Zinc Layered Hydroxide-Sodium Dodecyl Sulphate-Isoprocab Modified Multiwalled Carbon Nanotubes as sensor for Electrochemical Determination of Dopamine in Alkaline Medium

Mohamad Syahrizal Ahmad^{1,2,*}, Illyas Md Isa^{1,2,*}, Norhayati Hashim^{1,2}, Mohamad Idris Saidin^{1,2}, Suyanta M. Si³, Rahadian Zainul⁴, Alizar Ulianas⁴, Siriboon Mukdasai⁵

¹ Nanotechnology Research Centre, Faculty of Science and Mathematics, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak Darul Ridzuan, Malaysia.

² Department of Chemistry, Faculty of Science and Mathematics, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak Darul Ridzuan, Malaysia.

³ Department of Chemistry Education, Faculty of Mathematics and Natural Science, Yogyakarta State University, Yogyakarta, Indonesia.

⁴ Department of Chemistry, Faculty of Mathematics and Natural Science, Universitas Negeri Padang, West Sumatera 25171, Indonesia

⁵ Department of Chemistry, Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand

*E-mail: syahrizal@fsmt.upsi.edu.my and illyas@fsmt.upsi.edu.my

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A sensitive and selective electrochemical sensor for detection of dopamine (DOP) using zinc layered hydroxide-sodium dodecyl sulphate-isoprocab (ZLH-SDS-I)/multiwalled carbon nanotubes (MWCNT) in 100 mM phosphate buffer solution (PBS) and at the pH 8.0 was developed. The morphology and electrochemistry properties of ZLH-SDS-I/MWCNT nanocomposites were characterized using square wave voltammetry (SWV), transmission electron microscopy (TEM), cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS) and scanning electron microscopy (SEM). Under optimized conditions, the linear analytical curve for determination of dopamine was 1.0 μ M to 0.3 mM with the detection limit of 0.43 μ M. Besides that, the proposed sensor also exhibited good selectivity, stability, sensitivity and was found to be applicable for dopamine detection in the commercial dopamine hydrochloride injection samples.

Keywords: Dopamine, zinc layered hydroxide-sodium dodecyl sulphate-isoprocab, square wave voltammetry, multiwalled carbon nanotubes.

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