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Micropropagation of Rhododendron tomentosum (Ledum palustre): An Endangered Plant of Scientific Interest as the Example of Ex Situ Conservation

Authors : Anna Jesionek, Aleksandra Szreniawa-Sztajnert, Zbigniew Jaremicz, Adam Kokotkiewicz, Natalia Filipowicz, Renata Ochocka, Bozena Zabiegala, Maria Luczkiewicz

Abstract : Rhododendron tomentosum (formerly Ledum palustre), an evergreen shrub grows in peaty soils in northern Europe, Asia and North America. In Poland, it is classified as an endangered species not only due to the drainage of wetlands, but also to the excessive collection of this repellent plant by human. The other valuable biological properties of R. tomentosum, used for years in folk medicine, include anti-inflammatory, analgesic and anti-microbial activity, conditioned by the essential oil content. Taking into account the importance of biodiversity and the potential therapeutic application, it was decided to establish, for the first time, the micropropagation protocol for R. tomentosum, for ex-situ conservation of this endangered species as well as to obtain the continuous source of in vivo and in-vitro plant material for further studies. This object was achieved by the selection of the explant and the media, which were modified within the scope of mineral composition, sugar content, pH and the growth regulators. As a result, the four-stage micropropagation protocol for R. tomentosum was specified, including shoot multiplication, elongation, rooting and ex-vitro adaptation. The genetic identification of the examined species and the compatibility of progeny plants with maternal ones was tested with molecular biology methods. Moreover, during the research process, the chemical composition of initial and regenerated plant and in vitro shoots was controlled in terms of volatile fraction by phytochemical analysis (GC and TLC methods). The correctness of the micropropagation procedure was confirmed by both types of studies.

Keywords : ex situ conservation, Ledum palustre, micropropagation, Rhododendron tomentosum
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