Sweet potato

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Abstract

Sweet potato in the HMI library has 290 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, methylmercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Zn, Ca, Mg and Na from 18 sources. WHO GEMS/Food submissions reported lead in sweet potato as sold from 1,801 results in 4 reporting regions, with subgroup medians from 2.2 to 10.8 µg/kg. In the US Total Diet Study, cooked sweet potato had a median lead result of 6.9 µg/kg across 27 composites from 2017-2020.

1 | Sweet potato overview

Across 4 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 13 µg/kg (Spungen et al. 2024) to 520 µg/kg (Guerra et al. 2012).[5,7] For cadmium, 3 studies on an as-sold or fresh-weight basis reported means and medians from 5.7 µg/kg (Spungen et al. 2024) to 120 µg/kg (Guerra et al. 2012).[5,7]

For a buyer the practical points are the form bought, the basis a result is reported on, where the sweet potato came from and the laboratory's reporting limit. Testing finds contamination but does not remove it.

2 | What counts as sweet potato

This page covers sweet potato in 4 forms kept separate in every comparison: sweet potato as sold (275 results), cooked sweet potato (9 results), dried sweet potato (5 results) and sweet potato flour or meal (1 result).[1,2,3,4,5,6]

Results stay on the basis each source reports: as sold or fresh weight, dry weight, or unstated. Dry-weight, as-sold and unstated results are never pooled, and no moisture conversion is applied.

3 | How metals reach sweet potato

No study in the library compared sweet potato from contaminated and ordinary settings, so the routes by which metals reach it are not measured here.

4 | Which forms and regions measured lower

The HMI reference for lead in sweet potato as sold pools 70 subgroup units from 3 sampling families, with a median of between 6.4 and 8 µg/kg and a middle half spanning between 2 and 4.3 (lower quartile) and between 11.3 and 14.1 µg/kg (upper quartile).[1,8,10] cooked for lead in sweet potato, the reference median was 6.9 µg/kg, with a middle half from below 4 to 19 µg/kg across 27 units.[2] for cadmium in sweet potato as sold, the reference median was between 3.5 and 4 µg/kg, with a middle half from between 2.1 and 2.7 to 7.8 µg/kg across 55 units.[1,8,10]

Among GEMS/Food reporting regions, sweet potato as sold had the lowest lead subgroup median in WPRO (2.2 µg/kg) and the highest in PAHO (10.8 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in AFRO (1 µg/kg) and the highest in AFRO (150 µg/kg).[1]

In one study, lead across 24 groups of sweet potato ranged from 1.2 µg/kg (Mixtures, FY2023) to 27.3 µg/kg (Vegetables, FY2021); the lowest is the lowest observed in that study, not an established sourcing preference.[10] In another study, lead across 11 groups of sweet potato ranged from 1.5 µg/kg (Vegetable) to 29.3 µg/kg (Vegetable); the lowest is the lowest observed in that study, not an established sourcing preference.[8]

5 | Processing, cooking and preparation

No processing study for metals in this food is in the library yet.

6 | Mitigation for sweet potato

Lot testing against the applicable limit is the check that can be verified.

7 | Trade-offs and limits of controls

Metals do not move together, so a lot that passes a lead limit says little about cadmium, arsenic or nickel unless those are tested as well.

8 | Testing sweet potato for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (WHO GEMS/Food) to 100 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for cadmium ranged from 0.3 µg/kg (WHO GEMS/Food) to 128 µg/kg (Mehari et al. 2015), so a non-detect from a less sensitive method says much less.[1,11] Reporting limits for total arsenic ranged from 0.667 µg/kg (WHO GEMS/Food) to 600 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1]

A useful lot result names the form, the basis and a quantification limit well below the limit that applies.

9 | Buying and verifying sweet potato

No maximum level for metals in sweet potato was verified from primary text for this page; buyers should confirm the limit that applies in the destination market.

10 | Exposure from sweet potato

No source in the library converted sweet potato concentrations into a verified estimate of intake for a defined population. Concentrations describe the food, not individual risk.

11 | Evidence review and remaining gaps

Every source record that names sweet potato was decided on its content: 18 occurrence extracted, 18 records in all. The occurrence table renders every extracted result; held values remain visible with their reason.

References identify the sources used in these answers. The Sources index preserves additional discovery links; inclusion there does not mean a source has been reviewed for this assessment. Corrections, completed searches, new direct evidence and changes in requirements should reopen the relevant answer.

12 | Sweet potato FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, methylmercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Zn, Ca, Mg and Na in sweet potato, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in sweet potato as sold from 1,801 results in 4 reporting regions, with subgroup medians from 2.2 to 10.8 µg/kg.[1]

Among GEMS/Food reporting regions, sweet potato as sold had the lowest lead subgroup median in WPRO (2.2 µg/kg) and the highest in PAHO (10.8 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in AFRO (1 µg/kg) and the highest in AFRO (150 µg/kg).[1]

Inorganic arsenic, the more toxic form, was measured in 2 results from 1 source, far fewer than total arsenic.[8]

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STATUS AND LICENCE

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COMPETING INTERESTS

The Heavy Metal Index reports what the peer-reviewed and regulatory literature supports. It is operated separately from any certification program, does not evaluate or endorse brands, and does not use certification thresholds as evidence for the statements made here.

DATA AVAILABILITY

Every source behind this ingredient profile is listed with its own source record at https://heavymetalindex.com/ingredients/sweet-potato#sources.

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