

ABSTRACT

INVESTIGATION OF VOLTAMMETRIC BEHAVIOUR OF SOME ANTIBIOTICS AND DETERMINATION OF THEIR QUANTIFICATION CONDITIONS

Hasan Aydoğan

Master of Science Thesis, Chemistry Division

Supervisor: Prof. Dr. A. Ersin Karagözler

2015, 41 pages.

Antibiotics, in general term, are drugs used for the treatment of infections caused by microorganisms. Antibiotics are placed on top of the prescribed drug list for patients consulting a doctor.

Methods of high accuracy and precision are developed for the residue analysis of antibiotics, which are used for the treatment and protection of living things, and their metabolites in various tissues and biological fluids along with some nutrients such as milk and honey,. The most advanced techniques developed for this purpose are chromatographic techniques.

In this work, electrochemical behavior of 6 different antibiotics (cefazolin, cefuroxime, ceftriaxone, penicillin G, ampicillin ve gentamicin) from three particular class (betalactam antibiotics, penicillins and aminoglycosides) were investigated by cyclic voltammetry using graphite pencil electrode in Britten-Robinson buffer solutions (pH 2, 5 and 9) afterwards, oxidation peaks of antibiotics were determined using differential pulse voltammetry and calibration graphics for each antibiotic were plotted using peak current intensities determined by using calibration standard solutions. Linear working range and quantitation sensitivity of antibiotics were discussed regarding the correlation coefficients and line equations drawn according to the method of least squares

Key Words: Antibiotic, Voltammetry, Pencil Graphite Electrode