



Electrochemical behavior of modification Au electrode with AuNPs, Polypyrrole/ L-cystein/ Fe₃O₄@SiO₂@NH₂ structured for determination Oxytocin and Epinephrine in human blood serum sample.

Zahra kamari ^{a*}, Arash Babakhaniab

Abstract

In this study, a novel sensitive sensor is designed based on the Au/ AuNPs, Polypyrrole/ L-cystein/ Fe₃O₄@SiO₂@NH₂ nano structure for monitoring of Oxytocin and Epinephrin (Adernalin) in human blood serum sample. Cyclic and square wave voltametry, Impedance spectroscopy and Scaning Electron Microscopy techniques are used to identify and verify the electrochemical behavior and characterization of the new modified electrode. The proposed sensor has good sensitivity, selectivity, stability and long-term maintenance of electro activity and is used for application in Oxytocin and Epinephrine determination in biological fluids without any side interferences effects.

Keywords: Cyclic and square wave voltametry, Impedance spectroscopy, Scaning Electron Microscopy, Oxytocin, Epinephrine, Modified electrodes

References

- [1] Berecek Kh, B. M.; Brody, M. J. (1982). *Am J Physiol* **242** (4): H593–H601
- [2] Reddon, O'Connor, Marsh-Rollo & Balshine.2012.
- [3] Z.G. Peng, K. Hidajat, M.S. Uddin, J. *Colloid Interface Sci.* 271 (2004) 277.
- [4] M.Zhao, J.Ding, L. P.Guo, Q.K.Shang, *Anal.Chem.* 79(2007)5328
- [5] X.Chen, B.Xia, P.He, *J.Electroanal.Chem.* 281(1990)185
- [5] J.H.Lin, C.Y.He, L.J.Zhang, S.S.Zhang, *Anal.Biochem*, 384(2009)130-135
- [6] Z.Wang, Y.F.Tu, S.Q.Liu, *Talanta* 77(2008)815-821