

J. Surface Sci. Technol., Vol 30, No. 3-4, pp. 149-161, 2014
© 2014 Indian Society for Surface Science and Technology, India.

Cyclic Voltammetric Determination of Acetylsalicylic Acid (Aspirin) at Polyaniline (PANI) Modified Glassy Carbon Electrode

CHERINET BEKELE¹, O. P. YADAV^{1*} and ARCHANA BACHHETI²

¹Chemistry Department, Haramaya University, Post Box : 138, Dire Dawa, Ethiopia

²Biology Department, Haramaya University, Post Box : 138, Dire Dawa, Ethiopia

Abstract — Polyaniline (PANI)-modified glassy carbon electrode has been synthesized by electro-polymerizing aniline for determining acetylsalicylic acid (ASA) in pharmaceutical samples using cyclic and differential pulse voltammetric techniques. The best performance of the PANI modified glassy carbon electrode in 0.04 M Britton Robinson buffer was obtained at pH 2.0. Under these conditions single oxidation peak at a potential of 250 mV vs Ag/AgCl/sat'd KCl, characteristic of an irreversible reaction, was observed. Studies on the effects of pH, scan rate and substrate concentration revealed irreversible diffusion controlled electrode redox reaction. The PANI modified glassy carbon electrode showed higher electro-catalytic efficiency, compared to the unmodified one, for ASA determination.

Keywords : *Aspirin, electro-catalytic efficiency, pharmaceutical, polyaniline, voltammetry.*

INTRODUCTION

Acetylsalicylic acid (ASA) also known as Aspirin is a salicylate drug. It is used in the form of willow bark, as an analgesic during the time of Hippocrates [1], and its antipyretic effects have been recognized for more than 200 years [2]. It was first synthesized in 1897, by Felix Hoffmann, in Farbenfabrik Freidrich Bayer laboratories, Elberfeld, Germany [3]. Aspirin is world's oldest and best known nonsteroidal anti-inflammatory drug. It continues to receive special attention due to its clinical effects on inflammation, fever, renal function, and platelet aggregation [4]. There has also been demonstrated aspirin therapeutic benefit in a variety of cardiovascular diseases

*Corresponding author. E-mail : yadavop02@yahoo.com