

## **Electrochemical DNA biosensor based on 30 nM gold nanoparticle modified electrode by electro less deposition for Human Papillomavirus (HPV) 18 E6 Region**

### **ABSTRACT**

The aim of this work was to develop a novel, simple, inexpensive, sensitive an electrochemical DNA biosensor based on interdigitated electrodes (IDEs) integrated gold nanoparticle modified electrode by electro less deposition for HPV 18. The biosensor was designed with a 30 mer E6 region of HPV 18 DNA modified probe. The E6 region has been used for their clinical importance properties and suitable as recognition biomarker region. Three different target types were tested which complementary target, non complementary target and mismatch target. All target were analyzed for detection of HPV 18 in early stages by using Dielectric Analyzer (DA), Alpha-A High- performance Frequency Analyzer, Novocontrol Technologies, Handsagen, Germany associated with the software package Windeta. Complementary target gives a positive result in HPV detection, while noncomplementary and mismatch target give negative results. IDE device with 5 nm gap sizes has demonstrated a high performance towards the detection of HPV18 ssDNA target by modified with 30 nm gold nanoparticle. The electrochemical biosensor showed better performance compared to agarose gel electrophoresis assay. This technology can be used as a new and attractive sensor development for detection of virus infection in human bodies.