

STRUKTUR ANATOMIS DAN SENYAWA BIOAKTIF DAUN MELON (*Cucumis melo* L. 'HIKAPEL') TERINFEKSI *DOWNY MILDEW*

Ozie Akbar Pratama
09/285330/BI/08316

INTISARI

Penyakit *Downy Mildew* menginfeksi tanaman melon yang disebabkan oleh jamur *Pseudoperonospora cubensis* Rostovtsev yang menyebabkan klorosis daun. Kultivar Hikapel merupakan melon unggul hasil penelitian Laboratorium Genetika, Fakultas Biologi UGM dan belum diteliti mengenai struktur anatomis dan kandungan senyawa bioaktif terhadap infeksi *Downy Mildew*. Penelitian ini bertujuan untuk mempelajari struktur anatomis daun melon kultivar Hikapel serta senyawa bioaktifnya terhadap penyakit *Downy Mildew*. Sayatan daun melon kultivar Hikapel dibuat preparat melintang metode *embedding* dan diamati anatominya dengan Optilab di Laboratorium Struktur dan Perkembangan Tumbuhan UGM. Data pengukuran anatomis dianalisis dengan *One-Way ANOVA*. Ekstraksi serbuk daun melon menggunakan pelarut hexan. Ekstrak dianalisis dengan GC-MS di Laboratorium Kimia Organik MIPA UGM. Hasil pengamatan anatomis yaitu kerapatan epidermis atas daun terinfeksi lebih rapat (52,48 sel/mm) dibanding daun sehat (48,64 sel/mm). Epidermis bawah daun terinfeksi (60,64 sel/mm) lebih jarang dibanding daun sehat (63,36 sel/mm). Kerapatan jaringan palisade mengalami penurunan pada daun terinfeksi (70,88 sel/mm) dibanding daun sehat (86,88 sel/mm). Panjang dan lebar sel palisade daun terinfeksi mengalami kenaikan masing-masing sebesar 66,23 μm dan 9,06 μm dibandingkan dengan daun sehat hanya sebesar 46,84 μm dan 6,43 μm . Analisis statistik dengan *One-Way ANOVA* menunjukkan tidak ada beda nyata kerapatan epidermis atas dan bawah, tetapi ada beda nyata kerapatan dan ukuran sel palisade. *Downy Mildew* menginfeksi jaringan parenkim palisade diindikasikan perubahan ukuran dan kerapatan sel. Daun sehat tidak mensintesis senyawa bioaktif 1-hexacosanol, heptadecane, 6,10,14-trimethyl-2-pentadecanone, methyl linoleate, methyl 11-octadecenoate, dan methyl octadecanoate. Daun terinfeksi tidak mensintesis senyawa bioaktif 5-octadecene, methyl 10-octadecenoate, 1-monolinolein, dan tetratetracontane.

Kata kunci : Hikapel, *Downy Mildew*, *Pseudoperonospora cubensis*, struktur anatomis, senyawa bioaktif.

**ANATOMICAL STRUCTURE AND BIOACTIVE COMPOUND
OF MELON LEAF (*Cucumis melo* L. 'HIKAPEL')
INFECTED BY DOWNY MILDEW**

Ozie Akbar Pratama

09/285330/BI/08316

ABSTRACT

Downy Mildew which infects melon plants caused by *Pseudoperonospora cubensis* Rostovtsev. This disease causes leaf chlorosis. Hikapel is one of superior melon cultivar produced from research in Laboratory of Genetics, Faculty of Biologi, UGM. Anatomical structure and bioactive content of Hikapel melon infected by Downy Mildew yet to be researched. This research aims to learn about anatomical structure and bioactive content of Hikapel cultivar against Downy Mildew infection. Transverse incision of Hikapel leaf were embedded and its anatomical structure was observed using Optilab in Plant Structure and Development Laboratory, UGM. Anatomic measurement data were analyzed using one-way ANOVA. Leaf powder were extracted using hexane solvent. Extract were analyzed with GC-MS in Organic Chemistry Laboratory, MIPA UGM. Anatomical observation shows upper epidermal cell density in infected leaf denser (52,48 cell/mm) than healthy leaf (48,64 cell/mm). Lower epidermis cell of infected leaf (60,64 cell/mm) less dense than healthy leaf (63,36 cel/mm). Palisade cell density in infected leaf (70,88 cell/mm) is lower than healthy leaf (86,88 cel/mm). Infected leaf palisade cells lenght and width increases each of 66,23 μm and 9,06 μm while the healthy leaf only 46,84 μm and 6,43 μm . Statistical analysis using one-way ANOVA shows there is no significant difference in upper and lower epidermal density, but there's significant difference in size and density of palisade tissue. Downy Mildew infected palisade tissue indicated by change in cell size and density. Bioactive compound such as 1-hexacosanol, heptadecane, 6,10,14-trimethyl-2-pentadecanone, methyl linoleate, methyl 11-octadecenoate, dan methyl octadecanoate didn't synthetized in healthy leaf. Infected leaf didn't synthetize bioactive compound such as 5-octadecene, methyl 10-octadecenoate, 1-monolinolein, dan tetratetracontane.

Keywords : Hikapel, Downy Mildew, *Pseudoperonospora cubensis*, leaf anatomy, terpenoid profile.