

Proceeding Paper

Electrochemical Screening of Tyrosine and Tryptophan as Potential Biomarkers for Prostate Cancer [†]

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Abstract: Detection of diseases at an early stage is important for an effective treatment, hence electrochemical biosensors for early detection of many diseases are on their way. Prostate cancer is one of the leading causes of cancer death. In this study, we developed an electrochemical method to measure tyrosine and tryptophan in urine and performed a pilot study to investigate their potential clinical use as biomarkers for prostate cancer. The biosensors were able to measure the tyrosine and tryptophan content in patient urine samples. This study is the first to present electrochemical quantitative data of these amino acids in biological fluids. We demonstrated an inverse correlation between the levels of tyrosine and tryptophan and the clinical stage of prostate cancer. Liquid Chromatography Tandem Mass spectrometry (LC/MS/MS) was used to validate the results obtained by the biosensors. The conventional method for detection of tyrosine and tryptophan is expensive and time-consuming; therefore, the use of the electrochemical biosensor for that purpose seems ideal, due to fast, simple and cheap detection.

Keywords: biosensor; diagnostic; cancer; tyrosine; tryptophan; electrochemical sensing

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