

Antimicrobial property of chitosan and induction of systemic acquired resistance for the control of rice bacterial blight caused by *Xanthomonas oryzae* pv. *oryzae* (Swings et al.)

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ABSTRACT

Chitosan has been reported to have antimicrobial property to some pathogen species as well as an elicitor of resistance in plants , particularly Systemic Acquired Resistance (SAR). A bioassay of chitosan against *Xanthomonas oryzae* pv. *oryzae* (*Xoo*) was conducted to determine its antimicrobial property against bacterial blight pathogen and the optimum concentration that is most inhibitory to the pathogen. Chitosan was also tested as foliar spray to rice plants to evaluate its potential to induce SAR against bacterial blight disease.

Chitosan treatments (300 ppm, 400 ppm, and 500 ppm) possessed antimicrobial property against *Xoo in vitro*, producing zones of inhibition which were generally significantly bigger than those of the control (streptomycin, acetic acid, and sterile distilled water) at 2, 4, and 6 days after inoculation. Chitosan-sprayed plants showed significantly shorter bacterial blight lesions which were comparable to the plants sprayed with streptomycin, and Boost, a commercial plant defense activator and a known inducer of SAR. Chitosan is found effective in reducing bacterial blight lesions in rice plants due to its antimicrobial property and also most likely due to the induction of SAR.

Keywords: *Rice, bacterial blight, resistance, induction, chitosan, antimicrobial, systemic acquired resistance (SAR)*