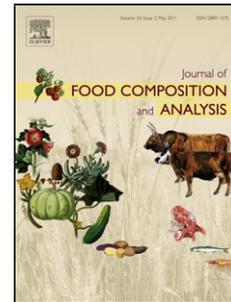


Accepted Manuscript

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PII: S0889-1575(17)30047-9
DOI: <http://dx.doi.org/doi:10.1016/j.jfca.2017.02.008>
Reference: YJFCA 2842

To appear in:

Received date: 11-11-2016
Revised date: 27-1-2017
Accepted date: 10-2-2017

Please cite this article as: Ashrafzadeh, Seyedardalan., Gaw, Sally., Genet, Russell., Glover, Chris N., & Leung, David W.M., Natural variation in correlations between cadmium and micronutrients in potato tubers. *Journal of Food Composition and Analysis* <http://dx.doi.org/10.1016/j.jfca.2017.02.008>

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Natural variation in correlations between cadmium and micronutrients in potato tubers

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Highlights

- Variations in Cd, Zn, Fe, Mn, and Cu in tubers of ten potato varieties
- Relationships among variations in cadmium and the selected micronutrients contents
- Positive correlation between Cd accumulation in tubers and Zn, Cu or Mn
- A variety with low Cd accumulation and high Fe accumulation in tubers identified

Abstract

Tuber cadmium (Cd) accumulation was evaluated in ten potato cultivars grown in the same field with an average soil Cd level of 0.06 mg kg⁻¹ dry weight (DW). Analysis of tuber metal levels revealed a significant difference in mean Cd concentrations among different cultivars, which varied from 0.05 to 0.21 mg kg⁻¹ DW. No cultivars exceeded the maximum permissible concentration (MPC) for Cd in potato. Correlation analysis showed a strong positive relationship between bioaccumulation of Cd and zinc (Zn), copper (Cu) or manganese (Mn). There was also a negative correlation between Cd and iron (Fe) accumulation which was significant only within three cultivars including Summer Delight, Russet Burbank and Agria. Summer Delight, with the lowest Cd and highest Fe content, was identified as a low Cd accumulating cultivar as well as a Fe-enriched tuber vegetable making it of significant interest. Laura, Yukon Gold and Purple Passion were identified as strong Cd accumulators. One of the implications is that growing these three potato cultivars in soils with Cd levels

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