

利用离体叶片鉴定杨树耐盐潜力

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Using Leaf Sections to Identify Different Salt Tolerance Potential of Poplar Plants

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摘要

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摘要 以受体杨树107和转基因杨树18-1的一年生枝条为材料, 采用Hoagland营养液水培方法, 添加不同浓度的NaCl, 检测二者植株生长以及叶中Na⁺和K⁺含量的变化。结果表明, 在0.6%NaCl处理下18-1生根率明显高于107, 生物量较大, 叶片中Na⁺积累量是107的1.45倍左右。以107和18-1离体叶片为材料, NaCl处理下测定其生理活性指标, 发现18-1叶盘的失绿速度和相对电导率都显著低于107叶盘。把离体叶片接种在改良MS培养基上, 1.2%NaCl处理可使107叶盘几乎停止伸长, 细胞大小不再增加; 而18-1叶盘培养7天后伸长了近50%。以上结果表明利用离体叶片可以鉴定出不同基因型杨树的耐盐潜力。

关键词: 离体叶片 Na⁺积累 杨树 耐盐性

Abstract: Plant dry weight and changes in Na⁺ and K⁺ contents in leaves were investigated in 1-year-old cuttings from the receptor poplar 107 (*Populus × euramericana* 'Neva') and transgenic poplar 18-1 after cuttings were cultured in Hoagland solution with different NaCl concentrations. The growth and rooted percentage of 18-1 was higher than that of 107 with 0.6%NaCl, and the accumulation of Na⁺ in 18-1 leaves was about 1.45 times higher than that in 107. Physiological characteristics in leaf sections from 107 and 18-1 under NaCl stress were determined. Leaf sections from 18-1 displayed lower chlorophyll decreasing speed and relative electrical conductivity than that from 107. When sections of young poplar leaves were plated on MS medium with 1.2% NaCl, leaf sections from 107 stopped growing, but those from 18-1 grew continuously and their length increased nearly 50% after 7 days. Thus, salt tolerance between different genotypes can be identified in leaf sections.

Keywords: leaf sections Na⁺ accumulation poplar salt tolerance

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