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Trace Analysis of Drugs based on Novel Metal Complexes using Electrochemical Techniques

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Analysis of drugs are required not for regulatory purposes only but also due to their toxicity. Apart from this the new frontiers in personalized therapy also envisage the development of new tools for fast, easy-to-use, low cost, and point-of-care analysis of drugs efficacy on the patients. Recently we developed an electrochemical technique for selective and sensitive detection of drugs based on novel metal complexes. This technique is demonstrated for trace analysis of Cefotaxime (third generation cephalosporin drug) and Azidothymidine (AZT, Zidovudine, Retrovir, 3'-azido-3'-deoxythymidine) antiviral drugs. The basic principle behind our technique was to accumulate the drug specifically over the sensing electrode based on the interaction of the functional groups present on drugs with the metal complex coated over the sensing electrode. After the accumulation of drug anodic or cathodic voltammetry was used for the analysis. Our technique was found to be sensitive enough to detect the drugs at nM level with negligible interference.