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论文

烟碱降解菌L1的分离鉴定与降解特性分析研究

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摘要 菌株L1分离自云南烟草叶片，能有效降解1.5 g/L的烟碱。通过形态观察，16S rDNA序列分析和生理生化测定将其鉴定为Bacillus simplex。菌落生长密度测定和高压液相色谱分析表明， L1菌株最适生长烟碱浓度为1g/L，随着菌落密度增加，烟碱降解效率逐渐升高，36 h达到最高降解率75.0%。而低烟碱含量不利于L1菌株的生长，过高烟碱含量对L1菌株的生长和降解效率具有反馈抑制作用。菌株L1降解烟碱过程中无色素产生，说明其代谢途径烟碱有别于节杆菌。

关键词 烟碱；芽孢杆菌；生物降解

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Isolation and Characterization of Nicotine-degrading Bacterial Strain L1

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Abstract

<P>A bacterial strain L1, capable of degrading 1.5g/L nicotine, was isolated from tobacco leaves in Yunnan. It was identified as a member of Bacillus simplex based on morphology, physiological and chemical tests, 16S rDNA sequence and phylogenetic characteristics. Strain L1 could utilize nicotine as sole source of carbon and nitrogen and its optimal growth concentration of nicotine was 1.0g/L, too high or too low of nicotine concentration would have negative effect on its growth. Under the optimized incubation conditions for 36 h monitored by high-performance liquid chromatography, 75.0% of nicotine could be degraded by strain L1. But no pigment was presented during the degrading process. This study demonstrates that Bacillus simplex L1 has strong ability to degrade nicotine, and the degrading mechanism may be different from that of Arthrobacter sp.</P>

Key words Nicotine； Bacillus simplex； Biodegradation

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