Pineapple juice

Karen Pendergrass · Heavy Metal Index, Institute of Contaminant Standards

HEAVY METAL INDEX · INGREDIENT PROFILE October 2026
DOI 10.83376/hmi.ingredient.pineapple-juice

CITE AS

Pendergrass, K. (2026). Pineapple juice. Heavy Metal Index. https://doi.org/10.83376/hmi.ingredient.pineapple-juice

CORRESPONDENCE

Corrections are logged publicly on the article page, each with its date, the affected value, and the source that resolved it.

KEYWORDS

heavy metals, food safety, dietary exposure

PUBLICATION HISTORY

This revision 2026-10-22.

Abstract

Pineapple juice in the HMI library has 862 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, uranium, Cu, Fe, Mn and Zn from 15 sources. WHO GEMS/Food submissions reported lead in pineapple juice from 35 results in 5 reporting regions, with a subgroup median of 23 µg/kg. In the US Total Diet Study, pineapple juice had a median lead result of 3.8 µg/kg across 3 composites from 2018-2020.

1 | Pineapple juice overview

Across 3 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 0.17 µg/kg (Youssao et al. 2018) to 260 µg/kg (Youssao et al. 2018).[7] For cadmium, 2 studies on an as-sold or fresh-weight basis reported means and medians from 0.06 µg/kg (Youssao et al. 2018) to 8 µg/kg (Alzagtat et al. 2016).[3,7]

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

2 | What counts as pineapple juice

This page covers pineapple juice (862 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 pineapple juice

No study in the library compared pineapple 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 pineapple juice pools 119 subgroup units from 4 sampling families, with a median of between 3.2 and 3.9 µg/kg and a middle half spanning between 1.02 and 2.7 (lower quartile) and between 5.3 and 11 µg/kg (upper quartile).[1,2,7,9] for cadmium in pineapple juice, the reference median was below 1 µg/kg, with a middle half from below 0.45 to between 0.38 and 1 µg/kg across 26 units.[1,2,7,10] for total arsenic in pineapple juice, the reference median was below 1.67 µg/kg, with a middle half from below 1 to between 1.1 and 4 µg/kg across 52 units.[1,2,7]

In one study, lead across 67 groups of pineapple juice ranged from 0.27 µg/kg (sample JAF2) to 608 µg/kg (sample OJA4); the lowest is the lowest observed in that study, not an established sourcing preference.[7] In another study, lead across 41 groups of pineapple juice ranged from 0.3 µg/kg (FY2015) to 28 µg/kg (FY2016); the lowest is the lowest observed in that study, not an established sourcing preference.[9]

5 | Processing, cooking and preparation

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

6 | Mitigation for pineapple 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 pineapple juice for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (FDA Total Diet Study) to 90 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,2] Reporting limits for cadmium ranged from 0.7 µg/kg (WHO GEMS/Food) to 40 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 40 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 pineapple juice

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

10 | Exposure from pineapple juice

No source in the library converted pineapple 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 pineapple juice was decided on its content: 15 occurrence extracted, 15 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 | Pineapple juice FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, uranium, Cu, Fe, Mn and Zn in pineapple juice, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in pineapple juice from 35 results in 5 reporting regions, with a subgroup median of 23 µg/kg.[1]

In one study, lead across 67 groups of pineapple juice ranged from 0.27 µg/kg (sample JAF2) to 608 µg/kg (sample OJA4); the lowest is the lowest observed in that study, not an established sourcing preference.[7] In another study, lead across 41 groups of pineapple juice ranged from 0.3 µg/kg (FY2015) to 28 µg/kg (FY2016); the lowest is the lowest observed in that study, not an established sourcing preference.[9]

Inorganic arsenic, the more toxic form, was measured in 2 results from 2 sources, far fewer than total arsenic.[1,11] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 3 µg/kg (mean) in pineapple juice from European dietary-survey occurrence data.[11]

References

[1] GEMS/Food Contaminants database heavy-metal exports
World Health Organization · GEMS/Food Contamination Monitoring and Assessment Programme · 2026 · extranet.who.int
DATASET

[2] FY2018-FY2020 TDS Elements Analytical Results
U.S. Food and Drug Administration · FDA Total Diet Study · 2022 · www.fda.gov
DATASET

[3] Conformity of Fruit Nectar Samples to Libyan Specification Standards
Alzagtat AA and Eledody RY · Turkish Journal of Agriculture - Food Science and Technology · 2016 · doi.org/10.24925/turjaf.v4i7.524-530.533
PEER-REVIEWED

[4] Determination of trace metals in fruit juices in the Portuguese market
Anastácio M, Marreilha dos Santos AP, Aschner M, and Mateus L · Toxicology Reports 5 (2018) 434-439 · 2018 · doi.org/10.1016/j.toxrep.2018.03.010
PEER-REVIEWED

[5] Determination of some soft drink constituents and contamination by some heavy metals in Nigeria
Engwa Azeh Godwill, Ihekwoaba Cynthia Jane, Ilo Uchenna Scholastica, Unaegbu Marcellus, Ayuk L. Eugene, and Osuji Amarachukwu Gloria · Toxicology Reports · 2015 · doi.org/10.1016/j.toxrep.2015.01.014
PEER-REVIEWED

[6] ICP-OES assisted determination of the metal content of some fruit juices from Yemen's market
Mohamed F, Guillaume D, Abdulwali N, Al-Hadrami K, and Al Maqtari MA · Heliyon 6 (2020) e04908 · 2020 · doi.org/10.1016/j.heliyon.2020.e04908
PEER-REVIEWED

[7] Levels of Minor and Trace Elements of Some Commercial Fruit Juices and Syrup Produced in Artisanal and Semi-Industrial Units in Benin Republic
Alassane A. K. Youssao, Magloire A. N. Gbaguidi, Leonce Dovonon, Oriol Baltrons, Fabienne Seby, Mathilde Monperus, et al. · International Journal of Chemistry · 2018 · doi.org/10.5539/ijc.v10n4p68
PEER-REVIEWED

[8] Toxic metal contamination and health risk assessment of packaged fruit juices for children in Gondar city, Ethiopia
Fasika Weldegebriel, Zemichael Gizaw, Mulat Gebrehiwot, Lamrot Yohannes, Jember Azanaw, Mengesha Genet, et al. · Scientific Reports 15:36868 · 2025 · doi.org/10.1038/s41598-025-20789-x
PEER-REVIEWED

[9] 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)
U.S. Food and Drug Administration · FDA analytical results table · 2018
DATASET

[10] Infants' and young children's dietary exposures to lead and cadmium: FDA total diet study 2018-2020
Spungen JH and et al. · Food Additives & Contaminants: Part A · 2024 · doi.org/10.1080/19440049.2024.2396910
PEER-REVIEWED

[11] Dietary exposure to inorganic arsenic in the European population
European Food Safety Authority (EFSA) · EFSA Journal 2014;12(3):3597 · 2014 · doi.org/10.2903/j.efsa.2014.3597
GOVERNMENT

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/pineapple-juice#sources.

PUBLICATION HISTORY

This revision 2026-10-22. The full dated record is maintained at https://heavymetalindex.com/ingredients/pineapple-juice.