

农学—研究报告

大茂山地区苏云金芽孢杆菌分布与多样性研究

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摘要:

为了对大茂山地区苏云金芽孢杆菌的分布与多样性进行研究,本试验利用温度-抗生素筛选法从大茂山不同海拔地区采集的784份土壤样品中分离得到76株苏云金芽孢杆菌,发现在海拔900~1200 m之间为土壤最佳采集区域。对这76株菌株进行光学显微观察,发现其伴孢晶体呈现球形、菱形、方形、不规则形等多种形态;PCR-RFLP对分离获得的76株菌株基因鉴定发现,主要包含cry1、cry2等7种基因类型,其中有28株未鉴定出基因型;其SDS-PAGE晶体蛋白分析发现,这些菌株主要表达130 kDa、97 kDa、66 kDa和45 kDa蛋白。对铜绿丽金龟进行生物活性测定,17株具有高毒力的菌株中的16株含有cry8Ca基因,另一株未鉴定出已有基因型。从晶体形态、基因类型、SDS-PAGE检测以及生物活性方面均说明苏云金芽孢杆菌在河北省大茂山地区的分布具有良好的多样性。

关键词: 苏云金芽孢杆菌; 海拔; PCR-RFLP; SDS-PAGE

Research on the Distribution and Diversity of *Bacillus thuringiensis* from Damaoshan Mountains

Abstract:

By the temperature-antibiotic method, the author isolated 74 strains *Bacillus thuringiensis* from totally 764 soil samples which were collected from different altitude Damaoshan mountains of Hebei province. The results showed the optimal collecting area at an altitude of 900 to 1200 m. Light microscope observation showed that the crystals of these Bt strains were in shape of spherical, bipyramidal, square, irregular and so on; 7 kinds of cry gene were found by PCR-RFLP system, and 11 Bt strains harbour unknown cry genes; The results of SDS-PAGE analysis showed that these Bt strains mainly expressed 130 kDa, 97 kDa, 66 kDa and 45 kDa proteins. 17 strains were shown to be highly toxic to scarabaeoidae larvae, 16 of them contained the gene of cry8Ca, one of them could not be found any known cry gene. All of these showed the great diversity of Bt strains in Damaoshan mountains of Hebei province.

Keywords: *Bacillus thuringiensis* altitude RCP-RFLP SDS-PAG

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- 苏云金芽孢杆菌; 海拔; PCR-RFLP; SDS-PAGE

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