Pengaruh bahan organik dalam air terhadap pertumbuhan bakteri bercahaya pada pemeliharaan larva udang windu (Penaeus Monodon) = The effect of organic matters in water on the population growth of luminescent vibrio in the rearing Penaeus Monodon Larvae

Rauf Achmad Sue, author

Abstrak

ABSTRAK
Suatu penelitian telah dilakukan di laboratorium basah, Balai Penelitian Perikanan Air Tawar Bogor, dimulai tanggal 20 Agustus sampai dengan 1 Desember 1991. Penelitian ini bertujuan untuk melihat pengaruh bahan organik dalam air terhadap pertumbuhan bakteri bercahaya pada pemeliharaan larva udang windu. Juga untuk rnengetahui Pertumbuhan jumlah bakteri dan mortalitas larva udang windu.

Percobaan ini dilakukan dengan menggunakan rancangan acak lengkap (RAL) dengan enam perlakuan konsentrasi bahan organik dan tiga kali ulangan. Perlakuan tersebut adalah 0 ppm(A) sebagai kontrol, 15 ppm(B), 30 ppm(C), 45 ppm (D), fi0 ppm (E) dan 75 ppm (F.).

Sebanyak 100 ekor larva udang windu stadia nauplius di masukkan ke dalam bak akuarium yang telah diberi perlakuan konsentrasi bahan organik. Isolasi bakteri bercahaya juga dinokulasikan ke dalam bak akuarium dengan kepadatan 103 sel per ml.

Pengarnbilan contoh bakteri dan air dilakukan setiap hari selama lima hari. Idetifikasi bakteri menurut metoda Cowen & Steel 1974: 17-20) ; West & Colwell (1984: 285-289). Fisika dan kirnia air seperti oksigen terlarut, karbondioksida, total bahan organik, ammonia, pH, salinitas dan temperatur air di ukur dengan menggunakan metoda standar.

Hasil penelitian menuniukkan bahwa konsentrasi bahan organik dalam air meningkat sesuai dengan rataan konsentrasi bahan organik yang dimasukkan ke dalam bak percobaan saat awal. Peningkatan konsentrasi bahan organik dalam air ternyata rata-rata meningkat. Puncak konsentrasi bahan organik perlakuan E dan F dicapai pada hari kedua sedngkan perlakuan A dan S terjadi pada hari kelima. Konsentrasi bahan organik dalam air berbeda sangat nyata terhadap pertumbuhan bakteri, bercahaya dalam air dan pada larva udang windu (P> 0.01). Jumlah total bakteri dan bakteri bercahaya lebih tinggi pada konsentrasi bahan organik yang lebih besar.

Rataan jumlah kaloni bakteri pada masing-masing konsentrasi bahan organik adalah 103.44; 99.4; 82.81 dan 82.32. Mortalitas larva udang windu lebih tinggi pada perlakuan konsentrasi bahan organik yang lebih besar. Mortalitas tersebut berturut-turut adalah 80.33%; 68.66%; 22.3%; 15.0% dan 2.3% untuk perlakuan F, E, D, C, B dan A.

Karakteristik fisika dan kimia air adalah sebagai berikut : oksigen terlarut 4.8-7.4 ppm; CO2 0-19.36 ppm;

NH3 0.025-0.175 ppm; pH 7-8 ppm; temperatur air 30-31°C dan salinitas 30-32%.
<hr>ABSTRACT
An experiment was conducted at the Research Institute for Freshwater Fisheries's wet laboratory in Bogor from 20 August to 1 December, 1991. This study was done to evaluate the effect of organic matter in water to the population growth of luminescent vibrio on Penaeus monodon larval. The total number of bacterial population and the mortality of the shrimp larvae were also evaluated.

In this study a complete randomized design (CRD) was used with six different concentrations of organic matter as treatments and three replication. The treatments were 0 ppm(A) as a control, 15 ppm(B), 30 ppm(C), 45 ppm(D), 60 ppm(E) and 75 ppm(F).

One hundred shrimp larvae at nauplius stage were stocked in each aquarium contained the respective organic matter concentration.

The luminous vitro isolate were also inoculated in each aquarium at a concentration of 10 cell per ml. Sample of bacteria and water were taken every day for 5 days. The bacteria were identified according to Cowan & Steil method (1974:17-20): West & Colwell (1984:285-289). Physical and chemical of the water such as dissolved oxygen, carbon dioxide. total organic matter, ammonia, pH, salinity and water temperature were examined by the standard water measurement method.

The results indicated that the concentration of organic matter in water increased proportionally relative to the rate of initial concentration used. The higher the initial organic matter concentration applied the higher increase rate of its concentration in the water. The peak of the concentration was reached faster at the higher concentration than the lower one. The peak of E and F treatment were at the second day while A and S treatment were at the fifth day. Organic matter content in water significantly effect on the population growth of bacteria both in water and in shrimp larvae (P>0.01). The number of total bacteria and the luminous vibrio were higher at a higher concentration of organic matter. The average number of bacterial colony count at the respective organic matter concentration were 103.44; 99.4; 82.81; and 82.32.

The shrimp larvae mortalities were also higher at the higher concentration of organic matter. The percent mortality rate were : 80.33%; 68.86%; 22.3%, 15.0%, and 2.3% for F,E,D,C,B and A treatments respectively.

The physical and chemical characteristic of the water are as follows: dissolved oxygen 4.8-7.4 ppm; CO2 0-19.36 ppm; NH3 0.025-0.175 ppm; pH 7-8; temperature 30- 31°C and salinity 30-32%.