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Synthesis, characterization, and antifungal evaluation of diethoxyphosphoryl polyaminoethyl chitosan derivatives

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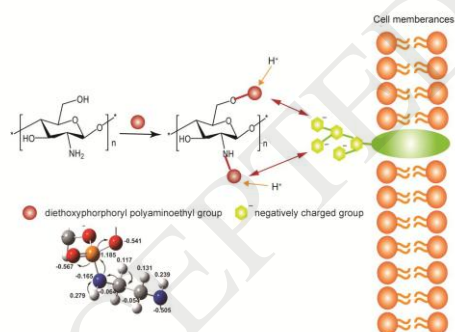
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Highlights

- The chitosan derivatives were synthesized successfully by grafting polyaminoethyl and diethoxyphosphoryl groups on chitosan backbone.
- The derivatives have better antifungal activity and water solubility than chitosan.
- At certain extent, the more aminoethyl groups, the more antifungal activity of chitosan.
- Polyaminoethyl group and diethoxyphosphoryl group may perform synergistic effect to enhance the antifungal activity.
- The derivatives have good biocompatibility.

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Graphical abstract



Abstract

Botrytis cinerea, *Phytophthora capsici* Leonian, and *Fusarium solani* are important plant pathogenic fungi which can cause great crop losses worldwide, but their control methods are limited. It is necessary to develop efficient and green fungicides from abundant marine resources. Chitosan is a non-toxic, biodegradable, biocompatible

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