

研究论文

脱乙酰壳多糖抑制真菌生长的构效关系

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**摘要** 本研究目标是研究脱乙酰壳多糖的化学结构(乙酰化程度DA和聚合程度DP)与它的抑制真菌生长能力之间的构效关系. 选用了12个分属于3个系列、化学结构相关而又不同的、结构清晰的脱乙酰壳多糖和3种不同的真菌(*Fusarium solani*, *Fusarium graminearum*和*Ustilago maydis*). 通过分别测定每个脱乙酰壳多糖对3种真菌的生长曲线和最低抑制浓度(MIC, minimum inhibitory concentration); 比较各个系列脱乙酰壳多糖的MIC和它的化学结构(DA和DP)之间的关系. 结果显示对同一种真菌, 不同脱乙酰壳多糖的抑制真菌生长曲线形态和MIC是各不相同的; 同样同一脱乙酰壳多糖, 对不同真菌也有其特殊的生长曲线和MIC; 通常随着脱乙酰壳多糖中DA的递增, MIC是增加的, 其抑制真菌的活性是降低的; 在DA相同的条件下, 随着DP的递增, MIC也是增加的, 其抑制真菌的活性是减低的. 所以可以说, 脱乙酰壳多糖抑制真菌生长的能力与其化学结构紧密相关, 在本实验的条件下, 脱乙酰壳多糖分子越小, 分子中的自由氨基越多, 抑制真菌的活性越大.

**关键词** [脱乙酰壳多糖](#) [抑制真菌活性](#) [Fusarium solani\(腐皮镰孢\)](#) [Fusarium graminearum\(禾谷镰孢\)](#) [Ustilago maydis\(玉蜀黍黑粉菌\)](#)

分类号

**Structure-Function Relationship of Chitosan against Phytopathogenic Fungi**

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**Abstract** The objective of this study was to investigate the relation between anti-fungal activity and their chemical structure (DA, degree of acetylation or DP, degree of polymerization) of chitosans. 12 different chemical structure chitosans with well characterized DA and DP were tested against three different phytopathogenic fungi (*Fusarium solani*, *Fusarium graminearum* and *Ustilago maydis*) respectively. MIC (minimum inhibitory concentration) of every chitosan against every fungus was determined with micro plate reader, and then these MIC data were analyzed and correlated with their chemical structure (DA or DP). The results showed that anti-fungal activity MIC of every chitosan was different against even the same fungus, and then also against different fungi; but it was increased with decreasing both DP and DA of chitosan.

**Key words** [chitosan](#) [anti-fungal activity](#) [Fusarium solani](#) [Fusarium graminearum](#) [Ustilago maydis](#)

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