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Polymer platforms for selective detection of cocaine in street samples adulterated with levamisole

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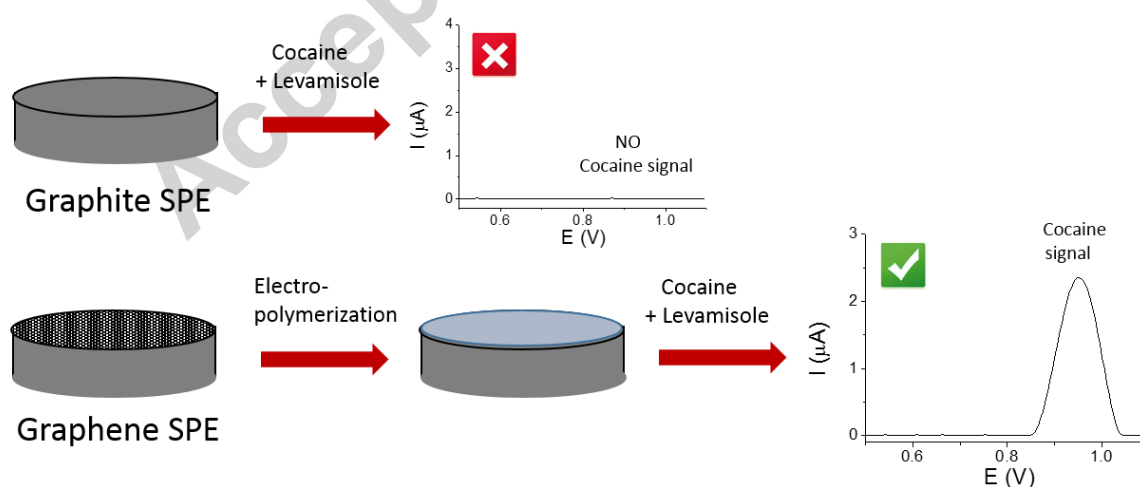
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Abstract

Accurate drug detection is of utmost importance for fighting against drug abuse. With a high number of cutting agents and adulterants being added to cut or mask drugs in street powders the number of false results is increasing. We demonstrate for the first time the usefulness of employing polymers readily synthesized by electrodeposition to selectively detect cocaine in the presence of the commonly used adulterant levamisole. The polymers were selected by computational modelling to exhibit high binding affinity towards cocaine and deposited directly on the surface of graphene-modified electrodes via electropolymerization. The resulting platforms allowed a distinct electrochemical signal for cocaine, which is otherwise suppressed by levamisole. Square wave voltammetry was used to quantify cocaine alone and in the presence of levamisole. The usefulness of the platforms was demonstrated in the screening of real street samples.

Graphical abstract



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