VALIDATION METHOD OF FORMALIN ANALYSIS USING CYCLIC VOLTAMMETRY METHOD USING PLATINUM, NICKEL AND GOLD ELECTRODES

ABSTRACT

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Validation of formaldehyde analysis method using cyclic voltammetry method using Pt, Ni and Au electrodes has been conducted. The effect of testing effectiveness is electrolyte variation, electrode and *scan rate*. The results obtained from the effectiveness of the effect of variations of H_2SO_4 0.5 M, KNO_3 0.1 M, 0.1 M KOH and NaOH 0.5 M using Pt electrodes showed different peak response voltammograms. The effectiveness of the electrode Pt, Ni and Au variation, which gives the best peak response is Ni and Au electrodes with NaOH 0.5 M electrolyte. The parameters of the method validation used are determination of linearity, precision, accuracy, LOD and LOQ. Linearity value of coefficient of determination ($R^{2)}$ is 0.996 Ni electrode and Au 0.997. Precision values obtained %RSD for Ni electrodes 1.8895% smaller than %RSD Horwitz 3.020%, Au electrodes 2.5247% smaller than %RSD Horwitz 3.0936%. Accuracy (%*recovery)* Ni electrode 107.1520% and Au 113.1787%electrode. Ni electrodes with LOD values 0.0082 M and LOQ 0.0276 M, while Au electrodes with LOD values 0.0067 M and LOQ 0.0225 M. The results of formaldehyde testing on tofu samples with cyclic voltammetry obtained an average concentration for Ni electrodes of 0.0209 M and for Au electrode is 0.0245 M.

Keywords: cyclic voltammetry, formalin, validation, electrodes, electrolytes