# INTISARI

*Pectobacterium brasiliense* merupakan patogen penting penyebab penyakit busuk lunak pada tanaman hortikultura. *Pectobacterium brasiliense* memproduksi dan mengeluarkan enzim ekstraseluler yang dapat mendegradasi dinding sel tanaman. Enzim yang dihasilkan oleh *P. brasiliense* dapat meningkat apabila terjadi perubahan fisiologi dan lingkungan, termasuk sinyal dari senyawa kimia pada tanaman inang. Sinyal kimia tanaman inang merupakan salah satu faktor yang mendorong bakteri untuk dapat memproduksi enzim ekstraseluler. Bagaimanapun, induksi enzim ekstraseluler yang disebabkan oleh ekstrak tanaman belum banyak diteliti. Oleh karena itu, penelitian ini dilakukan untuk mengetahui pengaruh ekstrak tanaman terhadap induksi enzim ekstraseluler pada *P. brasiliense* secara in vitro. Ekspresi gen penyandi enzim ekstraseluler dianalisis menggunakan Real-Time qPCR. Perlakuan ekstrak tanaman dengan konsentrasi 30% pada media pertumbuhan *P. brasiliense* dapat meningkatkan produksi enzim ekstraseluler pektatliase, poligalakturonase, protease, dan seluose, serta meningkatkan eskpresi gen penyandi enzim ekstraseluler, yaitu *pelA, pelB, pelC, pehA,* dan *prtW,* jika dibandingkan dengan internal standar *recA.*

Kata kunci: *Pectobacterium brasiliense,* enzim ekstraseluler, ekstrak tanaman, gen penyandi enzim ekstraseluler, ekspresi gen.

# ABSTRACT

*Pectobacterium brasiliense* is an important pathogen that causes soft rot in horticultural plants. *P. brasiliense* produces and secretes extracellular enzymes that can degrade plant cell walls. Enzymes produced by *P. brasiliense* can increase when there are physiological and environmental changes, including signals from chemical compounds in the host plant. The chemical signal of the host plant is one of the factors that encourages bacteria to produce extracellular enzymes. However, the induction of extracellular enzymes caused by plant extracts has not been widely studied. Therefore, this study was conducted to determine the effect of plant extracts on the induction of extracellular enzymes in *P. brasiliense* in vitro. Expression of extracellular enzyme encoding genes was analyzed using Real-Time qPCR. Treatment of plant extracts with a concentration of 30% on *P. brasiliense* growth medium can increase the production of extracellular enzymes pectate lyase, polygalacturonase, protease, and cellulose, as well as increase the expression of extracellular encoding genes, namely *pelA, pelB, pelC, pehA,* and *prtW,* when compared with the internal standard *of recA.*

Keywords: *Pectobacterium brasiliense,* extracellular enzymes, plant extracts, extracellular enzyme encoding genes, gene expression.