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干旱胁迫对大丽花生理生化指标的影响

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Effects of drought stress on physiological and biochemical parameters of *Dahlia pinnata*.

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摘要

以大丽花品种'粉西施'扦插苗为试材，研究不同程度干旱胁迫及复水处理对大丽花品种'粉西施'叶片生理生化指标的影响.结果表明：随着干旱胁迫程度的增加和时间的延长，大丽花叶片的相对含水量、水势和叶绿素含量显著下降;叶片相对电导率、丙二醛含量显著增加，质膜遭到损害，大量离子外渗，严重胁迫下质膜的损害最严重，复水后无法恢复到对照水平;可溶性糖、脯氨酸含量显著增加，脯氨酸含量在中度和重度胁迫后期增加显著，说明其对干旱亏缺的敏感性较低；可溶性蛋白呈降-升-降的变化趋势;抗氧化酶SOD、POD和CAT活性先上升后下降，3种酶对干旱胁迫和活性氧的响应存在一定差异，表现为相互协调的作用.

关键词： 大丽花 干旱胁迫 抗旱性 生理变化

Abstract:

Taking *Dahlia pinnata* 'Fenxishi' as test material, this paper studied its leaf physiological and biochemical responses to different degrees of drought stress and re-watering. With the increasing extent and duration of drought stress, the leaf relative water content, water potential, and chlorophyll content of *D. pinnata* 'Fenxishi' decreased significantly, leaf relative electric conductivity and malondialdehyde (MDA) content had a significant increase, plasma membrane was damaged, and massive ions were leaked out. The damage of plasma membrane was most serious under severe stress, and could not recover to the control level after re-watering. The leaf soluble sugar and proline contents also increased significantly with increasing extent and duration of drought stress. Especially for proline content, it was increased significantly in the later period of moderate and severe stresses, suggesting its lower sensitivity to water deficit. The leaf soluble protein content had a trend of down-up-down, while the activities of superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT) decreased after an initial increase. There were some differences in the responses of the three enzymes to drought stress and reactive oxygen, exhibiting their coordinating role.

Key words: *Dahlia pinnata* drought stress drought resistance physiological change

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