Sensor glukosa non enzimatik berbasis deposit logam tembaga (cu) = Non enzimatik glucose sensor based on copper (Cu) metal deposits

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Abstrak

Pada penelitian ini dilakukan sensor glukosa non-enzimatik menggunakan deposit tembaga pada permukaan emas (Cu/Au). Deposit Cu/Au dapat disintesis dengan metode amperometri pada potensial -0,45 V vs Ag/AgCl menggunakan larutan CuSO4. Konsentrasi CuSO4 dan waktu deposisi divariasikan untuk memperoleh kondisi optimum. Kondisi optimum untuk deposisi adalah tiga menit dengan konsentrasi CuSO4 0,1 M. Hasil karakterisasi SEM dan EDS menunjukan deposit memiliki ukuran 400 - 480 nm dengan persen berat Cu sebesar 71,50%. Deposit Cu/Au dapat mendeteksi glukosa hingga konsentrasi 0,0462 mM. Deposit Cu/Au kemudian digunakan untuk mengukur kadar glukosa dalam sampel darah. Hasil pengukuran menunjukkan kadar glukosa dalam sampel darah sebesar 6,6504 mM. Nilai tersebut berbeda sebesar 9,8238% jika dibandingkan dengan pengukuran menggunakan glukosa meter yang menghasilkan nilai 6,0555 mM.

.....Non-enzymatic glucose sensor using copper deposits on gold (Cu/Au) was studied in this research. Cu/Au deposits was synthesized using amperometry method at -0,45 V vs Ag/AgCl using CuSO4. The concentration of CuSO4 and deposition time were varied to obtained the optimum condition. Optimum condition of deposition was at 3 minutes and CuSO4 concentration of 0,1 M. SEM and EDS characterization showed that the size of deposits was 480 nm with percent weight 71,50% via EDS characterization. Cu/Au deposits was able to measure glucose up to 0.0462 mM. Cu/Au deposits was utilized to measure the level of glucose in blood samples. The level of glucose in blood samples was measured to be 6,6504 mM. This result differs about 9,8238% to the results obtained from glucose meter that resulted value 6.0555 mM.