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## Electrochemical determination of phenothrin in fruit juices at graphene oxide-polypyrrole modified glassy carbon electrode

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### Abstract

An electrochemical sensor was developed based on graphene oxide-polypyrrole modified glassy carbon electrode (GO/PPy/GCE) for sensitive determination of phenothrin in fruit samples. GO/PPy/GCE was characterized by scanning electron microscopy (SEM), Fourier Transform Infrared Spectroscopy (FT-IR), Ultraviolet–Visible spectroscopy (UV–Vis) and Raman spectroscopy. The sensor was also characterized using electrochemical impedance spectroscopy and cyclic voltammetry. Compared to bare GCE, GO/GCE and PPy/GCE, the reduction peak current of phenothrin increased significantly at GO/PPy/GCE, demonstrating that GO/PPy/GCE exhibited electrocatalytic activity towards the reduction of phenothrin. Under the optimal conditions, the sensor showed a linear relationship over the range of  $2.5 \times 10^{-8}$ – $2.0 \times 10^{-5}$  M with detection limits of  $13.8 \times 10^{-9}$  M. In addition, the analytical application of the proposed method was carried out by the determination of phenothrin in fruit juice samples.

**Key words:** phenothrin, graphene oxide-polypyrrole, sensor, fruit juices

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