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Novel acyclonucleoside analog bearing 1,2,4-triazole–schiff base: synthesis, characterization and analytical studies using square wave-adsorptive stripping voltammetry and HPLC

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Abstract

New acyclonucleoside analogs tethering 1,2,4-triazole scaffold were synthesized through the condensation of 4-amino-5-(2-phenyleth-1-yl)-2,4-dihydro-3*H*-1,2,4-triazole-3-thione (**2**) with benzaldehyde followed by the alkylation of the resulting Schiff base **3** with 2-bromoethanol, 3-chloropropanol and/or 3-chloropropan-1,2-diol. Voltammetric studies were carried out for the analysis of 1×10^{-6} mol L^{-1} of the newly synthesized acyclonucleoside analogs **4-6** using square wave-adsorptive stripping voltammetry (SW-AdSV). The sharp voltammetric peak and high reduction current were recorded by Britton-Robinson B-R pH10 buffer at E_p= −1250 mV on the hanging mercury drop surface (HMDE) and Ag/AgCl reference electrode. Several experimental conditions were studied such as supporting electrolytes, pH, accumulation time and potential, scan rate, frequency and step potential for 4-benzylideneamino-5-(2-phenyleth-1-yl)-3-[(2,3-dihydroxyprop-1-yl)thio]-1,2,4-triazole (**6**). The analytical performance of the voltammetric technique was investigated through the analysis of the calibration curve, detection limit, recovery and stability. The voltammetric analytical applications were evaluated by recovering of compound **6** in urine and plasma samples. The HPLC technique was also applied for the separation of compound **6** from interferences using C-18 (5 µm) column with UV detection at 254 nm.

Keywords: Acyclonucleoside analog; 1,2,4-triazoles, Schiff bases; square wave voltammetry, adsorptive stripping voltammetry, HPLC, biological fluids.