

제 목(Title) : *Enterobacter* sp.를 이용한 농업용 신소재 Microbial Polyglucosamine의 분비생산과 항균활성 검사

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Excretive Production of Microbial Polyglucosamine from *Enterobacter* sp. and Its Antifungal Activity

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실험목적

Novel biopolymer excreted from *Enterobacter* sp. is a unique cationic polysaccharide composed of 95% D-glucosamine and was named microbial polyglucosamine. For its agricultural utilization, *Enterobacter* sp. was cultivated by pH-stat fed batch fermentation and the culture conditions were optimized. Microbial polyglucosamine was obtained through several purification steps and its antifungal activities were determined.

재료 및 방법

Enterobacter sp. was cultivated by the pH-stat fed-batch wisely for the secretion of microbial polyglucosamine and its optimal cultivation conditions were determined. The excreted biopolymer was purified by three-step procedure, involving ethanol precipitation and deprotonizations to a near homogeneous state and investigated its antifungal activity against plant pathogenic fungi, such as *Alternaria alternata*, *Botryosphaeria dothidea*, and *Phytophthora cryptogea*.

결과 및 고찰

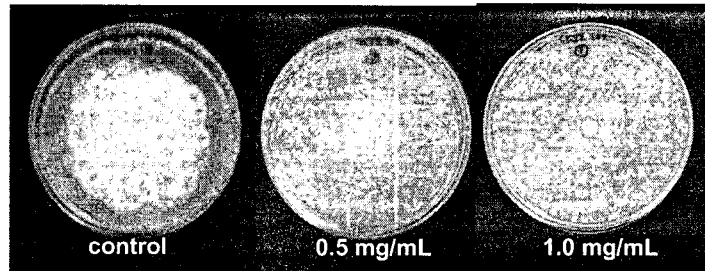
The best carbon and nitrogen sources were acetate and a mixture of ammonium sulfate and soybean flour. The optimum initial pH and temperature were 7.0 and 30°C, respectively. On the basis of these conditions, *Enterobacter* sp. was cultivated by the pH-stat fed-batch wisely using 3M acetic acid as a feeding solution at pH 8.0 for the mass-production of microbial polyglucosamine. As a result, 12.5 g/L of cells and 2.1 g/L of extracellular biopolymer were produced after 72 hr. Microbial polyglucosamine showed significant antifungal activity, especially, the growth of *A. alternata*, *B. dothidea*, and *P. cryptogea* were inhibited more than 95% at the concentration of 1.0 mg/mL.

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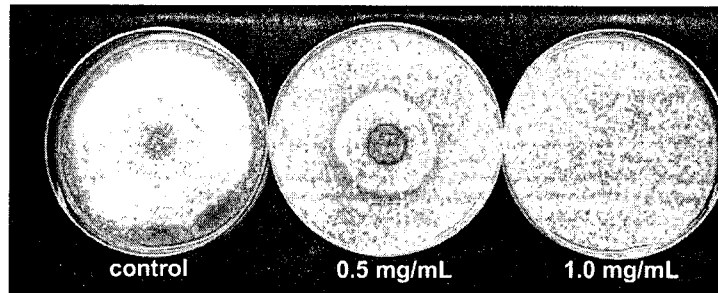
E-mail : leeyh@knu.ac.kr

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P. cryptogea



A. alternata



B. dothidea

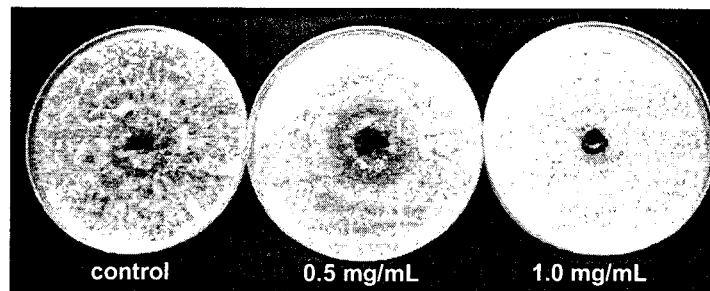


Fig. Antifungal activities of microbial polyglucosamine excreted from *Enterobacter* sp