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Fabrication of New Potentiometric Microsensor for Metformin Based on Modified Screen-Printed Microchip

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A new disposable potentiometric micro-senor responsive for metformin drug has been microfabricated using new developed approach. The organic membrane based sensitive layer was prepared by embedded the metformin : tetraphenyl borate ion association complex in plasticized PVC support matrix modified with carbon nanotubes (CNTs). The cocktail coating mixture of the sensitive layer was deposited on the surface of disposable plastic screen-printed microchip using new methodology recently developed. The microfabricated chip assembly was characterized according to IUPAC recommendations as a potentiometric microsensor for analysis of metformin drug. The merits offered by the developed novel disposable microchip include simple, high reliability, good credibility, long life span and low cost and rapid determination of metformin drug. The elaborated microchip was successfully utilized in the quantification of the metformin drug in some pharmaceutical formulations. Statistical calculations were performed to assess the accuracy and precision of the new microchip assembly for accurate determination of the metformin instead of the highly sophisticated expensive machines.

Keywords: Metformin; Screen printed microsensor; Disposable microchip; Potentiometric analysis

FULL TEXT