Simultaneous Voltammetric Detection of Acetaminophen and Tramadol using Molybdenum Tungsten Disulfide-Modified Graphite Screen-Printed Electrode

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Nanopetal-structured molybdenum tungsten disulfide (MTD) have been successfully synthesized and applied as a very good modifier for constructing a new and strongly sensitive electro-chemical sensing ground for concurrent detection of two crucial pain reliever medicines, acetaminophen and tramadol. XRD, EDX and SEM have been employed for characterizing synthesized nanoparticles. A comprehensive examination by electro-chemical techniques, including differential pulse voltammetry (DPV) and cyclic voltammetry (CV) has been conducted for clarifying electro-catalytic features of nanopetals by modify graphite screen printed electrode (SPE). Under the optimal condition, the MTD/SPE provided linearly responses in range between 0.04-600.0 and little determination limit of 12.0 nM for acetaminophen. Accurate and sensitive concurrent detection of acetaminophen and tramadol in biological samples and medicine formulations validated the suggested sensor reliability.

Keywords: Acetaminophen, Tramadol, Nanopetal-structured MoWS₂, Graphite screen printed electrode

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