in plant bioresource conservation. The highest regeneration rates and shoot lengths were recorded on Murashige and Skoog (1962) medium supplemented with 0.5 mg/L zeatin for all species. Regeneration rate and primary and secondary stem branching showed consistent patterns across phytohormonal variants, indicating stable developmental responses under controlled conditions. The conservation of *Astragalus* species through in vitro methods supports ecological restoration efforts, while also enabling the sustainable use of native species in traditional medicine and horticulture. Integrating biotechnological approaches with conservation practices aligns with international agendas on promoting biodiversity conservation, sustainable resource management, and resilience in the face of climate change.

Keywords: *Astragalus* species; In vitro conservation; Phytohormonal response; Zeatin regeneration; Biodiversity restoration

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