

ABSTRAK

ANALISIS KERAGAMAN GENETIK IKAN TENGGIRI (*Scomberomorus*) ASAL PALEMBANG, GRESIK, KUPANG, MOROWALI UTARA DAN FAKFAK BERDASARKAN GEN ATP SYNTHASE 6

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Indonesia memiliki keragaman hayati laut yang sangat tinggi. Kondisi ini membuat Indonesia menjadi salah satu negara eksportir hasil laut terbesar di dunia salah satunya hasil perikanan yaitu ikan tenggiri dari famili Scombridae. Penelitian ini bertujuan untuk analisis keragaman genetik dan hubungan kekerabatan ikan tenggiri berdasarkan gen ATP Synthase 6 yang terdapat pada mitokondria. Sebanyak 12 sampel ikan tenggiri yang digunakan berasal dari Palembang, Gresik, Kupang, Morowali Utara, dan Fakfak. Sampel yang telah diisolasi DNA nya kemudian diamplifikasi menggunakan teknik *Polymerase Chain Reaction* (PCR). Produk hasil amplifikasi disekuensing menggunakan metode *Sanger Sequencing*. Hasil sekuensing diperoleh pita DNA berukuran 1072 bp yang selanjutnya dianalisis menggunakan aplikasi *Molecular Evolutionary Genetics Analysis* (MEGA) versi 11. Berdasarkan hasil analisis didapatkan kesimpulan bahwa sampel ikan tenggiri asal Palembang, Gresik, Kupang, Morowali Utara, dan Fakfak memiliki gen ATP synthase 6 dengan panjang 684 nukleotida (228 asam amino) memiliki variasi 124 situs nukleotida (10 situs asam amino). Sampel asal Palembang (1, 2, 3), Gresik (1 & 2), Kupang (1,2, 3) dan Morowali Utara memiliki kekerabatan spesies pembanding *Scomberomorus commerson* KSMJ-3 (PP437202.1) dengan jarak genetik antara sampel yang di uji dengan spesies pembanding berkisar antara 0,0015 hingga 0,0163. Sampel ikan tenggiri Asal Fakfak (1, 2, 3) memiliki kekerabatan dengan spesies pembanding *Scomberomorus semifasciatus* strain GREY-SsPD211135 (NC_021391.1) dan *Scomberomorus munroi* x *Scomberomorus semifasciatus* strain GREY-SSCRC0736 (JX559743.1) dengan jarak genetik sampel yang diuji dengan spesies pembanding berkisar antara 0,0000 hingga 0,0015.

Kata kunci: gen ATP synthase 6, ikan tenggiri, PCR, *Scomberomorus* sp.

ABSTRACT

ANALYSIS OF GENETIC DIVERSITY OF MACKEREL FISH (*Scomberomorus*) FROM PALEMBANG, GRESIK, KUPANG, NORTH MOROWALI, AND FAK BASED ON ATP SYNTHASE 6

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Indonesia has a very high level of marine biodiversity. This condition makes Indonesia one of the world's largest exporters of marine products, one of which is fish from the Scombridae family. This study aims to analyze the genetic diversity and kinship of mackerel based on the ATP Synthase 6 gene found in mitochondria. A total of 12 mackerel samples were collected from Palembang, Gresik, Kupang, North Morowali, and Fakfak. The samples were isolated for DNA extraction and then amplified using the Polymerase Chain Reaction (PCR) technique. The amplification products were sequenced using the Sanger Sequencing method. The sequencing results obtained a DNA band measuring 1072 bp, which was then analyzed using the Molecular Evolutionary Genetics Analysis (MEGA) application version 11. Based on the analysis results, it was concluded that the mackerel samples from Palembang, Gresik, Kupang, North Morowali, and Fakfak had an ATP synthase 6 gene with a length of 684 nucleotides (228 amino acids) and 124 nucleotide site variations (10 amino acid sites). Samples from Palembang (1, 2, 3), Gresik (1 & 2), Kupang (1,2, 3) and North Morowali had a genetic distance between the test samples and the reference species *Scomberomorus commerson* KSMJ-3 (PP437202.1), with genetic distances between the tested samples and the reference species ranging from 0.0015 to 0.0163. The Spanish mackerel samples from Fakfak (1, 2, 3) are related to the reference species *Scomberomorus semifasciatus* strain GREY-SsPD211135 (NC_021391.1) and *Scomberomorus munroi* x *Scomberomorus semifasciatus* strain GREY-SSCRC0736 (JX559743.1) with a genetic distance between the tested samples and the reference species ranging from 0.0000 to 0.0015.

Key words: ATP synthase 6 gene, mackerel fish, PCR, *Scomberomorus* sp