Electrochemical determination of food colorants in soft drinks using MWCNT-modified GCEs

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Food colorants are chemicals added to foods and soft drinks during manufacturing or processing. However, some of these chemicals represent potential risks to human health, especially if they are consumed in excess. Here, we modified a glassy carbon electrode (GCE) with multi-walled carbon nanotubes (MWCNTs) using 1,3-dioxolane as a dispersant agent, resulting in a stable and reproducible electrochemical sensor. The resulting sensor was applied to study the food dyes tartrazine, sunset yellow and carmoisine, showing high sensitivity and reproducibility. The influences of the scan rate, pH, amount of MWCNTs and accumulation time were studied. Moreover, the developed method was successfully applied in the determination of colorants in commercial soft drinks and compared with a chromatographic method. The resulting concentrations were compared based on the maximum amount of soft drink that a child and an adult can consume before reaching the admissible daily intake (ADI