



Abstract

Trichoderma spp. is a fungus widely used to control soil-borne pathogens, such as sheath blight caused by *Rhizoctonia solani* which is the major diseases of rice. This research aimed to evaluate the ability of *Trichoderma asperellum* isolate UGM-LHAF to control sheath blight disease of rice IR64 through in vitro (dual culture and antifungal activity) and screen house test. The completely randomized design with seven treatments and six replicates consisting of control, soil treatment of *T. asperellum* isolate UGM-LHAF on planting medium, seedling medium, combined planting and seedling medium, a *difenoconazole*, only *T. asperellum* isolate UGM-LHAF, only *R. solani*, and without *T. asperellum* isolate UGM-LHAF, and *R. solani*, was used in screen house test. In the in vitro test, *T. asperellum* isolate UGM-LHAF was able to inhibit the growth of *R. solani* (64.23% on dual culture and 68.5% on antifungal activity). The incubation period, disease intensity, and area under disease progress curve (AUDPC) could be reduced by *T. asperellum* isolate UGM-LHAF (24.38–50.62%, 20.69–22.41%, and 26.52%–28.96%, respectively). Also, plant height (6.29–12.06%), number of leaves (48.31–68.54%), tiller number (75.53–112.77%), fresh plant weight (63.0–101.03%), dry plant weight (80.43–123.31%), grains number/penicle (33.49–43.17%), dry grain weight/clump (10.56–51.43%), 100 grain weight/clump (34.35–42.14%) was increased with unfilled grains percentage/penicle (43.28–49.86%) reduced under screen house test. This study suggests that *T. asperellum* isolate UGM-LHAF applied in soil can be used as an alternative strategy to manage sheath blight disease of rice IR64.

Keywords: *Trichoderma asperellum*, sheath blight disease, *Rhizoctonia solani*, rice



Intisari

Trichoderma spp. merupakan jamur yang banyak digunakan untuk mengendalikan patogen tular tanah, seperti penyakit hawar pelelah yang disebabkan oleh *Rhizoctonia solani* yang merupakan penyakit utama pada padi. Penelitian ini bertujuan untuk mengevaluasi kemampuan *Trichoderma asperellum* UGM-LHAF dalam mengendalikan penyakit hawar pelelah padi IR64 melalui uji in vitro (*dual culture* dan aktivitas antifungal) serta uji rumah kaca. Rancangan acak lengkap dengan tujuh perlakuan dan enam ulangan yang terdiri dari aplikasi *T. asperellum* isolat UGM-LHAF pada media tanam, media semai, kombinasi media tanam dan semai, fungisida (difenconazole), hanya *T. asperellum* isolat UGM-LHAF, hanya *R. solani* serta kontrol (tanpa *T. asperellum* isolat UGM-LHAF dan *R. solani*) digunakan dalam uji rumah kaca. Pada uji in vitro, *T. asperellum* isolat UGM-LHAF mampu menghambat pertumbuhan *R. solani* (64,23% pada kultur ganda dan 68,5% pada aktivitas antifungal). Masa inkubasi (24,38–50,62%), intensitas penyakit (20,69–22,41%), dan area di bawah kurva perkembangan penyakit (AUDPC) (26,52–28,96%) dapat ditekan oleh *T. asperellum* isolat UGM-LHAF, tinggi tanaman (6,29–12,06%), jumlah daun (48,31–68,54%), jumlah anakan (75,53–112,77%), bobot segar tanaman (63–101,03%), bobot kering tanaman (80,43–123,31%), jumlah butir/malai (33,49–43,17%), bobot gabah kering/rumpun (110,56–151,43%), bobot 100 butir/rumpun (34,35–42,14%) meningkat dengan persentase gabah hampa/malai (43,28–49,86%) berkurang dibandingkan dengan kontrol pada uji rumah kaca. Penelitian ini menunjukkan bahwa *T. asperellum* isolat UGM-LHAF yang diaplikasikan pada medium tanam dapat digunakan sebagai salah satu strategi alternatif untuk mengatasi penyakit hawar pelelah pada tanaman padi IR64.

Kata Kunci: *Trichoderma asperellum*, hawar pelelah, *Rhizoctonia solani*, padi