

 中文标题 检索 跨刊检索

外源Ca²⁺处理对高温胁迫下半夏植株保护效应及主要成分积累规律的影响

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作者中文名	作者英文名	单位中文名	单位英文名	E-Mail
李灿雯	LI Can-wen	南京农业大学 中药材研究所, 江苏, 南京 210095	College of Horticulture, Nanjing Agricultural University, Nanjing 210095, China	
王康才	WANG Kang-cai	南京农业大学 中药材研究所, 江苏, 南京 210095	College of Horticulture, Nanjing Agricultural University, Nanjing 210095, China	wangk@cjmm.njau.edu.cn
罗庆云	LUO Qing-yun	南京农业大学 中药材研究所, 江苏, 南京 210095	College of Horticulture, Nanjing Agricultural University, Nanjing 210095, China	
汤兴利	TANG Xing-li	南京农业大学 中药材研究所, 江苏, 南京 210095	College of Horticulture, Nanjing Agricultural University, Nanjing 210095, China	

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中文摘要:目的:研究外源Ca²⁺在高温条件下对半夏植株的保护效应及对主要成分积累的影响。方法:采用无土栽培,不同浓度外源Ca²⁺处理,测定半夏叶片抗逆性指标,统计半夏倒苗率,并测定不同部位草酸、块茎中总生物碱、总有机酸及鸟苷含量。结果:在较低浓度Ca²⁺处理下,半夏倒苗率高于其他处理。随着Ca²⁺浓度升高,半夏叶片中SOD、POD活性呈现先升高后下降的趋势,叶片Pro含量则呈现先降后升的趋势;半夏叶片及块茎中可溶性草酸含量均低于未处理可溶性草酸含量,随着Ca²⁺浓度的升高,半夏叶片及块茎中可溶性草酸含量呈先升后降的趋势;产量的变化趋势与可溶性草酸含量变化一致;当Ca²⁺质量浓度为400 mg·L⁻¹时,半夏块茎总生物碱和鸟苷含量最高,低浓度Ca²⁺处理下,半夏块茎总游离有机酸含量较高。结论:通过外源Ca²⁺处理,半夏抗热能力有显著提高,倒苗时间有所推迟,生长期延长,产量有所提高。

中文关键词:半夏 高温胁迫 保护效应 化学成分

Effect of exogenous Ca²⁺ on protective infection of *Pinellia ternata* and accumulation of major components under high temperature stress

Abstract: Objective: To study the effect of exogenous Ca²⁺ on protective infection of *Pinellia ternata* and accumulation of major components under high temperature stress. **Method:** The soilless cultivation experiment was applied, stress resistance index of *P. ternata* leaves, statistics the rate of lodge *P. ternata*, the content of oxalate in different places in the plant, the content of total alkaloids, total organic acids and guanosine in *P. ternata* tubers were measured based on different concentrations of exogenous Ca²⁺. **Result:** The test results showed that, at lower concentrations of Ca²⁺ treatments, the rate of lodge *P. ternata* was higher than that of the others. With Ca²⁺ concentration increasing, activities of SOD and POD initially increased and then decreased, however, proline level tended to be down then up. Soluble oxalic acid content was lower than the content of unhandled treatment in *P. ternata* leaves and tubers; with Ca²⁺ concentration increasing, soluble oxalic acid content and yield showed a tendency of decrease after increase in the leaves and tubers. Compared with other treatments, spraying 400 mg·L⁻¹ Ca²⁺ significantly enhanced the accumulation of total alkaloid and guanosine in *P. ternata* tubers. At lower concentrations of Ca²⁺, the content of total free organic acid was higher in the tuber. **Conclusion:** With the treatment of Ca²⁺, the capacity of heat resistance was improved in *P. ternata* plants, the rate of lodge *P. ternata* was postponed, growing period was extended and corresponding production has increased by spraying exogenous Ca²⁺.

keywords: *Pinellia ternata* high temperature stress protective infection major components

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