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目录

黄河三角洲地区野大豆根瘤菌生物学特性及其遗传多样性研究

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摘要：

野大豆具有耐盐碱、抗寒、抗病等特点，对于研究大豆遗传基因的变迁、改善大豆品质和产量具有重要作用。为了探明黄河三角洲地区野大豆根瘤菌的生物学特性及其遗传多样性，从黄河三角洲地区的14个乡镇26个采样点采集了227株野大豆，从其根瘤中分离纯化根瘤菌，进行一系列的生理生化实验、抗逆性实验、结瘤能力测定、结瘤广谱性测定、16S rDNA序列测定和RAPD分析，共分离纯化出100 株根瘤菌，其中菌株3D-21，3D-24，3K-8，3K-23VS等对酸、碱、盐、抗生素、高温、低温均有较强耐受性，且结瘤能力也较强；菌株7K-8结瘤能力较强，K-5抗逆性较强。16S rDNA序列测定表明所获菌株分属于3个属7个种，相近菌株的RAPD分析呈现明显的多态性。结果表明黄河三角洲地区野大豆根瘤菌存在着丰富的多样性，部分菌株结瘤能力和/或抗逆能力强，该研究为挖掘、利用优良菌株资源奠定了基础。

关键词： 野大豆 根瘤菌 抗逆性 遗传多样性

Research on biological characteristics and genetic diversity of rhizobia of Glycine soja in the Yellow River Delta

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Abstract:

Wild soybeans (Glycine soja) have such positive characteristics as saline alkali resistance, cold tolerance and disease resistance, so they play a significant role in the research on soybean gene evolution and the improvement of soybean quality and yield. We collected 227 wild soybeans from 26 sites of 14 rural towns in the Yellow River Delta, and isolated and purified rhizobia strains from wild soybean nodules. We then performed physiological and biochemical experiments , stress tolerance experiments, nodulation ability determination, nodulation wide spectrum analysis, 16S rDNA sequence determination and RAPD analysis. We isolated and purified 100 rhizobia strains from Glycine soja. Strains 3D-21, 3D-24, 3K-8 and 3K-23VS had strong tolerance against acid, alkali, salt, antibiotics, high and low temperature and stronger nodulation capability. Strain 7K-8 had stronger nodulation capability and strain K-5 had stronger stress tolerance capability. 16S rDNA sequence analysis shows that all the isolated strains belong to 3 genera and 7 species, and that RAPD analysis of similar strains exhibits obvious polymorphism. Results indicate that rich diversity exists in the rhizobia of wild soybean in the Yellow River Delta. Some strains have strong nodulation ability and/or stress tolerance ability. This research lays a foundation for the excavation and utilization of better strain resources.

Keywords: wild soybean (Glycine soja) rhizobium stress tolerance genetic diversity

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