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*In vitro*Introduction and Morphogenesis Study of Aquatic Plant *Marsilea hirsuta* L.

Olga A. GORISEVA, Mikhail Yu. CHEREDNICHENKO
Department of Genetics, Biotechnology, Plant Breeding and Seed Science,
Russian Timiryazev State Agrarian University, Russian Federation
aquaticplant109@gmail.com

Aim of the study: Aquatic plants not only play a great biological role, but also serve as the main decorative element of a freshwater aquarium. For many active aquarists, the culture of aquatic and marsh plants reveals the possibility of studying biological and ecological relationships. *In vitro* cultivation of aquatic plants gives an opportunity to receive a large number of healthy plants all year round and to study the possibilities of the influence of external factors on the growth and development of plants. The aim of this study is to introduce *Marsilea hirsuta* L. into *in vitro* culture and to assess its morphogenetic potential.

Material and Methods:*M. hirsuta* L. plants had thin creeping stem-rhizomes. Sterilization was carried out with 2 sterilizing agents, 0.1% solution of mercury (II) chloride (corrosive sublimate, CS) and 5% solution of sodium hypochlorite (bleach), and various exposure variants: 1, 2, 3, 5 minutes in CS, 30 seconds in alcohol + 7 minutes in bleach and 20 seconds in alcohol + 5 minutes in bleach. After sterilization, the plants were placed on Murashige and Skoog nutrient medium (MS) with full and half base components concentration or on the Gamborg medium (B5) with full and half base components concentration, or on the Knop medium. To study the influence of the cutting size on the intensity of growth processes, the plants were divided into cuttings with a different number of nodes (1...4) and placed on full and half MS nutrient medium. To study the effect of phytohormones and growth regulators on the intensity of growth processes, explants (leaf blades, petioles, nodes) were placed on full and half MS medium with addition of 2,4-D or different combinations of cytokinin (BAP) and auxins (IAA, NAA, IBA).

Results: The lowest mortality rate and the highest survival rate were observed on the half MS nutrient medium with a sterilization of 3 minutes in CS. The highest contamination was noted on the Knop nutrient medium with a sterilization mode of 30 s in alcohol and 7 minutes in bleach. 60% mortality and 40% contamination were observed in variants on the Knop nutrient medium with a sterilization duration of 3 and 5 minutes in CS. On the B5 nutrient medium, a low survival rate and a contamination of not more than 20% was observed. The planted plants with 4 nodes, developed faster than plants with 1, 2, and 3 nodes. None of the studied variants of phytohormone and growth regulator composition resulted in morphogenesis *in vitro*.

Keywords: *Marsilea hirsuta*, aquascaping, *in vitro* culture, morphogenesis