Detection of glyphosate in drinking water: A fast and direct detection method without sample pretreatment - DTU Orbit (03/11/2019)

Glyphosate (Gly) is one of the most problematic pesticides that repeatedly appears in drinking water. Continuous on-site detection of Gly in water supplies can provide an early warning in incidents of contamination, before the pesticide reaches the drinking water. Here, we report the first direct detection of Gly in tap water with electrochemical sensing. Gold working electrodes were used to detect the pesticide in spiked tap water without any supporting electrolyte, sample pretreatment or electrode modifications. Amperometric measurements were used to quantify Gly to a limit of detection of 2 µM, which is below the regulation limit of permitted contamination of drinking water in the United States. The quantification of Gly was linearly proportional with the measured signal. The selectivity of this method was evaluated by applying the same technique on a Gly Metabolite, AMPA, and on another pesticide, omethoate, with a chemical structure similar to Gly. The testing revealed no interfering electrochemical activity at the potential range used for Gly detection. The simple detection of Gly presented in this work may lead to direct on-site monitoring of Gly contamination at drinking water sources.

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