Isolation, identification, and optimal cultivation of a marine bacterium antagonistic to Magnaporthe grisea

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ABSTRACT. In this paper, a plate confrontation method was used to isolate bacteria antagonistic to the rice blast fungus Magnaporthe grisea from samples collected from China’s Dalian Bay. The antagonist strain LM-031 was obtained. We studied this strain’s morphological, physiological and biochemical characteristics and analyzed its 16S rDNA sequence. We compared the effects of different culture conditions (type of media, carbon and nitrogen source, incubation temperature and time, and initial pH value) on the inhibitory effect against M. grisea. Strain LM-031 was preliminarily identified as Bacillus pumilus and was found to strongly inhibit M. grisea, especially when grown on BPY medium at an initial pH 7 for 72 h at 30°C. The optimum carbon and nitrogen sources for growth were lactose and peptone, respectively. The most suitable carbon and nitrogen sources for production of active substances were glucose and NH₄Cl, respectively. Our results show that development and
utilization of *B. pumilus* LM-031 has great potential for biological control of *M. grisea*.

**Key words:** Marine microorganisms; Rice blast fungus; Antagonistic bacteria; Identification; *Bacillus pumilus*