



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

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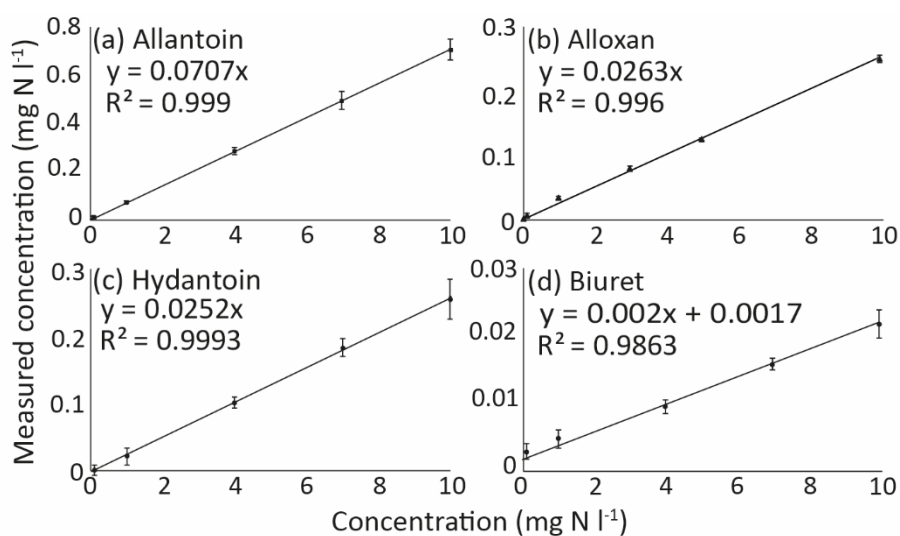
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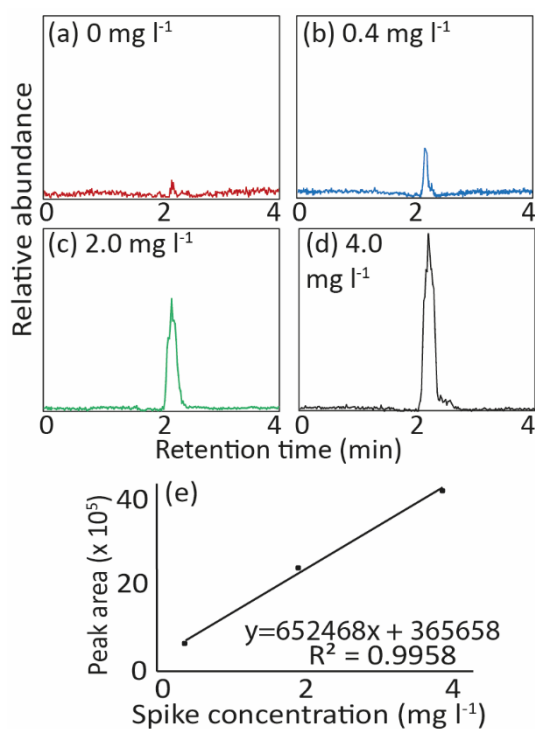
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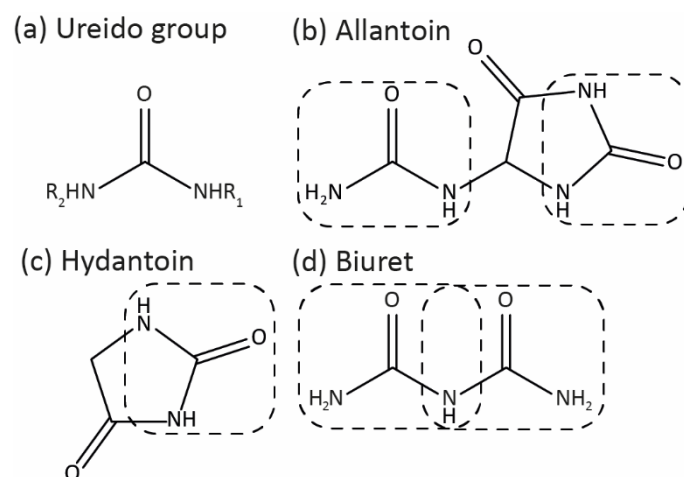
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**Fig. 1** Calibration curves for (a) allantoin, (b) alloxan, (c) hydantoin, and (d) biuret under the DAM colorimetric reaction conditions at concentrations between 0.1 to 10 mg N l<sup>-1</sup>.



**Fig. 2** Extracted ion chromatograms for urea [M+H]<sup>+</sup> (*m/z* 61.08) for a soil extract from Merddwr, Conwy with (a) no added urea spike, and (b) 0.4 mg l<sup>-1</sup>, (c) 2.0 mg l<sup>-1</sup> and (d) 4.0 mg l<sup>-1</sup> 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 μg g<sup>-1</sup>).



**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.