

INTISARI

Tanaman pisang merupakan salah satu tanaman komoditas penting di Indonesia. Namun, dalam proses budidaya tanaman pisang terdapat penurunan jumlah produksi disebabkan oleh organisme pengganggu tanaman yaitu jamur *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4. Teknik pengendalian patogen jamur dapat dilakukan melalui pemanfaatan agens pengendalian hayati. Agens pengendalian hayati dapat ditemukan pada daerah-daerah di sekitar perakaran tanaman (rizosfer) seperti bakteri *Bacillus* sp.. Salah satu rizosfer tanaman yang menyediakan mikroorganisme menguntungkan yaitu rizosfer tanaman bambu. Oleh karena itu, penelitian ini bertujuan untuk mengetahui spesies bakteri *Bacillus* sp. yang terdapat pada perakaran bambu yang berguna dalam menekan pertumbuhan jamur *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 secara *in vitro*. Hasil penelitian menunjukkan bahwa isolat BNV 45 yang diisolasi dari rizosfer bambu dapat menekan pertumbuhan jamur *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 secara *in vitro* dengan presentase daya hambat terbesar yaitu 48,65% serta mekanisme penghambatan bersifat fungistatik. Berdasarkan analisis sekuensing menggunakan gen 16S rRNA maka isolat bakteri yang menunjukkan presentase daya hambat terbesar merupakan bakteri *Bacillus subtilis*. Selain itu, uji fisiologi dan biokimia menunjukkan bahwa hasil positif terhadap uji gram, uji katalase, uji oksidase, uji levan, serta uji OF. Sementara itu, hasil negatif terdapat pada pengujian hipersensitivitas. Selain itu, 5. Bakteri *Bacillus subtilis* mempunyai mekanisme penghambatan bersifat fungistatik tetapi tidak dapat menekan pertumbuhan jamur patogen Foc TR4 pada uji VOC.

Kata kunci : tanaman pisang, jamur *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4, rizosfer bambu, *Bacillus* sp.

ABSTRACT

Banana plants are one of the important commodity crops in Indonesia. However, in the process of cultivating banana plants, there is a decrease in the amount of production caused by plant-disturbing organisms, namely the fungus *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4. Fungal pathogen control techniques can be carried out through the use of biological control agents. Biological control agents can be found in areas around plant roots (rhizosphere) such as *Bacillus* sp. One of the plant rhizospheres that provides beneficial microorganisms is the bamboo plant rhizosphere. Therefore, this study aims to determine the species of *Bacillus* sp. bacteria found on bamboo roots which are useful in suppressing the growth of the fungus *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 in vitro. The results showed that the BNV 45 isolate isolated from the bamboo rhizosphere could suppress the growth of the fungus *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 in vitro with the largest percentage of inhibitory power, namely 48.65% and the inhibition mechanism was fungistatic. Based on sequencing analysis using the 16S rRNA gene, the bacterial isolate that showed the greatest percentage of inhibitory power was *Bacillus subtilis* bacteria. Apart from that, physiological and biochemical tests showed positive results for the gram test, catalase test, oxidase test, levan test and OF test. Meanwhile, negative results were found in hypersensitivity testing. The *Bacillus subtilis* bacteria has a fungistatic inhibitory mechanism but cannot suppress the growth of the pathogenic fungus Foc TR4 in the VOC test.

Key words: banana plants, *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 fungus, bamboo rhizosphere, *Bacillus* sp.