

Analisis timbal, tembaga, kadmium pada daun dan batang selada, bayam merah dan genjer secara spektrofotometri serapan atom = Analysis of lead, copper, cadmium in leaf and stem of lettuce, red spinach and genjer with atomic absorption spectofotometry

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Abstrak

Pencemaran logam berat terhadap alam lingkungan merupakan suatu proses yang erat hubungannya dengan penggunaan logam berat oleh manusia yang tidak memperhatikan keselamatan lingkungan. Kontaminasi dari timbal (Pb), tembaga (Cu), dan kadmium (Cd) pada sayuran seperti selada, bayam merah, dan genjer akan menimbulkan masalah kesehatan apabila melebihi batas cemaran yang diperbolehkan. Penelitian ini dilakukan untuk mengetahui kadar logam pada sampel dari lahan kebun sayur yang terletak di Jalan Pramuka Jakarta Pusat. Sampel dicuci bersih terlebih dahulu kemudian dikeringkan dengan oven pada suhu 80o C selama 4 jam, setelah kering kemudian diblender menjadi serbuk. Sampel didestruksi dengan asam nitrat pekat menggunakan alat microwave digestion system pada suhu 180oC selama 25 menit, lalu sampel dianalisis dengan spektrofotometer serapan atom (SSA). Hasil kadar rata-rata timbal dalam batang dan daun genjer, selada, dan bayam merah dalam sampel antara $0,12\pm 0,05$ sampai $0,63\pm 0,03$ mg/kg. Kadar rata-rata kadmium dalam batang dan daun genjer, selada, dan bayam merah dalam sampel antara $0,001\pm 0,006$ sampai $0,009\pm 0,001$ mg/kg. Kadar rata-rata tembaga dalam batang dan daun genjer, selada, dan bayam merah dalam sampel antara $0,17\pm 0,01$ sampai $0,55\pm 0,005$ mg/kg. Pada hasil analisis kadar cemaran timbal pada batang genjer melewati batas kadar aman.

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Abstract

Heavy metal contamination on natural environment is a process that closely related to human's using of heavy metal without paying attention to environmental safety. Contamination of lead (Pb), copper (Cu) and cadmium (Cd) in vegetables like lettuce, red spinach, and genjer will cause health problem if they exceed safety limit of contamination. This research was conducted to determine metal content in sampel (lettuce, red spinach, and genjer) from farm that located in Jalan Pramuka Jakarta Pusat. Samples were first washed and then dried in an oven at a temperature of 80o C for 4 hours, after ward blended into powder. Destruction of samples were done by microwave digestion system at 180 o C for 25 minute with using concentrated nitric acid. After destruction process, samples were analyzed with atomic absorption spectrophotometry. The result showed average levels of lead in stems and leaf of genjer, lettuce, red spinach were between 0.12 ± 0.05 to 0.63 ± 0.03 mg/kg. The average levels of cadmium in stems and leaves of genjer, lettuce, red spinach were between 0.001 ± 0.006 to 0.009 ± 0.001 mg/kg. The average copper content in stems and leaves of genjer, lettuce, red spinach were between 0.17 ± 0.01 to 0.55 ± 0.005 mg/kg. The result also showed that the level of lead contamination in the trunk of genjer over the safe limit for humans consumption.