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Author	Teerachote Pitayataratorn
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Abstract

An electrochemical potentiometric biosensor based on the molecularly imprinted polymer (MIP) technique has been fabricated for creatinine detection. The polymer consists of azobisisobutyronitrile (AIBN) as an initiator together with N, N'-(1,2-Dihydroxyethelene) bisacrylamide (DHEBA) as a cross-linker and graphene oxide (GO) was prepared along with several functional monomers combination to compare each combination's effectiveness in the detection of creatinine. An experiment was divided into imprint and non-imprint polymer for imprinting effectiveness evaluation. Creatinine anhydrous were used as template molecules for imprinting the polymer. The analyte was prepared in buffer solution (PBS) at a pH of 7.4 with a concentration range from 0.01 mg/dl to 100 mg/dl. N-hydroxy succinimide (NHS) and D-glucose were used for the specificity test. This study can conclude that polymers consisting of functional monomer methyl methacrylate (MMA) and acrylamide (AAM) with a 1:1 ratio show significant sensitivity to creatinine with the detection limit of 0.1 mg/dl along with remarkable selectivity to creatinine against other negative control compared to other conditions in this study and the sensor has a response linearly ranges from 0.01 to 100 mg/dl.