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摘要： 以铝耐受型丹波黑大豆(RB)和铝敏感型黑大豆(SB)为试验材料，在水培条件下分析RB和SB的生理生化特性对聚乙二醇（PEG-6000)模拟干旱胁迫的应答。结果表明：在2%、5%、10% PEG（PEG-6000)胁迫处理5 h和2 d后，SB叶片蒸腾速率和气孔传导率下降的幅度均大于RB；在胁迫较短（5 h)时期内，RB和SB硝态氮吸收量均随着PEG胁迫浓度的增加而升高，SB对硝态氮的吸收量显著高于相同处理条件下RB的吸收量；在5%PEG胁迫1,2,3和4 d后,RB和SB的硝态氮吸收量与未胁迫对照相比仍然大幅度增加，但在相同胁迫条件下，RB的硝态氮吸收量显著地超过SB的吸收量；RB和SB根尖质膜H^+-ATPase活性和氢泵活性均随着PEG胁迫时间的增加呈现显著降低的趋势，但在相同胁迫处理条件下RB根尖质膜H^+-ATPase活性和氢泵活性显著高于SB。说明SB的耐旱性比RB强，PEG模拟干旱胁迫显著增强RB和SB对硝态氮的吸收但降低根尖质膜H^+-ATPase活性和氢泵活性。

Abstract: In this study,aluminum(Al)tolerant Tamba black soybean(RB)and Al-sensitive black soybean(SB)were used as experimental materials to analyze the physiological and biochemical characteristics of RB and SB in response to polyethylene glycol(PEG-6000)simulated drought stress under hydroponic conditions.The results showed that,under 2%,5%,10% PEG stress for 5 h and 2 d,the decreases in SB leaf transpiration rate and stomatal conductance were greater than those in RB.Stress in short period(5 h),RB and SB nitrate uptake were increased with the increasing PEG concentration,SB uptake of nitrate uptake was significantly higher than that under the same treatment condition RB.Under 5%PEG stress increased to 1,2,3 and 4 d,the nitrate uptake of RB and SB were still significant increase compared with control,but under the same stress conditions,RB nitrate absorption significantly exceeded the amount of absorption of the SB.The apical plasma membrane H^+-ATPase activity and hydrogen pump activity of RB and SB with increasing PEG stress time showed a significant decreasing trend,but under the same conditions of stress treatments,the apical plasma membrane H^+-ATPase activity and hydrogen pump activity of RB were significantly higher than SB.Those results suggested that SB drought-tolerance was stronger than RB,PEG simulated drought stress significantly enhanced the absorption of nitrate in RB and SB,but reduced the apical plasma membrane H^+-ATPase activity and hydrogen pump activity.

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