ABSTRAK

EKSPLORASI JAMUR RIZOSFER PADI ORGANIK (*Oryza sativa* L.) UNTUK MENGENDALIKAN PATOGEN BUSUK PELEPAH (*Sarocladium oryzae*) DAN POTENSINYA DALAM MEMACU PERTUMBUHAN TANAMAN

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Penyakit busuk pelepah padi yang disebabkan oleh *Sarocladium oryzae* merupakan salah satu kendala penting dalam produksi padi, sehingga diperlukan alternatif pengendalian yang ramah lingkungan. Penelitian ini bertujuan untuk mengeksplorasi dan mengidentifikasi jamur antagonis dari rizosfer padi organik yang berpotensi sebagai agen pengendali hayati dan *Plant Growth Promoting Fungi* (PGPF). Penelitian meliputi eksplorasi isolat, uji hipovirulen, uji antagonis menggunakan metode kultur ganda dan *double dish system*, pengamatan mikoparasitisme, serta uji PGPF pada tanaman mentimun. Hasil penelitian memperoleh 30 isolat jamur, dengan 17 isolat di antaranya bersifat hipovirulen. Berdasarkan hasil identifikasi, isolat L1O1 18 dan L2O1 7 termasuk dalam genus *Penicillium*. Pada uji antagonisme metode kultur ganda, isolat L1O1 18 menunjukkan daya hambat tertinggi terhadap *S. oryzae* sebesar 61,3%, sedangkan pada metode *double dish system*, daya hambat tertinggi ditunjukkan oleh isolat L2O1 7 sebesar 63,2%. Pengamatan mikroskopis menunjukkan adanya mekanisme mikoparasitisme melalui kontak langsung antarhifa. Hasil identifikasi menunjukkan dominasi genus *Penicillium*, *Aspergillus* dan *Trichoderma*. Selain sebagai agen antagonis, beberapa isolat juga mampu meningkatkan pertumbuhan tanaman. Hasil penelitian menunjukkan bahwa jamur rizosfer padi organik, terutama *Penicillium* (L1O1 18, L2O1 7, serta L1O1 1) dan *Trichoderma* (L2O1 1) berpotensi sebagai agen pengendali hayati sekaligus pemacu pertumbuhan tanaman.

Kata kunci: Jamur antagonis, pengendalian hayati, PGPF, rizosfer padi, *Sarocladium oryzae*.

ABSTRACT

EXPLORATION OF ORGANIC RICE (*Oryza sativa* L.) RHIZOSPHERE FUNGI FOR THE CONTROL OF SHEATH ROT PATHOGEN (*Sarocladium oryzae*) AND THEIR POTENTIAL IN PROMOTING PLANT GROWTH

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Sheath rot disease caused by *Sarocladium oryzae* is one of the major constraints in rice production, highlighting the need for environmentally friendly control strategies. This study aimed to explore and identify fungal isolates from the rhizosphere of organic rice with potential as biological control agents and *Plant Growth Promoting Fungi* (PGPF). The research included isolation and exploration of fungal isolates, hypovirulence testing, antagonistic assays using dual culture and double dish system methods, observation of mycoparasitic mechanisms, and evaluation of PGPF activity on cucumber plants. A total of 30 fungal isolates were obtained, of which 17 were classified as hypovirulent. Identification results showed that isolates L1O1 18 and L2O1 7 belonged to the genus *Penicillium*. In the dual culture assay, isolate L1O1 18 exhibited the highest inhibitory effect against *S. oryzae*, with an inhibition percentage of 61.3%, whereas in the double dish system assay, isolate L2O1 7 showed the highest inhibition percentage of 63.2%. Microscopic observations revealed a mycoparasitic mechanism characterized by direct hyphal contact. Overall, the fungal isolates were dominated by the genera *Penicillium*, *Aspergillus*, and *Trichoderma*. In addition to their antagonistic activity against the pathogen, several isolates were also able to promote plant growth. The results indicated that organic rice rhizosphere fungi, particularly *Penicillium* isolates L1O1 18, L2O1 7, and L1O1 1, as well as *Trichoderma* isolate L2O1 1, have potential to be developed as biological control agents and PGPF.

Keywords: Biological control, *Penicillium*, PGPF, rice rhizosphere fungi, *Sarocladium oryzae*, *Trichoderma*.