

Apriliasari, C., 2018, Pengaruh Asam Urat, Urea, dan Asam Askorbat pada Analisis Kreatin secara Potensiometri Menggunakan Elektroda Pasta Karbon Termodifikasi *Molecularly Imprinted Polymer*. Skripsi di bawah bimbingan Dr. Miratul Khasanah, M.Si dan Dra. Usreg Sri Handajani, M.Si. Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya

ABSTRAK

Kreatin di dalam serum darah berada bersama-sama dengan asam urat, urea, dan asam askorbat sehingga seringkali analisis kreatin dalam serum darah diganggu oleh senyawa tersebut. Pada penelitian ini dipelajari pengaruh asam urat, urea, dan asam askorbat pada analisis kreatin secara potensiometri menggunakan elektroda pasta karbon termodifikasi *molecularly imprinted polymer* (MIP). MIP dibuat dengan mereaksikan asam metakrilat, etilen glikol dimetakrilat, benzoil peroksida, dan kreatin dengan perbandingan mol 4:12:5:1. Elektroda dibuat dari campuran karbon aktif, parafin, dan MIP dengan perbandingan massa 11:7:2. Analisis kreatin secara potensiometri dilakukan pada pH 6. Pada penelitian ini diperoleh jangkauan pengukuran pada konsentrasi 10^{-2} - 10^{-6} M dengan linieritas kurva kalibrasi sebesar 0,997, faktor Nernst sebesar 27,05 mV/dekade, dan batas deteksi $7,18 \times 10^{-6}$ M. Asam urat, urea, dan asam askorbat dengan berbagai macam konsentrasi tidak mengganggu analisis kreatin secara potensiometri menggunakan elektroda pasta karbon termodifikasi MIP. Aplikasi elektroda pasta karbon termodifikasi MIP untuk analisis kreatin dalam sampel serum darah menunjukkan *recovery* sebesar 83,63 dan 85,98% dan akurasi terhadap metode spektrofotometri sebesar 76,77 dan 78,68%.

Kata kunci: *kreatin, potensiometri, molecularly imprinted polymer, elektroda pasta karbon, selektivitas*

Apriliasari, C., 2018, The Influence of Uric Acid, Urea, and Ascorbic Acid on Creatine Analysis by Potentiometric Method Using Molecularly Imprinted Polymer Modified Carbon Paste Electrode. Thesis under guidance of Dr. Miratul Khasanah, M.Si and Dra. Usreg Sri Handajani, M.Si. Department of Chemistry, Faculty of Science and Technology, Universitas Airlangga, Surabaya

ABSTRACT

In blood serum, creatine is present with uric acid, urea, and ascorbic acid. Thus, the analysis of creatine in blood serum is usually interfered by those compounds. In this research the effects of uric acid, urea, and ascorbic acid on creatine analysis by potentiometry using molecularly imprinted polymer (MIP) modified carbon paste electrode were evaluated. MIP was prepared by reacting methacrylic acid, ethylene glycol dimethacrylate, benzoyl peroxide, and creatine in a mole ratio of 4:12:5:1. The electrode is made from a mixture of activated carbon, paraffin, and MIP with mass ratio 11:7:2. Potentiometry method for creatine analysis was performed in pH 6. In this research, the measurement range of 10^{-6} - 10^{-2} M with calibration curve linearity of 0.997, Nernst factor value of 27.05 mV/decade, and the detection limit of 7.18×10^{-6} M were obtained. Uric acid, urea, and ascorbic acid with various concentrations did not interfere creatine analysis using the MIP modified carbon paste electrode by potentiometry. The application of MIP modified carbon paste electrode for creatine analysis in blood serum samples showed the recovery of 83.63 and 85.98% and the accuracy toward spectrophotometry was 76.77 and 78.68%.

Keywords: *creatine, potentiometry, molecularly imprinted polymer, carbon paste electrode, selectivity*