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Conference Abstract

Alternative biotechnological approaches for propagation of *Helichrysum italicum* (Roth) G. Don (Asteraceae)

Asya Kozhuharova‡, Boryanka Traykova‡, Yana Shopova§, Marina Stanilova‡

‡ Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria
§ University Botanic Gardens - Sofia, Sofia, Bulgaria

Corresponding author: Asya Kozhuharova (asya.kozhuharova@mail.bg)

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Abstract

Biotechnology uses diverse approaches for plant propagation, among them *in vitro* micropropagation and hydroponics, based on the plant's capacity for vegetative multiplication. Nowadays, the market demand of *Helichrysum italicum* is increasing for its valuable essential oils; however, seed quality and crops' growth are variable. The aim of this study was to test different approaches for rapid multiplication of cultivars. Seeds and stem tips were used as initial material for *in vitro* cultivation (MS medium), and cuttings - for hydroponic propagation (Cutting board system, GHE) in culture rooms under 16/8 h photoperiod and 23±2°C temperature. *In vitro* cultures initiation was hampered by high microbial contamination: 55.8% of the seeds survived, and almost all leaf explants dropped out due to fungi or necrosis. Seed germination was stimulated with 0.1% GA_3 and increased up to 24.4%, while a fungi-free stem-tips culture was obtained on medium containing antibiotic. Subcultivation was tested on media supplemented with different plant growth regulators, and 6.4 new shoots per explant were obtained on the best medium containing 2 mg/l BAP and 0.2 mg/l NAA, for 8 weeks. Plants cultivated on MS control medium rooted spontaneously and some of them were *ex vitro* adapted to phytotron and then to a greenhouse. On the hydroponic system, 77.8% of the cuttings rooted; 76.2% of which were transferred to soil mixture, and 81.3% of the potted plants successfully adapted

to greenhouse conditions. Vegetative rapid propagation of valuable *H. italicum* cultivars was proved to be feasible by both *in vitro* and hydroponic multiplication for a 6-month period.

Keywords

Immortelle, *in vitro* micropropagation, soilless cultivation, essential oils

Presenting author

Asya Kozhuharova

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