ABSTRAK

UJI PEMBERIAN VERMIKOMPOS-ZEOLIT ALAM TERHADAP KEPADATAN SEL *Thalassiosira* sp., dan PROBIOTIK *Lactobacillus* sp. DALAM UPAYA MENINGKATKAN SINTASAN LARVA UDANG VANAME

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Thalassiosira sp. adalah mikroalga yang dikultur untuk memenuhi kebutuhan nutrisi dalam budidaya larva udang vaname. Kepadatan sel mikroalga pada kultur dipengaruhi oleh komposisi pupuk yang diberikan dan didukung oleh bakteri probiotik yang dapat diperoleh dari alam. Penelitian ini dilakukan dalam dua tahap. Penelitian tahap pertama dilakukan uji pemberian vermikompos-zeolit alam terhadap jumlah probiotik *Lactobacillus* sp. dan kepadatan sel *Thalassiosira* sp. Penelitian tahap kedua merupakan penelitian pengembangan dengan menguji hasil kultur *Thalassiosira* sp. terhadap jumlah probiotik *Lactobacillus* sp. dan sintasan larva udang vaname. Penelitian dilaksanakan dari bulan November 2022 sampai Maret 2023 di lokasi pembenihan udang vaname PT. Citra Larva Cemerlang di Kalianda, Lampung Selatan dan Laboratorium Mikrobiologi FMIPA Universitas Lampung. Perlakuan disusun menggunakan Rancangan Acak Lengkap (RAL) dengan satu faktor yaitu jenis pupuk *Thalassiosira* sp. terdiri dari pupuk komersial (FeCl, $NaNO_3$, DSP, silika, EDTA) sebagai kontrol (K), vermikompos (V), zeolit alam (Z), vermikompos + zeolit alam (VZ). Setiap perlakuan diulang 4 kali. Data yang diperoleh dilakukan analisis ANOVA menggunakan program IBM SPSS 26 pada taraf kepercayaan 5%, dilanjutkan dengan uji lanjut *Duncan* untuk mengetahui perbedaan antar perlakuan. Pemberian vermikompos dan zeolit alam pada kultur *Thalassiosira* sp. mampu meningkatkan jumlah probiotik *Lactobacillus* sp. Hasil terbaik terdapat pada perlakuan menggunakan kombinasi vermikompos dan zeolit alam dengan rata-rata log jumlah sel hidup *Lactobacillus* sp. 6 CFU/mL. Namun, pemberian vermikompos dan zeolit alam tidak mampu meningkatkan kepadatan sel hidup *Thalassiosira* sp. Pemberian hasil kultur *Thalassiosira* sp. menggunakan vermikompos dan zeolit alam mampu meningkatkan jumlah probiotik *Lactobacillus* sp. dan sintasan larva udang vaname. Hasil terbaik terdapat pada perlakuan menggunakan kombinasi vermikompos dan zeolit alam dengan rata-rata log jumlah sel hidup *Lactobacillus* sp. 7,2 CFU/mL dan persentase sintasan 80,6%.

Kata kunci: vermikompos, zeolit alam, *Thalassiosira* sp., *Lactobacillus* sp., sintasan, larva udang vaname.

ABSTRACT

TEST APPLICATION of VERMICOMPOS-NATURAL ZEOLIT on CELL DENSITY of *Thalassiosira* sp., and PROBIOTICS *Lactobacillus* sp. in the EFFORT to INCREASE the SURVIVAL of VANNAMEI SHRIMP LARVAE

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Thalassiosira sp. is microalgae that is cultured to meet nutritional needs in the cultivation of vannamei shrimp larvae. The density of microalgae cells in culture is influenced by the composition of the fertilizer given and supported by probiotic bacteria that can be obtained from nature. This research is conducted in two steps. The first staps of the research was to test the application of natural vermicompost-zeolite to the amount of probiotic *Lactobacillus* sp. and the cell density of *Thalassiosira* sp. The second stage of research is development research by testing the culture results of *Thalassiosira* sp. on the amount of probiotic *Lactobacillus* sp. and survival of vannamei shrimp larvae. The research was carried out from November 2022 to March 2023 at the vannamei shrimp hatchery PT. Citra Larva Cemerlang in Kalianda, South Lampung and Microbiology Laboratory FMIPA University of Lampung. The treatments were arranged in a completely randomized design (CRD) with one factor, which is the type of fertilizer for the culture media of *Thalassiosira* sp. which consists of commercial fertilizers (FeCl, $NaNO^3$, DSP, Silica, EDTA) as controls (K), vermicompost (V), natural zeolite (Z), vermicompost + natural zeolite (VZ). Each treatment was repeated 4 times. The data obtained was analyzed with ANOVA by using the IBM SPSS 26 program at the 5% level of confidence, continued with Duncan's further test to determine the significant difference between each treatments. The Application of vermicompost and natural zeolite to the culture of *Thalassiosira* sp. was able to increase the amount of probiotic *Lactobacillus* sp. The best results was found in treatment by using a combination of vermicompost and natural zeolite with an average log number the live cell density of *Lactobacillus* sp. 6 CFU/mL. However, the application of vermicompost and natural zeolite was not able to increase the live cell density of *Thalassiosira* sp. Application of culture results of *Thalassiosira* sp. by using vermicompost and natural zeolite was able to increase the amount of probiotic *Lactobacillus* sp. and survival of vannamei shrimp larvae. The best results was found in the treatment by using a combination of vermicompost and natural zeolite with an average log number the live cell density of *Lactobacillus* sp. 7,2 CFU/mL and a survival rate of 80,6%.

Keywords: vermicompost, natural zeolite, *Thalassiosira* sp., *Lactobacillus* sp., survival, vann amei shrimp larvae