

PENGEMBANGAN SENSOR UNTUK ANALISIS KREATIN SECARA
VOLTAMMETRI LUCUTAN MELALUI MODIFIKASI ELEKTRODA
GRAFIT DENGAN *MOLECULARLY IMPRINTED POLYMER* (MIP)

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ABSTRAK

Pengembangan sensor untuk analisis kreatin melalui teknik *molecularly imprinted polymer* telah dipelajari. Sensor kreatin dibuat dengan cara melapiskan *molecularly imprinted polymer* (MIP) pada permukaan elektroda grafit dengan metode voltammetri lucutan. MIP dibuat dengan cara mencampurkan larutan asam metakrilat sebagai monomer, etilen glikol dimetakrilat (EGDMA) sebagai *cross-linker*, benzoil peroksida sebagai inisiator dan kreatin sebagai template. MIP yang terbentuk dikarakterisasi secara spektrometri FTIR. Sedangkan elektroda modifikasi grafit-MIP dikarakterisasi secara voltammetri. Analisis kreatin dilakukan pada waktu akumulasi 60 detik, potensial akumulasi 0,8 V, dan pH larutan 4. Kurva standar kreatin diperoleh dari pengukuran sinyal arus kreatin standar dengan konsentrasi 1-5 ppb. Koefisien korelasi (r) yang diperoleh sebesar 0,9959, harga KV berkisar 6,12 % hingga 24,44 %, sensitivitas metode sebesar 0,123 $\mu\text{A/ppb}$, limit deteksi sebesar 0,5804 ppb, dan akurasi sebesar 121,2%.

Kata kunci : kreatin, *molecularly imprinted polymer*, voltammetri lucutan, elektroda grafit

ABSTRACT

Development of the selective sensor for analysis of creatine through molecularly imprinted polymer technique has been studied. Sensor for creatine has been developed by superimposing molecularly imprinted polymer (MIP) on the surface of graphite electrode voltammetrically. MIP was synthesized by mixing the solution of methacrylic acid as monomer, ethylene glycol dimethacrylate as cross-linker, benzoyl peroxide as an initiator and creatine as template. MIP formed was characterized by fourier transform infrared spectroscopy, grafit modified MIP was characterized voltammetrically. Analysis of creatine was done on accumulation time 60 second, accumulation potential 0.8 V and pH solution 4. Standard curve of creatine was obtained from measurement current signal of standard creatine with concentration 1-5 ppb. Correlation coefisien (r) obtained is 0.9959, KV is 6.12% up to 24.44%, sensitivity of method is 0.123 $\mu\text{A/ppb}$, limit of detection is 0.5804 ppb and accuration is 121.2%.

Kata kunci : Creatine, molecularly imprinted polymer, stripping voltammetry, graphite electrode