ABSTRAK

APLIKASI *AERATED COMPOST TEA* SERAT BROMELAIN YANG DIINDUKSI INOKULUM *Trichoderma* sp. (BIO GGP 5) DALAM PENEKANAN PENYAKIT *Fusarium* sp. DAN PERTUMBUHAN TANAMAN SELADA (*Lactuca sativa* L.)

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Produksi olahan nanas menyisakan banyak limbah serat bromelain. Serat bromelain mengandung polimer kompleks seperti selulosa, hemiselulosa dan lignin yang tidak mudah terurai. Upaya untuk mempercepat proses dekomposisi salah satunya dengan pemberian inokulum *Trichoderma* sp. yang bersifat lignoselulolitik sebagai induser pada pembuatan kompos. *Trichoderma* sp. juga diketahui mampu mengendalikan penyakit pada tanaman apabila dijadikan bahan pembuatan *Aerated Compost Tea*. ACT adalah ekstrak air kompos oksigenat yang diperoleh melalui proses aerasi. Berbagai hasil penelitian menunjukkan potensi ACT dalam merangsang pertumbuhan tanaman dan menekan penyakit oleh beberapa patogen. Tujuan dari penelitian ini adalah untuk mengetahui kualitas kimia, biologi serta mengetahui pengaruh aplikasi ACT serat bromelain yang diinduksi inokulum *Trichoderma* sp. (BIO GGP 5) dalam penekanan penyakit *Fusarium* sp. dan pertumbuhan tanaman selada (*Lactuca sativa* L.). Penelitian ini dilaksanakan pada bulan Februari 2022 sampai bulan Mei 2022 di Laboratorium Mikrobiologi FMIPA Universitas Lampung. Penelitian ini dilakukan dalam 3 tahapan pengujian ACT serat bromelain, yaitu uji kualitas kimia dan biologi, uji *in vitro,* dan uji *in vivo* penekanan penyakit *Fusarium* sp. serta pertumbuhan tanaman selada. Uji *in vitro* dan *in vivo* dilakukan menggunakan RAL 1 faktor dengan perbandingan konsentrasi. kompos:air yaitu 1:3; 1:4; dan 1:5. Data kualitatif hasil pengujian kualitas ACT dan *in vitro* disajikan dalam bentuk deskriptif dan uji *in vivo* dianalisis menggunakan *Analysis of Variance* (ANOVA). Perbedaan antar perlakuan dilakukan uji *Tukey* pada taraf nyata 5%. Hasil penelitian menunjukkan bahwa kualitas ACT serat bromelain yang diinduksi inokulum *Trichoderma* sp. (BIO GGP 5) terbaik diperoleh dari perlakuan P1 yaitu perbandingan kompos : air adalah 1:3

(100 gr kompos : 300 mL air). Penambahan ACT serat bromelain mampu menekan pertumbuhan *Fusarium* sp. secara *in vitro* dan meningkatkan pertumbuhan tanaman selada yang diinfeksi *Fusarium* sp.

Kata kunci: *Aerated Compost Tea* (ACT), *Fusarium* sp., *Lactuca sativa* L., *Trichoderma* sp.

ABSTRACT

APPLICATION OF AERATED COMPOST TEA BROMELAIN FIBER INDUCED BY INOCULUM *Trichoderma* sp. (BIO GGP 5) IN DISEASE STRESSATION OF *Fusarium* sp. AND GROWTH OF LETTUCE (*Lactuca sativa* L.)

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The production of pineapple leaves a lot of bromelain fiber waste. Bromelain fiber contains complex polymers such as cellulose, hemicellulose and lignin which are not easily decomposed. One of the efforts to accelerate the decomposition process is by giving *Trichoderma* sp. inoculum which is lignocellulolytic as an inducer in composting. *Trichoderma* sp. It is also known to be able to control diseases in plants when used as an ingredient for making Aerated Compost Tea. ACT is an oxygenate compost water extract obtained through the aeration process. Various research results show the potential of ACT in stimulating plant growth and suppressing disease by several pathogens. The purpose of this study was to determine the chemical, biological quality and to determine the effect of ACT application on bromelain fiber induced by *Trichoderma* sp. (BIO GGP 5) in suppressing *Fusarium* sp. and growth of lettuce (*Lactuca sativa* L.). This research was conducted from February 2022 to May 2022 at the Laboratory of Microbiology FMIPA, University of Lampung. This research was conducted in 3 stages of bromelain fiber ACT testing, namely chemical and biological quality tests, in vitro tests, and in vivo tests for suppression of *Fusarium* sp. and lettuce growth. In vitro and in vivo tests were carried out using 1 factor RAL with a concentration ratio. compost:water is 1:3; 1:4; and 1:5. Qualitative data from the results of ACT and in vitro quality tests were presented in descriptive form and in vivo tests were analyzed using Analysis of Variance (ANOVA). The difference between treatments was carried out by the *Tukey* test at a 5% significance level. The results showed that the quality of ACT bromelain fibers induced by *Trichoderma* sp. (BIO GGP 5) the best was obtained from the P1 treatment, namely the ratio of compost: water was 1:3

(100 gr compost: 300 mL water). The addition of bromelain fiber ACT was able to suppress the growth of *Fusarium* sp. in vitro and increased the growth of lettuce plants infected with *Fusarium* sp.

Key words: Aerated Compost Tea (ACT), *Fusarium* sp., *Lactuca sativa* L., *Trichoderma* sp.