Grape Juice

Karen Pendergrass · Heavy Metal Index, Institute of Contaminant Standards

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CORRESPONDENCE

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Abstract

Grape juice in the HMI library has 590 reported results for lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, nickel, chromium, aluminum, tin, uranium, Co, Cu, Fe, Zn, AsIII and AsV from 14 sources. WHO GEMS/Food submissions reported lead in grape juice from 377 results in 4 reporting regions, with subgroup medians from 3.5 to 50.8 µg/kg. In the US Total Diet Study, grape juice had a median lead result of 5.4 µg/kg across 3 composites from 2018-2020.

1 | Grape juice overview

Across 2 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 2 µg/kg (Alzagtat et al. 2016) to 8 µg/kg (Alzagtat et al. 2016).[3] For cadmium, 2 studies on an as-sold or fresh-weight basis reported means and medians from 1.5 µg/kg (Spungen et al. 2024) to 6 µg/kg (Alzagtat et al. 2016).[3,6]

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

2 | What counts as grape juice

This page covers grape juice (590 results).[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 grape juice

No study in the library compared grape juice 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 grape juice pools 214 subgroup units from 3 sampling families, with a median of between 6.7 and 7.6 µg/kg and a middle half spanning between 3.8 and 4 (lower quartile) and between 10.5 and 11.1 µg/kg (upper quartile).[1,2,8] for cadmium in grape juice, the reference median was below 1 µg/kg, with a middle half from below 1 to between 1.17 and 1.5 µg/kg across 39 units.[1,2] for total arsenic in grape juice, the reference median was between 6.6 and 10 µg/kg, with a middle half from below 8.3 to between 10 and 12.5 µg/kg across 23 units.[1,2]

Among GEMS/Food reporting regions, grape juice had the lowest lead subgroup median in PAHO (3.5 µg/kg) and the highest in PAHO (50.8 µg/kg); reporting regions are markets, not growing areas.[1]

Targeted grape juice samples in EURO had total mercury lower at 20 µg/kg, against 170 µg/kg for EURO in the same study.[1]

In one study, lead across 168 groups of grape juice ranged from 0.6 µg/kg (FY2018) to 39.8 µg/kg (FY2011); the lowest is the lowest observed in that study, not an established sourcing preference.[8] In another study, lead across 5 groups of grape juice ranged from 2 µg/kg (imported nectar, producer code L (sample 2)) to 8 µg/kg (locally produced nectar, producer code B (sample 1)); the lowest is the lowest observed in that study, not an established sourcing preference.[3]

5 | Processing, cooking and preparation

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

6 | Mitigation for grape juice

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 grape juice for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (WHO GEMS/Food) to 200 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for cadmium ranged from 0.7 µg/kg (WHO GEMS/Food) to 300 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for total arsenic ranged from 1 µg/kg (FDA Total Diet Study) to 250 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,2]

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

9 | Buying and verifying grape juice

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

10 | Exposure from grape juice

No source in the library converted grape juice 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 grape juice was decided on its content: 14 occurrence extracted, 14 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 | Grape juice FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, nickel, chromium, aluminum, tin, uranium, Co, Cu, Fe, Zn, AsIII and AsV in grape juice, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in grape juice from 377 results in 4 reporting regions, with subgroup medians from 3.5 to 50.8 µg/kg.[1]

Among GEMS/Food reporting regions, grape juice had the lowest lead subgroup median in PAHO (3.5 µg/kg) and the highest in PAHO (50.8 µg/kg); reporting regions are markets, not growing areas.[1]

Inorganic arsenic, the more toxic form, was measured in 66 results from 5 sources, far fewer than total arsenic.[1,2,9,7,10] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 7.3 µg/kg (mean) in grape juice from European dietary-survey occurrence data.[9]

References

[1] GEMS/Food Contaminants database heavy-metal exports
World Health Organization · GEMS/Food Contamination Monitoring and Assessment Programme · 2026 · extranet.who.int
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[2] FY2018-FY2020 TDS Elements Analytical Results
U.S. Food and Drug Administration · FDA Total Diet Study · 2022 · www.fda.gov
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[5] ICP-OES assisted determination of the metal content of some fruit juices from Yemen's market
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[7] Analytical Results from Inorganic Arsenic in Rice Cereals for Infants, Non-Rice Infant Cereal and Other Foods Commonly Eaten by Infants and Toddlers
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[8] Analytical Results for Lead in Juice Sampled Under the FDA's Toxic Elements in Food and Foodware, and Radionuclides in Food – Import and Domestic Compliance Program (FY2005-FY2018)
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GOVERNMENT

[10] Baby Foods Are Tainted with Dangerous Levels of Arsenic, Lead, Cadmium, and Mercury
U.S. House of Representatives, Committee on Oversight and Reform, Subcommittee on Economic and Consumer Policy · Staff Report · 2021 · oversight.house.gov
GRAY LITERATURE

STATUS AND LICENCE

Editorially reviewed in-house; no external peer review has been completed on this ingredient profile. Published as an institutional technical report with its review state tracked on the article page. Released under CC BY 4.0.

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/grape-juice#sources.

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