In vitro Introduction and Cultivation of Aquatic Plant Alternanthera reineckii Briq.

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Aim of the study: Aquarium plant growing is a hobby that is extremely popular these days. Alternanthera is a wonderful decoration of the water landscape. It is a charming and immediately eye-catching plant. The plant looks great in a variety of aquascapes, as a rule, this plant is used as a focusing point. For many years, A. reineckii remains an excellent adornment of ornamental aquariums. Optimized techniques of in vitro cultivation are applied proactively for reproduction of this aquatic culture. The aim of this work is to select the optimal conditions for cultivation in vitro of plants Alternanthera reineckii Briq.

Material and Methods: To investigate the effect of sterilization, cuttings of A. reineckii plants were placed on the Murashige and Skoog nutrient medium after sterilization with different exposures by different sterilizing agents: 0.1% solution of mercury (II) chloride (1 min., 2 min., 3 min.), 10% solution of hydrogen peroxide (1 min., 2 min., 3 min.), 5% solution of sodium hypochlorite (1 min., 3 min., 5 min.). After sterilization, the plants were twice washed in sterile distilled water. The resulting plants were planted into sterile culture vessels on a solid nutrient medium. Then the culture vessels with plants were taken to a light room. Plants were placed on MS nutrient media with different acidity (pH): 5, 6, 7 and 8. For the experiment we used cuttings with one node, which had about 3-4 leaves and was not higher than 1 cm. Evaluation was performed 2 months after clonal micropropagation. Organic nutrient media used to induce organogenesis, contained: 0.5 mg/l IAA; 1 mg/l BAP; 0.5 mg/l IAA + 1 mg/l BAP; 0.1 mg/l IAA + 1 mg/l BAP. Explants were leaf and stem segments.

Results: Based on the experiment data, we can conclude that a 10% solution of hydrogen peroxide must be used for sterilization of A. reineckii plants, giving a stable high yield of live aseptic plants at different exposures (1, 2 and 3 min.). It is possible to make a preliminary conclusion about the superiority of using nutrient media with pH 5 or 6. The greatest efficiency of regeneration was found on MS nutrient medium with addition of 0.5 mg/l IAA, but it is slightly higher than that on MC + 1mg/l BAP, but other variants of nutrient media are significantly behind in indices. Consequently, it is possible to conclude that the media MS + 0.5 mg/l IAA and MS + 1 mg/l BAP are most effective for clonal micropropagation of A. reineckii.

Keywords: Alternanthera reineckii, in vitro culture, plant sterilization, aquatic plant, aquascaping, clonal micropropagation, medium acidity