

## **Inhibition in production of cellulolytic and pectinolytic enzymes of *Colletotrichum gloeosporioides* isolated from dragon fruit plants in response to submicron chitosan dispersions**

### ABSTRACT

In vitro and in vivo antifungal potential of submicron chitosan dispersions (SCD) was studied in order to investigate the effect of SCD on cell wall degrading enzymes of *Colletotrichum gloeosporioides* and to control anthracnose of dragon fruit under field conditions. Four concentrations of chitosan (0.5, 1.0, 1.5 and 2.0%) were used to prepare submicron dispersions with droplet sizes of 200, 400, 600, 800 and 1000 nm. The highest inhibition in cellulolytic and pectinolytic enzymes was observed with 600 nm droplet size of 1.0% chitosan concentration. In case of in vivo studies, the area under disease progress curve (AUDPC) showed a reduction of approximately 66% of disease incidence (DI). The lower level of production of cell wall degrading enzymes in response to SCD resulted in less disease on dragon fruit plants and sustained in increasing the effective resistance against the irresistible disease of anthracnose.

**Keyword:** AUDPC;  $\beta$ -Galactosidase;  $\beta$ -1, 4-Glucanase; Pectin lyase; Polygalacturonase