

Sauca Sunia Widyantari, A.A.A., 2015, Analisis Residu Profenofos Dalam Tanah Menggunakan Voltammetri lucutan Dengan Elektroda Pasta Karbon, Tesis dibawah bimbingan Dr. Miratul Khasanah, M.Si dan Dr. rer. nat Ganden Supriyanto, M.Sc, Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya

ABSTRAK

Profenofos merupakan salah satu pestisida golongan organofosfat. Selain membawa dampak positif, pestisida golongan organofosfat dengan konsentrasi kecil saja sudah dapat mempengaruhi fungsi syaraf dengan jalan menghambat kerja enzim kolinesterase dan juga membawa dampak negatif bagi lingkungan. Analisis residu profenofos dalam tanah menggunakan voltammetri lucutan dengan elektroda pasta karbon telah dipelajari. Analisis dilakukan pada potensial akumulasi 0,1 V, waktu deposisi 60 detik dan pH larutan 5. Kurva standar diperoleh dari pengukuran sinyal arus larutan standar profenofos dengan konsentrasi 0,1-0,5 ppb. Koefisien korelasi (r) yang diperoleh sebesar 0,9987, harga KV berkisar 0,65% hingga 6,44%, sensitivitas metode sebesar 65,48 $\mu\text{A/ppb cm}^2$, limit deteksi sebesar 0,028 ppb, akurasi berkisar 96,34%-103,25% dan recovery 78,86-93,82%. Mekanisme reaksi yang terjadi pada permukaan elektroda adalah analit mengalami reduksi menjadi 2-kloro-4-bromo-fenol dan menghasilkan produk lain yaitu O-etil S-propil fosforotiotat.

Kata kunci : voltammetri lucutan, profenofos, elektroda pasta karbon.

Sauca Sunia Widyantari, A.A.A., 2015, Analysis of Profenofos Residues in Soil by Stripping Voltammetry Using Carbon Paste Electrode, The thesis under the guidance of Dr. Miratul Khasanah, M.Si and Dr. rer. nat Ganden Supriyanto, M.Sc, Departement of Chemistry, Faculty of Science and Technology, Airlangga University, Surabaya

ABSTRACT

Profenofos is one pesticide organofosfat group. In addition to the positive impact, organophosphate pesticide group with a small concentration would affect nerve function by inhibiting the action of the enzyme kholinesterase and also have negative impacts on the environment. Analysis of profenofos residues in soil by stripping voltammetry using carbon paste electrodes has been studied. Analysis of profenofos was done on deposition potential 0.1 V, deposition time 60 second and pH solution 5. Standard curve of profenofos was obtained from measurement current signal of standard profenofos with concentration 0.1-0.5 ppb. Correlation coeficien (r) obtained was 0.9987, KV was 0.65% up to 6.44%, sensitivity of method is 65.48 $\mu\text{A/ppb cm}^2$, limit of detection is 0.028 ppb, accuracy 96.34% up to 105.25% and recovery was 78.86% up to 93.82%. Mechanisms of reaction occurring at the electrode surface is analyte was reduced to be 2-chloro-4-bromo-phenol and produce another product which is O-ethyl S-propyl fosforotiotat.

Key word : stripping voltammetry, profenofos, carbon paste electrode.