



Ekspresi Gen Virulensi *Pectobacterium brasiliense* Dengan Perlakuan Madu Manuka

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Abstrak

Virulensi pada patogen busuk lunak, termasuk *Pectobacterium brasiliense* ditentukan oleh produksi enzim pendegradasi dinding sel yang berfungsi untuk merusak dinding sel tanaman, selain itu juga pembentukan biofilm dan pelikel turut berperan penting dalam virulensi. Penggunaan antibiotik untuk mengendalikan busuk bakteri lunak menjadi permasalahan karena memicu resistensi antibiotik. Madu manuka menjadi salah satu alternatif untuk mengatasi permasalahan resistensi bakteri terhadap antibiotik karena belum dilaporkan adanya resistensi bakteri terhadap madu. Bagaimanapun, penggunaan madu terhadap patogen tumbuhan belum banyak diteliti. Oleh karena hal itu, penelitian ini dilakukan untuk mengetahui pengaruh madu manuka pada *P. brasiliense* secara in vitro. Ekspresi gen virulensi dianalisis menggunakan kuantitatif Real-Time PCR dan semi-kuantitatif PCR. Perlakuan madu manuka dengan konsentrasi sub-lethal menurunkan ekspresi gen virulensi yaitu *pelA*, *pelB*, *pelC*, *pehA*, *prtW*, *motA*, *fliA*, *flgA*, *bcsA*, *expl*, *fis*, dan *hrpL*, dibandingkan dengan internal standar *recA*. Faktor virulensi yang berkaitan dengan enzim pendegradasi dinding sel, pembentukan pelikel dan biofilm, reaksi hipersensitif dan patogenesitas, serta quorum sensing mengalami penurunan ekspresi gen dengan perlakuan madu manuka.

Kata kunci : *Pectobacterium brasiliense*, busuk lunak, virulensi, madu manuka



Virulence Gene Expression of *Pectobacterium brasiliense* using Manuka Honey Treatment

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Abstract

*The primary virulence of soft rot pectobacteria, including *Pectobacterium brasiliense* is mainly determined by massive production of plant cell wall degrading enzymes (PCWDE) that promote plant tissue maceration on many crops, also formation of biofilm and pellicle play important role of pathogenecity. The use of antibiotics against bacterial soft rot has become a problem and potentially affects resistance. Antibiotic resistance is driving interest in antimicrobial treatments, and there is no organism gained resistance to honey has been reported. However, the use of honey as theurapitic agent in plant bacterial pathogens was less study. Therefore, this study was undertaken to determine the in vitro effect of manuka honey against *P. brasiliense* assessed by genotypic level. The expression of virulence associated-genes was investigated using quantitive Real-Time PCR and semi quantitative reverse transcription-PCR. The exposure of *P. brasiliense* to sublethal concentration of manuka honey has decreased virulence gene expression namely *pelA*, *pelB*, *pelC*, *pehA*, *prtW*, *motA*, *fliA*, *flgA*, *bcsA*, *expl*, *fis*, and *hrpL*. These genes had lower expression with honey tratment compared to that of *recA* as internal standard. Virulence determinant of *P. brasiliense* associated with synthesis of PCWDE, pellicle and biofilm formation, Hypersensitivity reaction and pathogenecity (*Hrp*), and Quorum sensing was decreased by honey treatment, therefore we infer that manuka honey impacts on reducing virulence by suppression of these genes expression.*

*Key words : *Pectobacterium brasiliense*, soft rot, virulence, manuka honey*



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