The Determination of Riboflavin (Vitamin B₂) Using Manganese Dioxide Modified Glassy Carbon Electrode by Differential Pulse Voltammetry

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A manganese dioxide modified glassy carbon electrode (MnO₂/GCE) was prepared by coating method and used for the determination of riboflavin (VB₂) by differential pulse voltammetry (DPV). The influence of activation, amount of MnO₂, buffer type, buffer pH and concentration on the peak current of VB₂ was investigated, and the experimental results revealed that the DPV peak current of VB₂ shows a linear relationship with its concentration in the range of $2.0 \times 10^{-6} - 1.1 \times 10^{-4}$ mol L⁻¹ with a correlation coefficient of 0.9991. For 1.0×10^{-5} mol L⁻¹ vitamin B₂, the RSD is 1.7 % ($n=10$), and the detection limit is 2.7×10^{-8} mol L⁻¹. The method reveals the excellence of simple, sensitive, good repeatability and anti-interference. It has been applied to the determination of VB₂ in tablet and satisfactory results obtained.

Keywords: Vitamin B₂; differential pulse voltammetry; MnO₂/GCE; determination

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