

High resolution HPLC-MS confirms overestimation of urea in soil by the diacetyl monoxime (DAM) colorimetric method

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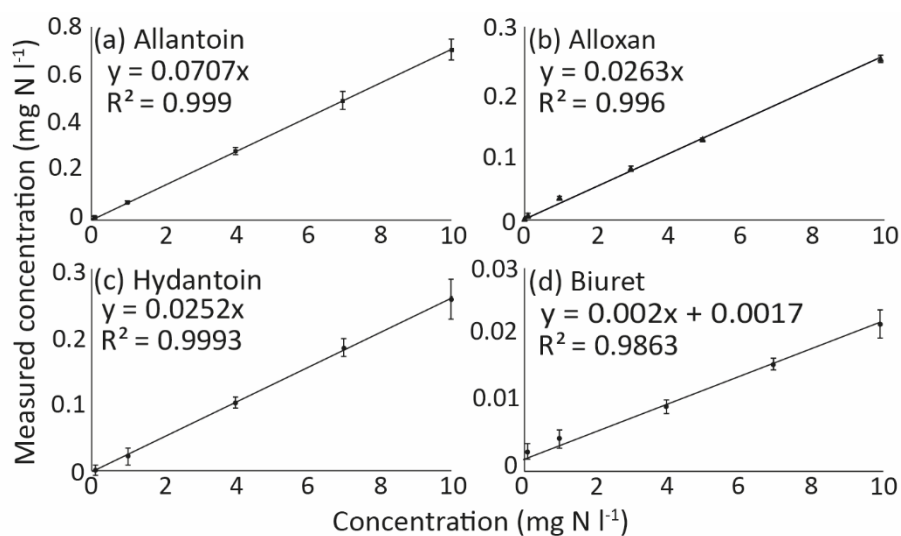


Fig. 1 Calibration curves for (a) allantoin, (b) alloxan, (c) hydantoin, and (d) biuret under the DAM colorimetric reaction conditions at concentrations between 0.1 to 10 mg N l⁻¹.

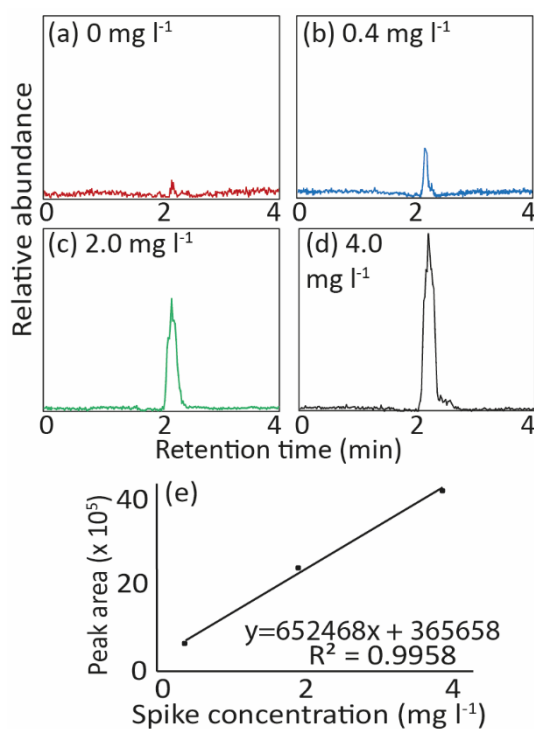


Fig. 2 Extracted ion chromatograms for urea [M+H]⁺ (m/z 61.08) for a soil extract from Merddwr, Conwy with (a) no added urea spike, and (b) 0.4 mg l⁻¹, (c) 2.0 mg l⁻¹ and (d) 4.0 mg l⁻¹ added urea spikes used for quantification by standard addition and (e) the standard addition calibration curve used to determine the urea concentration in the soil extract (0.709 $\mu\text{g g}^{-1}$).

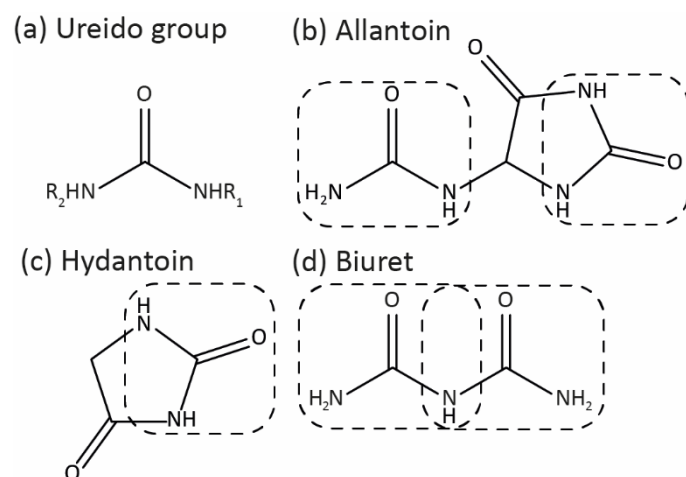


Fig. 3 (a) Ureido group responsible for the cross-reactivity with the DAM colorimetric method, and environmentally relevant compounds containing the ureido group which cross-react: (b) allantoin; (c) hydantoin and (d) biuret.