Intisari

PENGARUH NATRIUM KLORIDA TERHADAP PERTUMBUHAN DAN AKTIVITAS ENZIM SUPEROKSIDA DISMUTASE TANAMAN PEGAGAN (*Centella asiatica* (L.) Urb.)

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Tanaman pegagan (*Centella asiatica* (L.) Urb.) menjadi salah satu tanaman obat yang sedang populer dan mudah untuk tumbuh di berbagai wilayah di Indonesia. Indonesia sebagai negara tropis memiliki paparan intensitas cahaya dan suhu yang cukup tinggi khususnya pada saat musim kemarau. Kondisi seperti ini dapat memicu terjadinya cekaman kekeringan dan salinitas terhadap tanaman. Salah satu mekanisme tanaman dalam merespon kondisi cekaman salinitas yaitu melalui produksi enzim superoksida dismutase (SOD) yang menjadi komponen penting dalam pertahanan fisiologis tanaman terhadap radikal bebas dan spesies oksigen reaktif (ROS) yang dihasilkan dari cekaman biotik maupun abiotik. Penelitian dilakukan di Laboratorium Fisiologi Tumbuhan Fakultas Biologi Universitas Gadjah Mada Yogyakarta. Penelitian dilaksanakan dengan perlakuan penyiraman larutan garam NaCl dengan kadar 0; 75; 150; 225; dan 300 mM. Dilakukan pula pengukuran parameter lingkungan berupa suhu, kelembaban, pH, dan intensitas cahaya, serta pengukuran parameter pertumbuhan meliputi jumlah daun, jumlah daun ternekrosis, jumlah cabang, panjang batang, panjang stolon, biomassa, serta analisis aktivitas enzim superoksida dismutase (SOD). Pengamatan dilakukan selama 49 hari setelah masa tanam dan data yang didapatkan dianalisis menggunakan uji statistik Analisis Varians (ANOVA) dan dilanjutkan dengan menggunakan uji Duncan's New Multiple Range Test (DMRT) pada tingkat kepercayaan 95%. Berdasarkan hasil penelitian, dapat diketahui bahwa semakin tingginya kadar cekaman salinitas, diatas 100 mM, maka pertumbuhan tanaman pegagan (*Centella asiatica* (L.) Urban) akan semakin terganggu meliputi terhambatnya panjang/tinggi batang, panjang stolon, serta berat biomassa tajuk, akar, dan stolon. Semakin tingginya kadar cekaman salinitas juga membuat peningkatan aktivitas enzim superoksida dismutase sebesar 2,006 U/ml pada tanaman pegagan (*Centella asiatica* (L.) Urb.).

Kata kunci: *Centella asiatica*, NaCl, pertumbuhan, salinitas, superoksida dismutase, tropis.

Abstract

EFFECT OF SODIUM CHLORIDE ON THE GROWTH AND ACTIVITY OF SUPEROXIDE DISMUTASE ENZYME ON ASIATIC PENNYWORT (*Centella asiatica* (L.) Urb.)

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Asiatic pennywort (*Centella asiatica* (L.) Urb.) is one of the popular medicinal plants that grow wild in Indonesia. Indonesia as a tropical country has exposure to highlight intensity and temperature, especially during the dry season. Conditions like this can trigger drought stress and also salinity stress to the plants. One of the plant mechanisms in responding to salinity stress conditions is through the production of the enzymesuperoxide dismutase (SOD). This enzyme is an important component in the physiological defense of plants against free radicals and reactive oxygen species (ROS) resulting from biotic and abiotic stresses. Much research on the effect of salinity on the growth of pegagan plant has been done, but information about thedefense mechanism of the pegagan plant against salinity stress through the activity ofthe enzyme superoxide dismutase is still limited. Therefore, research was conducted at the Plant Physiology Laboratory, Faculty of Biology, Gadjah Mada University, Yogyakarta. The research was conducted with the initial seeding stagefor 7 days, measuring environmental parameters such as temperature, humidity, pH, and light intensity, then watering the salt solution with a concentration of 0; 75; 150; 225; dan 300 mM and analysis of SOD enzyme activity using a spectrophotometer UV-Vis. Observations were made for 49 days after planting and the data obtained were analyzed using the Analysis of Variance statistical test (ANOVA) and followed by using the Duncan's New Multiple Range Test (DMRT) at a 95% confidence level. Based on the research results, it can be seen that the higher the level of salinity stress, above 100 mM, the growth of *Centella asiatica* (L.) Urban) will be increasingly disrupted including inhibition of stem length/height, stolon length, wet and dry weight of crown, roots, and stolons. The higher levels of salinity stress also increased the activity of the superoxide dismutase enzyme by 2.006 U/ml in Centella asiatica (L.) Urb.).

Keywords: *Centella asiatica*, growth, NaCl, salinity, tropical, superoxide dismutase.