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生防芽孢杆菌蛋白水解液对小白菜根系的影响

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Effect of a biocontrol strain of *Bacillus subtilis* produced by degraded fish protein on pakchoi root

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摘要 利用沿海废弃鱼蛋白为原料分别制备含各种肽和氨基酸的广谱生防枯草芽孢杆菌T2水解液、酸水解液和自然浸提液，将其分别添加到植物生长培养基中，观察并分析了3种不同处理对小白菜根系发育的影响。结果表明，T2水解液明显增加了小白菜根毛的长度和密度，有效地诱导了不定根的形成，增强了植株的根系活力，且T2水解液中植物生长素IAA的前体物质色氨酸的含量也明显高于其它两种水解液，从而为开发兼具防病和增产作用的新型生物肥料提供新思路。

关键词： 枯草芽孢杆菌 根毛 不定根 色氨酸 枯草芽孢杆菌 根毛 不定根 色氨酸

Abstract:

Bacillus subtilis T2 is a potential biocontrol strain against a broad-spectrum plant pathogenic fungi. In order to determine special roles of extracellular protease in plant growth-promotion, deserted fish protein was selected as the only substrate to prepare degraded products of T2, acid-hydrolyzates and aqueous extracts, in which peptides and amino acids were included. Then, these three products were added to PG medium separately, and their effects on pakchoi root were investigated through observations under light microscopy and biochemical analysis. Results showed that within these three treatments, the hydrolysis protein products of T2 appeared to have the best function to increase root hair length, density, adventitious root formation and TTC reducing power. Content of L-tryptophan, which served as a precursor of indole-3-acetic acid (IAA), was much higher than other treatments. These results suggested that degraded products of *Bacillus subtilis* T2 could be a new biocontrol and plant-growth-promoting agent in the future.

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