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NEW TOOL SUITABLE FOR GENETIC STUDIES – AXENIC LEMNA MINOR LINE

Common duckweed (Lemna minor L.) is widely used for phytoremediation and environment monitoring of wastewater in vivo as well plants could be efficiently grown in Petri dishes and quickly multiplied in laboratory conditions. In this work we used in vivo collected L. minor clones, being inhabited with bacteria and algae naturally co-existing in tissues of fronds and roots, to establish laboratory axenic line free from the symbionts and having 2n chromosome number as these features of model system are essential for getting reproducible results of the experiments.

Totally 29 lines of L. minor previously collected in different locations and river's basins in Latvia and Lithuania were examined by flow cytometry for further use in experiments devoted to obtaining measurements of the impact of different environmental factors. Line entitled Sta2 confirmed desired properties including 2n chromosome number (ploidy). Based on elimination of any attached symbionts the two-step purification procedure of the selected line was performed for establishing of experimental line suitable for genetic studies. Efficiency of purification was checked by confocal laser scanning microscopy.

As the result developed axenic line of Lemna minor L. containing 2n ploidy and free from any symbiotic bacteria or algae for studies of genetic diversity and variations caused by biotic or abiotic factors can be more precise in comparison with results obtained by using L. minor samples collected in vivo.

Keywords: common duckweed, flow cytometry, confocal laser scanning microscopy, axenic laboratory line

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