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Determination of Morin by Using a Briggs-Rauscher Oscillator

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A suitable and convenient method for the analytical determination of morin was established by using Briggs-Rauscher chemical matrix (BR) in the paper. The macrocyclic Ni-complex $[NiL](ClO_4)_2$ was used as catalyst. The ligand L in the complex is 5,7,7,12,14,14-hexamethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene. Experimental data has absolutely indicated the inhibitory effect caused by morin on the active BR system. Different concentrations of morin ranging from 2.44×10^{-6} mol/L to 1.30×10^{-5} mol/L have been tested. As a result, oscillating system stopped to oscillate for some instant and then successfully regenerated. Such phenomenon has concentration dependent, meaning as the concentration of morin were increased, the inhibition time (t_{in}) of the system were increased and vice versa. Thus, by plotting t_{in} against concentrations of morin, a linear regression curve was obtained over a concentration range from 2.44×10^{-6} mol/L to 1.30×10^{-5} mol/L of morin with correlation coefficient of 0.98. The calculated RSD value is 2.56 %, which was obtained by the 5-measurements of 1.30×10^{-5} mol/L morin. Although the reaction of morin and KIO_3 was confirm through cyclic voltammetry experiment, actually the t_{in} was caused due to the reaction of morin with $HOO^{\bullet}$ radical (produced during oscillatory reaction).

Keywords: Briggs-Rauscher, Electrochemical Oscillator, Morin, Inhibitory effect

FULL TEXT