

## Intisari

Tujuan penelitian ini adalah mendapatkan bakteri potensial sebagai agen biokontrol *Vibrio harveyi* (VH), *Vibrio metschnikovii* (VM), dan *Vibrio alginus* (VA). Bakteri kandidat biokontrol bersumber dari koleksi Laboratorium Kesehatan Ikan dan Lingkungan Departemen Perikanan, Universitas Gadjah Mada sejumlah 83 bakteri. Penelitian ini dilakukan secara eksperimental dalam 3 tahapan utama meliputi penapisan bakteri kandidat biokontrol dengan metode *double layer*, identifikasi bakteri potensial biokontrol dengan metode pengujian biokimia dan PCR 16S rDNA, dan uji ko-kultur. Uji ko-kultur dilakukan terhadap CBR 19-A dengan VH untuk mengetahui efektifitasnya. Ko-kultur dilakukan dalam 15 ml medium Zobell cair selama 36 jam. Pengujian dilakukan dengan 3 perlakuan variasi kepadatan CBR 19-A meliputi  $10^2$  cfu/ml,  $10^4$  cfu/ml, dan  $10^6$  cfu/ml yang dikultur bersama masing-masing  $10^6$  cfu/ml VH. Sampel diambil secara periodik untuk mengestimasi pertumbuhan bakteri. Hasil penapisan didapatkan 4 bakteri potensial yakni CBR 19-A, CBR 22-B, ODS 3-1, dan WO AL 2.2 yang dapat menghambat pertumbuhan semua *Vibrio* patogen yang diujikan. Hasil penghambatan tertinggi oleh CBR 19-A terhadap VH dengan indeks penghambatan 12,7 mm. CBR 19-A, CBR 22-B, ODS 3-1 teridentifikasi secara molekuler dan biokimia sebagai *Pseudolateromonas* sp. sedangkan WO AL 2.2 sebagai *Vibrio* sp. Hasil uji ko-kultur menunjukkan bahwa CBR 19-A efektif melawan VH ketika kepadatannya mencapai  $10^8$  cfu/ml dan dalam kurun waktu antara 6 hingga 36 jam, CBR 19-A mampu membunuh semua VH untuk tiap perlakuan. Sehingga bakteri 19-A berpotensi dikembangkan sebagai agen biokontrol *Vibrio*.

Kata kunci : biokontrol, bakteri laut, daya hambat, *Pseudoalteromonas*, *Vibrio*

## *Abstract*

The aim of this research was to discover bacterial biocontrol agent against *Vibrio harveyi* (VH), *Vibrio metschnikovii* (VM), and *Vibrio alginus* (VA). Bacteria used in this study were bacterial collection of Fish Health and Environment Laboratory with 83 bacteria in total. This research was done experimentally and mainly conducted by bacterial screening with double layer method, identifying potential bacterial with biochemical tests and PCR 16S rDNA, and co-culturing potential bacterial biocontrol agent with *Vibrio*. Co-culture test was done by culturing CBR 19-A with VH to evaluate the killing activity of CBR 19-A to VH. VH at an initial density of  $10^6$  cfu/ml was co-cultured with CBR 19-A at an initial densities of  $10^2$  cfu/ml,  $10^4$  cfu/ml, and  $10^6$  cfu/ml for 36 hours. Bacterial densities were estimated at 0, 2, 6, 12, 24, and 36 hours after inoculation by total plate count method. Results indicated there were 4 potential bacteria for biocontrol which were CBR 19-A, CBR 22-B, ODS 3-1, and WO AL 2.2 that were able to inhibit all *Vibrios* tested. Highest inhibition activity was shown by CBR 19-A against VH with inhibitory index 12.7 mm. CBR 19-A, CBR 22-B, and ODS 3-1 were identified molecularly to be *Pseudoalteromonas* sp. and WO AL 2.2. was *Vibrio* sp. Co-culture result showed that CBR 19-A was able to kill VH within 6 until 36 hours for every treatments when its density reach  $10^8$  cfu/ml. This result revealed that CBR 19-A was potential bacterium to be developed as aa biocontrol agent against *Vibrios*.

Key words : biocontrol, marine bacteria, inhibitory capability, *Pseudoalteromonas*, *Vibrio*