PENGARUH HORMON ASAM SALISILAT TERHADAP RESPON FISIOLOGIS DAN INDUKSI RESISTENSI HIPERSALINITAS PROPAGUL *Rhizopora Mucronata* Lam.

Muhammad Rafie

20/461062/BI/10613

Dosen Pembimbing: Prof. Dr. Kumala Dewi, M.Sc.St.

INTISARI

Rhizopora mucronata Lam. merupakan salah satu jenis mangrove yang memiliki densitas terbesar di area konservasi Pantai Baros, Kabupaten Bantul, Yogyakarta. *R. mucronata* banyak tersebar disepanjang lokasi ekowisata "*tracking* mangrove" yang tergolong kedalam zona proksimal, yaitu kawasan terdekat dengan laut. Spesies ini menjadi fokus utama wilayah konservasi mangrove karena mudah dibudidayakan dan memiliki banyak manfaat. Namun, sangat disayangkan bahwa ekosistem mangrove jenis ini banyak mengalami kerusakan akibat faktor cekaman atau cekaman hipersalinitas. Pemberian zat pengatur tumbuh mampu meningkatkan toleransi cekaman terhadap cekaman hipersalinitas, yaitu dengan menginduksi hormon asam salisilat. Uji efektivitas hormon diamati parameter pertumbuhan meliputi tinggi dan diameter propagul, jumlah, kandungan klorofil, karoten, prolin, tanin, dan anatomi pada daun. Data dianalisis secara statistik dan disajikan dalam bentuk tabel dan diagram. Analisis data dilakukan dengan tingkat salinitas berbeda menggunakan metode rancangan acak kelompok (RAK) dan *analysis of Variance* (ANOVA) pada taraf kepecayaan 95% ($P<0,05$). Hasil menunjukkan bahwa salinitas tinggi, terutama pada 60 ppt berdampak pada seluruh pertumbuhan tanaman *R. mucronata*, asam salisilat (SA) pada konsentrasi 0,5 mM dan 0,75 mM meningkatkan pertumbuhan. Kadar klorofil dan karotenoid tidak dipengaruhi oleh kenaikan salinitas secara signifikan, tetapi AS 0,75 mM mampu meningkatkan kadar keduanya. Kondisi salinitas tinggi meningkatkan akumulasi prolin, terutama pada 60 ppt dan perlakuan AS 0,5 mM mampu meningkatkan kadar prolin secara signifikan. Kadar tanin dipengaruhi oleh salinitas dan AS 1 mM memberikan dampak terutama pada salinitas tinggi. Anatomi daun menunjukkan peningkatan epidermis, xylem, dan floem sebagai adaptasi terhadap salinitas. AS 0,75 mM dan 1 mM berpengaruh signifikan terutama epidermis atas dan xylem. Aplikasi AS pada berbagai variasi memiliki potensi dalam meningkatkan adaptasi dan toleransi *R. mucronata* terhadap salinitas.

Kata kunci: asam salisilat, propagul, *Rhizopora mucronata,* salinitas

EFFECT OF SALICYLIC ACID HORMONE ON PHYSIOLOGICAL RESPONSE AND INDUCTION OF *Rhizopora Mucronata* Lam. PROPAGULE HYPERSALINITY RESISTANCE

Muhammad Rafie

20/461062/BI/10613

Supervisor: Prof. Dr. Kumala Dewi, M.Sc.St.

ABSTRACT

Rhizophora mucronata Lam. is a prominent mangrove species with the highest density in the conservation area of Pantai Baros, Bantul Regency, Yogyakarta. *R. mucronata* is widely distributed along the "tracking mangrove" ecotourism location, classified as the proximal zone, which is the area closest to the sea. This species is the primary focus of mangrove conservation areas due to its ease of cultivation and numerous benefits. Unfortunately, this mangrove ecosystem often experiences damage due to s factors or hypersalinity stress.The application of growth regulators has the potential to enhance stress tolerance against hypersalinity, particularly by inducing salicylic acid hormones. The effectiveness of the hormone was assessed through various growth parameters, including propagule height and diameter, quantity, chlorophyll and carotenoid content, proline, tannin levels, and leaf anatomy. Data were statistically analyzed and presented in tables and diagrams. Data analysis was conducted under different salinity levels using a randomized block design (RBD) and Analysis of Variance (ANOVA) at a confidence level of 95% ($P<0.05$).The results indicated that high salinity, especially at 60 ppt, had an impact on the overall growth of R. mucronata. Salicylic acid (SA) at concentrations of 0.5 mM and 0.75 mM enhanced growth. Chlorophyll and carotenoid levels were not significantly affected by increased salinity, but 0.75 mM SA increased both concentrations. High salinity conditions led to proline accumulation, particularly at 60 ppt, and 0.5 mM SA treatment significantly increased proline levels. Tannin levels were influenced by salinity, with 1 mM SA having a significant impact, especially under high salinity. Leaf anatomy revealed increased epidermis, xylem, and phloem as adaptations to salinity. 0.75 mM and 1 mM SA significantly influenced upper epidermis and xylem. The application of SA at various concentrations has the potential to enhance the adaptation and tolerance of *R. mucronata* to salinity.

Keywords: propagules, *Rhizopora mucronata*, salicylic acid, salinity