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聚乙二醇(PEG-6000)模拟干旱条件下白芷苗期抗旱性研究

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中文摘要:目的:探讨研究白芷苗期抗旱性的最佳模拟条件,对白芷苗期抗旱性进行综合评价,并筛选鉴定白芷苗期抗旱性指标。方法:采用5种不同浓度聚乙二醇(PEG-6000)分别胁迫白芷幼苗3,6,9,12 d,测定其株高、根长、根冠比、可溶性糖、脯氨酸和丙二醛等。用隶属函数法评价白芷药材不同原植物的抗旱性,用灰色关联度分析法筛选白芷苗期抗旱性指标。结果:以20%的PEG胁迫9 d可作为研究白芷苗期抗旱性的最佳模拟条件。根据隶属函数均值进行抗旱性评价,抗旱性由强到弱依次为:川白芷、禹白芷、祁白芷和杭白芷。9个考察指标与隶属函数均值的关联序为:可溶性糖>根长>脯氨酸>根冠比>叶 绿素总含量>叶绿素b>叶绿素a>株高>丙二醛。结论:PEG-6000模拟干旱条件下,渗透调节物质以及根的相关指标对白芷苗期抗旱性影响较大,川白芷苗期抗旱性最强。

中文关键词:聚乙二醇(PEG-6000) 白芷 苗期抗旱性

Drought resistance of *Angelica dahurica* during seedling stage under polyethylene glycol (PEG-6000)-simulated drought stress

Abstract: Objective: To study the optimum conditions of simulated drought stress, and screen the indexes of drought resistance and comprehensively assess the drought resistance of the *Angelica dahurica* resources during seedling stage. Method: Investigations were carried out on the changes of height, root length, root-shoot ration, contents of soluble sugar, proline and malondialdehyde under polyethylene glycol (PEG-6000)-simulated drought stress. A comprehensive evaluation on the drought resistance of different (varietal) species of *A. dahurica* during seedling stage was applied by using the method of subordinate function. And the drought resistance indexes were selected out by applying the method of grey correlative degree analysis. Result: Drought stress of 9 days with 20% PEG was the optimum condition for the simulation of drought stress. The results showed that the drought resistant capability decreased in the order as follows, *A. dahurica* from Sichuan province, *A. dahurica* from Henan province, *A. dahurica* from Hebei province and *A. dahurica* from Zhejiang province. And the order of correlative degree of drought resistance and indexes was: soluble sugar>root length>proline>root-shoot ration>total content of chlorophyll a>chlorophyll b>chlorophyll a>height>malondialdehyd. Conclusion: Osmotic adjustment substance and the indexes related to the root have more influence on the drought resistance of *A. dahurica* during seedling stage. *A. dahurica* from Sichuan province shows the highest drought resistance during seedling stage.

keywords: polyethylene glycol (PEG-6000) *Angelica dahurica* the drought resistance of seedling stage

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