

INTISARI

UJI AKTIVITAS EKSTRAK TANAMAN AKAR RIMPANG DALAM MENGHAMBAT PEMBENTUKAN BIOFILM

Vibrio parahaemolyticus

Berkembangnya budidaya perikanan di Indonesia dibarengi dengan permasalahan yang muncul dalam kegiatan budidaya. Permasalahan penyakit disebabkan salah satunya akibat pembentukan biofilm oleh bakteri patogen yang berperan dalam sistem pertahanan dan virulensi bakteri patogen. Pendekatan yang dapat dilakukan yaitu melalui penggunaan *anti-biofilm substance* (ABS) yang bersumber dari tanaman akar rimpang. Tujuan penelitian ini yaitu mengetahui aktivitas ekstrak tanaman akar rimpang dalam menghambat pembentukan biofilm bakteri *Vibrio parahaemolyticus*. Metode penelitian yang digunakan yaitu dengan Rancangan Acak Lengkap (RAL) yang terdiri dari empat perlakuan, yaitu P0 (kontrol), P1 (*crude extract* jahe 0.25 µg/µL), P2 (*crude extract* kunyit 0.25 µg/µL), dan P3 (*crude extract* temulawak 0.25 µg/µL) dengan tiap perlakuan dilakukan empat kali pengulangan. Parameter yang diuji yaitu pertumbuhan serta penghambatan biofilm. Metode yang digunakan untuk mengetahui penghambatan biofilm, yaitu metode *Microtitter Plate Assay* (MTP) crystal violet. Analisis data menggunakan uji *Analysis of Variance* (ANOVA) serta uji lanjut (*post-hoc*) menggunakan Uji Tukey HSD. Hasil analisis statistik menunjukkan pemberian *crude extract* berpengaruh terhadap pertumbuhan serta pembentukan biofilm *V. parahaemolyticus*. Pemberian *crude extract* temulawak dan kunyit berpengaruh terhadap pertumbuhan bakteri *V. parahaemolyticus*. Penghambatan biofilm terbesar, yaitu sebesar 75.19±1.52% ditemukan pada pemberian *crude extract* kunyit, diikuti *crude extract* temulawak dengan besar penghambatan mencapai 70.46±2.95%, serta penghambatan paling minimal pada pemberian *crude extract* jahe (31.84±3.41%). Berdasarkan uji Tukey HSD, pemberian *crude extract* kunyit tidak berbeda nyata dengan pemberian *crude extract* temulawak dalam menghambat pembentukan biofilm. Pemberian *crude extract* kunyit menunjukkan pengaruh yang optimal dalam menghambat pembentukan biofilm pada bakteri *V. parahaemolyticus*.

KATA KUNCI : bakteri *Vibrio parahaemolyticus*, tanaman akar rimpang, biofilm, *anti-biofilm substance*.

ABSTRACT

THE EFFECT OF RHIZOME PLANT EXTRACT FOR INHIBIT BIOFILM FORMATION OF *Vibrio Parahaemolyticus*

The development of aquaculture in Indonesia has been accompanied by problems arising from aquaculture activities. One of the causes of disease is the formation of biofilms by pathogenic bacteria, which play a role in the defense system and virulence of pathogenic bacteria. One approach that can be taken is the use of anti-biofilm substances (ABS) sourced from rhizome plants. The objective of this study is to determine the activity of rhizome plant extracts in inhibiting the formation of *Vibrio parahaemolyticus* bacterial biofilms. The research method used was a Completely Randomized Design (CRD) consisting of four treatments: P0 (control), P1 (ginger crude extract 0.25 µg/µL), P2 (turmeric crude extract 0.25 µg/µL), and P3 (temulawak crude extract 0.25 µg/µL), with each treatment repeated four times. The parameters tested were growth and biofilm inhibition. The method used to determine biofilm inhibition was the Microtiter Plate Assay (MTP) crystal violet method. Data analysis was performed using Analysis of Variance (ANOVA) and post-hoc tests using the Tukey HSD test. Statistical analysis results showed that the administration of crude extracts affected the growth and biofilm formation of *V. parahaemolyticus*. The administration of temulawak and turmeric crude extracts affected the growth of *V. parahaemolyticus* bacteria. The highest biofilm inhibition, at 75.19±1.52%, was observed with the administration of turmeric crude extract, followed by temulawak crude extract with inhibition reaching 70.46±2.95%, and the lowest inhibition with ginger crude extract (31.84±3.41%). Based on the Tukey HSD test, the administration of turmeric crude extract was not significantly different from the administration of temulawak crude extract to inhibit biofilm formation. The administration of turmeric crude extract showed the optimal effect in inhibiting biofilm formation in *V. parahaemolyticus* bacteria.

Keyword : Biofilm, *Vibrio parahaemolyticus*, rhizome plant extract, anti-biofilm substance.