



IN VITRO CULTIVATION OF RED-SOIL ASTRAGALUS (ASTRAGALUS TERRAE RUBRAE BUTKOV)

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Relevance: The flora of Uzbekistan is rich and diverse, containing numerous rare and endemic plant species. Among them, Red-soil Astragalus (*Astragalus terrae rubrae* Butkov) is a unique endemic species listed in the "Red Book of Uzbekistan." This plant is distinguished by its high content of bioactive compounds such as flavonoids, saponins, polysaccharides, and organic acids. These components exhibit cardioprotective, immunostimulatory, and anti-inflammatory activities, making the species a valuable resource for pharmaceutical applications. However, the progressive reduction of its natural populations highlights the necessity of employing in vitro biotechnological approaches for its conservation and large-scale propagation.

Aim of the study: To develop effective in vitro propagation methods for Red-soil Astragalus, to investigate the influence of phytohormones on regeneration, and to evaluate the pharmaceutical potential of the obtained plant material.

Materials and Methods: Sterilization: Seeds and vegetative explants were surface-sterilized with ethanol and sodium hypochlorite solutions prior to inoculation. Culture medium: MS medium was supplemented with various concentrations of BAP, kinetin, IAA, and NAA to assess regeneration efficiency. Callus induction and regeneration: The role of cytokinin-auxin balance in organogenesis was evaluated. Pharmaceutical analysis: Regenerated plants were screened for flavonoids and saponins using qualitative pharmacognostic assays.

Results: The combination of BAP (1.0 – 2.0 mg/L) + IAA (0.5 mg/L) was the most effective for shoot regeneration, while NAA (0.5 – 1.0 mg/L) promoted root induction. The regenerated plant material demonstrated the presence of flavonoids and saponins, confirming its pharmaceutical significance.

Conclusions: The in vitro propagation of *Astragalus terrae rubrae* Butkov not only contributes to the conservation of this endemic species but also provides a sustainable source of valuable raw material for the pharmaceutical industry. Due to its richness in bioactive compounds, the plant represents a promising candidate for the development of cardioprotective, immunomodulatory, and antioxidant drugs.