

ABSTRACT

Muhammad Aufa. 24020121190050. Detection of β -Lactamase Resistance Genes in *Enterobacteriaceae* Isolated from Bottlenosed Dolphin (*Tursiops truncatus*). Under the guidance of Siti Nur Jannah and Nunak Nafiqoh.

Antibiotic resistance in *Enterobacteriaceae* has emerged as a serious global concern, not only in clinical settings but also within marine ecosystems. This study aimed to detect β -lactamase resistance genes in *Enterobacteriaceae* isolated from bottlenose dolphins (*Tursiops truncatus*). A total of 47 bacterial isolates were obtained and subsequently identified using MALDI-TOF MS, resulting in 18 species, of which 7 belonged to the *Enterobacteriaceae* family, namely *Escherichia coli*, *Hafnia alvei*, *Citrobacter freundii*, *Citrobacter brakii*, *Providencia stuartii*, *Serratia marcescens*, and *Proteus vulgaris*. Antibiotic susceptibility testing (AST) using the Kirby-Bauer disk diffusion method revealed that all isolates were resistant to penicillin and cephalothin, while most isolates remained sensitive to meropenem, except for *Serratia marcescens*, which showed intermediate susceptibility. Molecular detection of β -lactamase resistance genes (blaTEM, blaSHV, blaCTX-M, blaOXA) was performed using PCR. The results indicated that only *E. coli* carried the blaTEM gene, whereas other resistance genes were not detected in the tested isolates. These findings demonstrate that bottlenose dolphins may serve as carriers of *Enterobacteriaceae* harboring β -lactam resistance determinants, highlighting their potential role as sentinel species for monitoring antimicrobial resistance in marine environments. The absence of other β -lactamase genes may be associated with genetic variability among marine-associated isolates, potential primer-target mismatches, suboptimal PCR optimization, and the absence of appropriate positive controls, rather than indicating a complete failure of PCR amplification.

Keywords: *β -lactamase, antibiotic resistance, bottlenose dolphin, Enterobacteriaceae*