## عنوان مقاله:

In vitro callus induction and multiple shoot regeneration in rare Iranian endemic plant Haplophyllum virgatum var. virgatum

## محل انتشار:

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## خلاصه مقاله:

Haplophyllum virgatum var virgatum (Rutaceae) is a rare or narrow endemic plant, which grows only in one habitat (Geno-Hormozgan Province-Iran). Low distribution of this useful medicinal plant encouraged us to investigate about the micropropagation conditions of the plant. In the present study an efficient and reproducible protocol for multiple shoot induction of Haplophyllum virgatum var. virgatum was developed. Various explants (stem, leaf and root) were obtained from ۴۰ days old axenic seedlings and cultured on B۵ medium supplemented with different concentrations of plant growth regulators (Kin, BA, NAA and IAA) to determine the suitable explants and media composition for callus production. BA and Kin were used for multiple shoot induction. Stem explants showed the best results in both callus induction and shoot regeneration. Combination of ۰.۱ mg L-۱ Kin and ۵ mg L-۱ IAA produced the maximum callus fresh weight. BA at concentration of ۲ mg L-۱ was the best treatment for shoot induction and regeneration. Embryogenic callus was also observed and the stages of globular and heart embryos were seen on callus culture in B۵ medium supplemented with Kin (۰.۲mg L-۱) + IAA (۱mg L-۱). In conclusion, stem explants and ۲ mg L-۱ BA regenerated maximum number of shoots.

## کلمات کلیدی:

callus culture, Haplophyllum virgatum, organ culture, root regeneration, shoot regeneration, callus culture, Haplophyllum virgatum, organ culture, root regeneration, shoot regeneration