

## INTISARI

Tanaman cabai dapat terserang penyakit layu bakteri yang disebabkan oleh *Ralstonia solanacearum*. Upaya pengendalian penyakit layu bakteri terus dilakukan, seperti penggunaan agen biokontrol. Agen biokontrol yang menarik perhatian akhir-akhir ini adalah *Bacillus velezensis*. Penelitian ini bertujuan untuk mengetahui penghambatan *Ralstonia solanacearum* oleh *Bacillus velezensis* dan pengaruhnya terhadap perkecambahan cabai. Penelitian ini dimulai dengan konfirmasi gen 16S rRNA isolat *Bacillus* sp., pengujian penghambatan secara kontak, pengujian penghambatan secara non-kontak, serta pengujian secara langsung pada benih cabai. Berdasarkan konfirmasi gen 16S rRNA, diketahui bahwa *Bacillus* sp yang diuji memiliki kemiripan dengan *Bacillus velezensis*, Berdasarkan uji penghambatan secara kontak, didapat bahwa *B. velezensis* dapat menghasilkan zona hambat sebesar 20,83%. Setelah dilakukan uji penghambatan secara non-kontak, didapat bahwa VOC yang dihasilkan *B. velezensis* mampu menghambat *R. solanacearum*. Berdasarkan pengujian secara langsung pada benih cabai kontrol, C-09 yang tahan patogen, dan C-37 yang rentan patogen didapat gaya berkecambah masing-masing sampel yaitu 72,5% pada kontrol-C37, 42,5% pada C-37. 12,5% pada kontrol-C09, dan 72,5% pada C-09. Hasil penelitian menunjukkan bahwa *B. velezensis* dapat menghambat *R. solanacearum* baik secara kontak maupun non-kontak, serta *B. velezensis* dapat melindungi perkecambahan benih cabai C-37 yang rentan *R. solanacearum*.

Kata kunci: *Bacillus velezensis*, cabai, penghambatan pertumbuhan, *Ralstonia solanacearum*

## ABSTRACT

Chili plant can be easily attacked by bacterial wilt disease caused by *Ralstonia solanacearum*. Efforts to develop plant protection methods against this bacteria have been done, for example by using biocontrol agents such as *Bacillus velezensis*. This research was conducted to understand the inhibition process of *R. solanacearum* by *B. velezensis* and its effect to germination of chili. There are five steps in this research: genome sequencing of 16S rRNA, SEM imaging of *B. velezensis*, inhibition analysis by contact, inhibition analysis by fumigation, and inhibition analysis by directly applying *B. velezensis* to resistant chili seeds (C-09) and susceptible chili seeds (C-37). It was found that *Bacillus* sp used in this research has high similarity to *B. velezensis*. From inhibition analysis by contact, it was found that *B. velezensis* can inhibit *R. solanacearum* and produce clear zone at 20,83%. From inhibition analysis by fumigation, it was found that *B. velezensis* could produce VOCs that have inhibitory ability to *R. solanacearum*. From inhibition analysis by applying *B. velezensis* to chili seeds, it was found that the germinability of each samples is 72,5% for control-C37, 42,5% for C-37, 12,5% for control-C09, and 72,5% for C-09. From these results, *B. velezensis* has the potential to inhibit *R. solanacearum* directly and indirectly, and *B. velezensis* could protect the susceptible chili seeds, C-37, from *R. solanacearum* attacks.

**Keywords:** *Bacillus velezensis*, chili, growth inhibition, *Ralstonia solanacearum*