

## ABSTRAK

### ISOLASI DAN KARAKTERISASI MIKROORGANISME DARI PRODUK *SOLUBLE LIQUID* (SL) DAN UJI AKTIVITAS METABOLITNYA SEBAGAI ANTIBAKTERI TERHADAP *Vibrio parahaemolyticus*

Oleh

YASMIN FAHIRA

Penyakit *vibriosis* yang disebabkan oleh bakteri *Vibrio* sp. menjadi masalah kesehatan utama dalam industri perikanan dan budidaya perairan yang sering kali menyebabkan kematian massal pada berbagai jenis ikan. Penelitian ini dilakukan untuk memperoleh senyawa bioaktif dari ekstrak bakteri produk pupuk cair *Soluble Liquid* (SL).

Bakteri diisolasi dari pupuk cair SL menggunakan media *Tryptose Soy Agar* (TSA) dan *de Man Rogosa Sharpe Agar* (MRSA). Isolat terpilih selanjutnya diidentifikasi makroskopik dan mikroskopik, serta dikultivasi pada media cair *Nutrient Broth* (NB) dan diinkubasi selama tiga hari. Kultur diekstraksi dengan menggunakan etil asetat (EtOAc). Ekstrak kasar diskriminasi aktivitas antibakterinya terhadap *Vibrio parahaemolyticus* menggunakan metode difusi ring sumuran. Isolat potensial dikultivasi skala besar menggunakan media cair NB. Ekstrak kasar difraksinasi dengan kromatografi kolom dan diuji aktivitas antibakterinya terhadap *V. parahaemolyticus*. Fraksi aktif dikarakterisasi menggunakan LC-MS/MS. Hasil diperoleh isolat bakteri yang terpilih diduga adalah genus *Lactobacillus* sp. Skrining antibakteri menunjukkan isolat YSL-1 memiliki daya hambat paling besar terhadap *V. parahaemolyticus*.

Hasil analisis data LC-MS/MS sampel YSL-1K2F1 terdeteksi sebanyak 12 puncak dengan total 5 puncak yang memiliki kelimpahan tinggi. Analisis LC-MS/MS pada waktu retensi 17,97 menit dengan puncak dasar 441.2988 m/z teridentifikasi sebagai senyawa turunan *Docosahexaenoic Acid* (DHA) dalam fraksi YSL-1K2F1 yang memiliki aktivitas antibakteri terhadap *V. parahaemolyticus*.

Kata kunci: *Docosahexaenoic acid*, *lactobacillus* sp., *soluble liquid*, dan *vibrio parahaemolyticus*.

## ABSTRACT

### ISOLATION AND CHARACTERIZATION OF MICROORGANISMS FROM SOLUBLE LIQUID (SL) PRODUCTS AND TESTING THEIR METABOLITE ACTIVITY AS ANTIBACTERIAL AGAINST *Vibrio parahaemolyticus*

By

YASMIN FAHIRA

Vibriosis disease caused by the bacteria *Vibrio* sp. It is a major health problem in the fishing and aquaculture industry which often causes mass deaths in various types of fish. This research was conducted to obtain bioactive compounds from bacterial extracts from Soluble Liquid (SL) liquid fertilizer products. Bacteria were isolated from SL liquid fertilizer using Tryptose Soy Agar (TSA) and de Man Rogosa Sharpe Agar (MRSA) media. The selected isolates were then identified macroscopically and microscopically, and cultivated in Nutrient Broth (NB) liquid media and incubated for three days. Cultures were extracted using ethyl acetate (EtOAc). The crude extract was screened for its antibacterial activity against *Vibrio parahaemolyticus* using the ring well diffusion method. Potential isolates were cultivated on a large scale using NB liquid media. The crude extract was fractionated by column chromatography and tested for bacterial activity against *V. parahaemolyticus*. The active fraction was further characterized using LC-MS/MS. The results obtained by the selected bacterial isolate are thought to be the genus *Lactobacillus* sp. Antibacterial screening showed that YSL-1 isolate had the greatest inhibitory effect against *V. parahaemolyticus*. The results of LC-MS/MS data analysis of the YSL-1K2F1 sample detected 12 peaks with a total of 5 peaks having high abundance. LC-MS/MS analysis at a retention time of 17.97 minutes with a base peak of 441.2988 m/z indicated a compound derived from Docosahexaenoic Acid (DHA) in the YSL-1K2F1 fraction which had antibacterial activity against *V. parahaemolyticus*.

Keywords: Docosahexaenoic acid, *lactobacillus* sp., soluble liquid, and *vibrio parahaemolyticus*.