

Temporal changes in mineral content of fruit, vegetables and grains in Australian food composition databases

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Concerns about a historical decline in fruit and vegetables have been reported in several countries.⁽¹⁾ In Australia, Cunningham et al.⁽²⁾ compared the mineral content of 44 Australian fruit and vegetables between the 1980s and 2000s but found no significant nor consistent temporal changes. Due to the limited number of studies in this area, and the growing popularity of plant-based diets, it is timely to re-assess the nutrient content of plant-based foods. The present study aimed to review changes in the mineral content of fruit, vegetables, legumes and grains using the 1991 and 2022 Australian reference food composition databases. A total of 115 commonly consumed fruit, vegetables, legumes and grains, in raw unprocessed form, were matched between the databases. Iron, zinc, calcium and magnesium concentrations were examined as intakes of these minerals are frequently shown to be sub-optimal in various population groups. Absolute and percent differences in mineral content were calculated between 1991 and 2022 for 53 foods that had been re-analysed during this time period (18 fruit, 28 vegetables, zero legumes, seven grains). The largest temporal decreases were found for iron in fruit (–55%), while vegetables and grains showed decreases of 17% and 13%, respectively. Absolute differences in iron content were small, ranging from –0.1 mg/100 g for vegetables to –0.2 mg/100 g for fruit and grains. Zinc content decreased by 46% for fruit and 11% for vegetables (absolute differences –0.1 mg/100 g) and increased for grains by 36% (+0.4 mg/100 g). Calcium content of grains decreased by 22% (–7 mg/100 g), while magnesium content increased 27% for fruit (+3 mg/100 g). Calcium and magnesium content for other food groups remained relatively stable (< 10% change). Care must be taken when interpreting these data as direct comparability between the two time points is not possible due to differences in sampling (geographic, environmental and seasonal variability), likely variety of cultivars sampled, and different analytical methods used to measure nutrients over time.^(1,2) In conclusion, both increases and decreases in mineral content were observed for commonly consumed fruit, vegetables and grains in food composition databases over a 30-year time period. As absolute differences were small, any true decreases in mineral content of these foods are unlikely to have a large impact on nutritional intake. Continued monitoring of nutrient content of plant-based foods is recommended to reflect current food supply and hence dietary intake.

References

1. Marles RJ (2017) *J Food Compos Anal* **56**, 93–103.
2. Cunningham JH, Milligan G & Trevisan L (2002) *Mineral levels in Australian fruits and veg.* Kingston (ACT): Food Standards Australia New Zealand. Available from: <https://www.foodstandards.gov.au/publications/pages/minerallevelsinaustr2428.aspx>