

Pengaruh Kadar Timbal pada Daun terhadap Struktur Anatomis Daun Glodok Tiang (*Polyalthia longifolia* (Sonn.) Thwait) di Kawasan Ringroad Utara, Kabupaten Sleman

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INTISARI

Penurunan kualitas udara yang disebabkan oleh masuknya zat pencemar ke dalam lingkungan yang mengganggu kualitas hidup. Penurunan kualitas udara penurunan sejalan dengan bertambahnya aktivitas manusia, salah satunya pada penggunaan kendaraan bermotor. Emisi dari kendaraan bermotor mengandung logam berat yang berbahaya bagi kesehatan, yaitu timbal. Upaya yang dilakukan untuk mengurangi timbal di udara dengan menggunakan tanaman yang mampu menyerap timbal di udara. Tanaman glodok tiang (*P. longifolia* (Sonn.) Thwait) merupakan tanaman peneduh jalan yang mampu menyerap timbal di udara.

Penelitian ini bertujuan untuk mengetahui serapan timbal daun glodok tiang, pengaruh serapan timbal pada stomata dan terhadap anatomi daun glodok tiang. Penelitian meliputi pengambilan 24 sampel daun, penentuan kadar timbal daun, pembuatan preparat segar sayatan epidermis bawah dan anatomi melintang daun, pengukuran kepadatan kendaraan serta luas daun. Pengambilan sampel daun meliputi tajuk atas dan tajuk bawah dilakukan di 3 lokasi yang berada di kawasan Ringroad Utara (timur kentungan) yaitu sebelah utara toko *Publisher Outlet*, selatan kampus UPN, dan utara supermarket *Giant* (perempatan Condong Catur). Penentuan kadar timbal daun menggunakan metode destruksi basah. Pembuatan preparat stomata menggunakan metode *free hand section*, sedangkan pembuatan preparat anatomi daun dengan metode *embedding*. Penentuan luas daun menggunakan metode perbandingan berat menggunakan kertas kalkir.

Hasil penelitian menunjukkan tidak ada perbedaan nyata untuk kadar timbal daun pada setiap tajuk tetapi ada perbedaan nyata untuk kadar timbal daun pada setiap lokasi. Kandungan timbal pada daun tertinggi pada UPN yaitu 3,896 $\mu\text{g/g}$ dan terendah pada *Giant* 2,473 $\mu\text{g/g}$. Pada stomata tiap lokasi terdapat penurunan jumlah dan ukuran stomata, serta adanya flek hitam pada porus stoma pada daerah terpapar emisi jika dibandingkan dengan kontrol. Anatomi daun pada setiap lokasi menunjukkan adanya flek hitam pada jaringan mesofil daun. Luas daun pada ketiga lokasi mereduksi jika dibandingkan dengan kontrol.

Kesimpulan penelitian yaitu kadar timbal daun pada tiap lokasi yaitu berbeda nyata. Tidak ada korelasi signifikan antara kadar timbal daun dan stomata, luas daun, dan kepadatan lalu lintas. Epidermis bawah dan tebal mesofil daun berkorelasi signifikan terhadap kadar timbal daun glodok tiang.

Kata kunci: timbal, stomata, anatomi, glodok tiang

The Leads Level's Effect of Leaves Anatomical Structures of Glodok Tiang (*Polyalthia longifolia* (Sonn.) Thwait) in Northern Ringroad, District of Sleman

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ABSTRACT

Degradation of air quality is caused by the entry of contaminants into the environment that interfere the quality of life. This case is in line with increasing of human activity by using highway vehicles. Emissions from highway vehicles contain heavy metals such as lead which is harmful for health. An effort to reduce lead in the air by using plants which capable of absorbing lead in the air. Glodok Tiang (*P. longifolia* (Sonn.) Thwait) is a shade plant that absorbs lead in the air.

This study aimed to determine the uptake of lead in leaves of Glodok Tiang, effects of lead on stomata and leaves anatomy. This research involved taking 24 samples of leaves, determination of lead contents in leaves, making preparations of lower epidermis stomatal, leaves anatomy, and measurement of other parameters such as traffic density and leaves area. Samples of leaves were taken in three locations which placed in Ringroad Utara (east of Kentungan) were north of Publisher Outlet Store, south of UPN, and north of Giant Supermarket. Determination of lead contents of leaves using a wet digestion method, preparations stomata were used free hand section and leaves anatomy were used embedding method. Determination of leaves area used a weight ratio of tracing paper.

The results showed there was not significant difference of lead contents in leaves for canopy treatment. In other hand, lead contents in leaves was significant difference in each location, The highest lead content in leaves was found in UPN 3,896 $\mu\text{g/g}$ but the lowest in Giant 2,473 $\mu\text{g/g}$. On leaves stomatal there was a decreasing in number and size and the presence of black spots on stomatal pore. Leaves anatomical parameters showed black spots on mesophyll tissues. Leaves area at three locations were reduced in size.

Conclusions of this research that lead contents in leaves for was significant difference in each location. There was not significant correlation between lead contents in leaves and leaves stomatal, leaves area, and traffic density. Lower epidermis and mesophyll tissues were correlated significantly with lead contents in leaves.

Keywords: lead, stomata, leaves anatomy, glodok tiang