# Lignin Modified Electrodes Developed for Biosensing of DNA Interaction with Mitomycin C

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**Abstract**
Lignin is the second most abundant biopolymer after cellulose in biomass with a polyphenolic structure [1]. Many studies have been carried out in recent years for the use of lignin in many areas, such as gene delivery, drug encapsulation, tissue engineering, biological imaging, and biosensors [2]. Electrochemical biosensors are frequently used to detect specific biomolecules, DNA hybridizations, and drug-DNA interactions due to their advantages, such as high sensitivity and low detection limit [3,4]. Elucidation of drug-DNA interactions is very important, especially in pharmaceutical development processes [4]. For this reason, the study of the interactions of anticancer drugs with DNA has been a subject of interest in recent years [5,6]. Mitomycin C (MC), an antitumor antibiotic, is one of the major drugs used in the treatment of cancer. MC is used in the treatment of many types of cancer, especially breast, bladder, stomach, and oesophageal cancer [7]. In this study, lignin modified electrodes were first developed, and then their application to biosensing of interaction between DNA and MC was explored. The electrochemical behavior of lignin-modified electrodes was investigated by cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) techniques. Experimental conditions were optimized in different concentrations of lignin and also in MC interaction times. Electrochemical detection of interaction between DNA and MC was explored.

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