

## ABSTRAK

### KARAKTERISASI FENOTIPIK DAN EVALUASI AKTIVITAS PROTEOLITIK BAKTERI *Streptococcus iniae* PADA KAKAP PUTIH (*Lates calcarifer* Bloch) DAN KERAPU MACAN (*Epinephelus fuscoguttatus* Forsskål)

Oleh

**Azisa Nabila Putri**

*Streptococcus iniae* merupakan bakteri patogen penyebab *streptococcosis* pada ikan budidaya bernilai ekonomi tinggi, seperti kakap putih (*Lates calcarifer*) dan kerapu macan (*Epinephelus fuscoguttatus*), yang dapat menimbulkan perdarahan, eksophthalmia, gangguan saraf, hingga kematian massal. Tingkat virulensi bakteri ini terkait dengan faktor fenotipik dan kemampuan sekresi enzim protease yang berperan dalam degradasi jaringan inang. Penelitian ini dilaksanakan pada bulan Agustus–Oktober 2025 di Balai Besar Perikanan Budidaya Laut (BBPBL) Lampung dan Laboratorium Biomolekuler Universitas Lampung. Isolat diperoleh dari organ internal (ginjal, hati, limpa) ikan, yang merupakan lokasi utama kolonisasi dan penyebaran sistemik *S. iniae*. Analisis dilakukan melalui uji hemolisis, pewarnaan Gram, identifikasi biokimia menggunakan API Kit, uji motilitas, dan uji proteolitik pada *Skim Milk Agar*. Semua isolat menunjukkan karakter fenotipik konsisten dengan *S. iniae*, koloni putih krem, kokus berpasangan atau rantai pendek, Gram positif, dan non motil. Profil biokimia menunjukkan pola reaksi khas *S. iniae*, dengan isolat AG 1 paling sesuai pola acuan biokimia spesies ini, sedangkan uji proteolitik menunjukkan kemampuan enzim protease yang efektif (3–4 cm), dengan isolat AG1 memiliki aktivitas tertinggi (4,5 cm). Temuan ini menunjukkan bahwa isolat AG1, EL1 dan DG10 sesuai dengan *S. iniae*, sementara kemampuan proteolitik isolat AG1 menunjukkan potensi virulensi signifikan terhadap ikan budidaya.

**Kata kunci:** *Streptococcus iniae*, kakap putih, kerapu macan, fenotipik, patogen.

## ABSTRACT

### PHENOTYPIC CHARACTERIZATION AND EVALUATION OF PROTEOLYTIC ACTIVITY OF *Streptococcus iniae* IN ASIAN SEABASS (*Lates calcarifer* Bloch) AND TIGER GROUPER (*Epinephelus fuscoguttatus* Forsskål)

By

**Azisa Nabila Putri**

*Streptococcus iniae* is a pathogenic bacterium causing streptococcosis in high value cultured fish such as Asian seabass (*Lates calcarifer*) and tiger grouper (*Epinephelus fuscoguttatus*), leading to hemorrhages, exophthalmia, neurological disorders, and mass mortality. Bacterial virulence is closely associated with phenotypic traits and the secretion of proteolytic enzymes that facilitate host tissue degradation. This study was conducted from August to October 2025 at the Center for Marine Aquaculture Development (BBPBL) Lampung and the Biomolecular Laboratory of the University of Lampung. Bacterial isolates were obtained from internal organs (kidney, liver, and spleen), which serve as primary sites for colonization and systemic dissemination of *S. iniae*. Phenotypic characterization included hemolysis testing, Gram staining, biochemical identification using the API kit, motility testing, and proteolytic activity assays on skim milk agar. All isolates exhibited phenotypic characteristics consistent with *S. iniae*, including creamy white colonies, paired cocci or short chains, Gram positive reactions, and non motile behavior. Biochemical profiles showed reaction patterns characteristic of *S. iniae*, with isolate AG 1 displaying the closest similarity to the reference biochemical profile. Proteolytic activity was detected in all isolates, with inhibition zones ranging from 3.0 to 4.0 cm, while isolate AG1 showed the highest proteolytic activity (4.5 cm). These findings indicate that isolate AG1, EL1, and, DG10 is most consistent with *S. iniae*, whereas the strong proteolytic activity observed in isolate AG1 suggests a higher virulence potential in cultured fish.

**Keywords:** *Streptococcus iniae*, asian seabass, tiger grouper, phenotypic, pathogen.