

## **MORTALITAS LARVA *Culex quinquefasciatus* Say, 1823 (Diptera: Culicidae) TERHADAP BAKTERI *Lysinibacillus sphaericus* YANG DIISOLASI DARI KOTORAN BURUNG DAN GUANO**

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### **INTISARI**

Penelitian ini bertujuan untuk mengisolasi bakteri *Lysinibacillus sphaericus* dari kotoran burung dan guano, kemudian dilakukan skrining isolat yang diperoleh terhadap larva *Culex quinquefasciatus*. Dari 437 koloni bakteri terdapat 66 isolat dengan morfologi seperti *L. sphaericus* yang diperoleh dari 3 sampel kotoran burung atau guano. Sejumlah 66 isolat yang diperoleh kemudian diperbanyak pada media Embrapa menggunakan *shaker incubator* dengan kecepatan 150 rpm, suhu 30°C hingga sebagian besar bakteri telah mengalami sporulasi. Kemudian, hasil kultur bakteri diujikan pada larva nyamuk *Culex quinquefasciatus* instar IV. Skrining dilakukan dengan menggunakan konsentrasi perlakuan 1 µl FWC (*Final Whole Cultures*)/100 ml air pengujian, 25 larva nyamuk *Culex quinquefasciatus* instar IV, serta 4 kali pengulangan. Selanjutnya isolat-isolat tersebut dilakukan dua kali skrining ulangan untuk validasi potensi toksisitas. Mortalitas nyamuk pada 24 jam dan 48 jam setelah perlakuan dicatat dan dikalkulasi. Sebagai kontrol positif digunakan isolat *L. sphaericus* 1593, 229C, 15.4, dan 6.2. Tahapan skrining menghasilkan 5 isolat yang memiliki mortalitas lebih dari 10% yaitu isolat 4A25, 4A33, 4D21, 6B4 dan 6B6. Dari hasil skrining tersebut diperoleh mortalitas setelah 48 jam perlakuan dari masing-masing isolat 1593, 229C, 15.4, 6.2, 4A25, 4A33, 4D21, 6B4 dan 6B6 berturut-turut sebesar 29%,35%, 46%, 22%, 16%,11%, 19%, 29%,11%. Isolat 6B4 yang diisolasi dari Goa Giri Tuban memiliki tingkat mortalitas mendekati isolat kontrol positif 1593, akan tetapi hasilnya tidak lebih baik dibandingkan isolat kontrol 15.4 dari penelitian sebelumnya, dengan demikian, isolate 6B4 berpotensi untuk digunakan sebagai agensia hayati untuk mengendalikan nyamuk vektor penyakit.

**Kata kunci:** *Culex quinquefasciatus*, *Lysinibacillus sphaericus*, patogenik, kotoran burung, guano.

## **MORTALITY OF *Culex quinquefasciatus* Say, 1823 (Diptera: Culicidae) LARVAE TO *Lysinibacillus sphaericus* BACTERIA ISOLATED FROM BIRD DROPPINGS AND GUANO**

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### **ABSTRACT**

This study was aimed to isolate the *Lysinibacillus sphaericus* bacteria from guano and bird droppings, and then screen to *Culex quinquefasciatus* larvae. From three samples of bird droppings and guano there were 437 bacterial colonies obtained, 66 isolates of which were morphologically similar to *L. sphaericus*. Then, all of the 66 isolates were cultured on Embrapa's medium using a shaker incubator with a speed of 150 rpm, at the temperature of 30°C until most of the bacteria had been sporulated. The bacterial culture were then tested on larvae of the fourth instar *Cx. quinquefasciatus* mosquito. The screening was carried out using a concentration of 1 µl *Final Whole Culture*/ 100 ml of testing water. The screening was conducted using 25 instar IV *Cx. quinquefasciatus* mosquito larvae per cup and four cups for each bacterial isolates. Mosquito mortality at 24 hours and 48 hours after treatment was recorded and a mortality rate was calculated. The *L. sphaericus* isolates 229C, 15.4, and 6.2 from previous studies were used as positive control as well as isolate 1593 from reference. The screening experiments showed that the mortality rate after 48 hours of treatment from each isolate 1593, 229C, 15.4, 6.2, 4A25, 4A33, 4D21, 6B4 and 6B6 were 29%, 35%, 46%, 22%, 16%, 11 %, 19%, 29%, 11%, respectively. The 6B4 isolate which was isolated from Goa Giri Tuban has a mortality rate close to the 1593 isolate, but it was lower than the 15.4 isolate collected from the previous studies. In conclusion, the study was successfully isolate *L. sphaericus* from guano and bird droppings pathogenic to the *Cx. quinquefasciatus*. The isolates obtained from this study particularly this isolat 6B4 warrant a further research to test its prospect as a biological agent to control vector mosquitoes.

**Keywords:** *Culex quinquefasciatus*, *Lysinibacillus sphaericus*, pathogenic, bird dropping, guano.