Yogurt

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Abstract

Yogurt in the HMI library has 373 reported results for lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Se, Ba, CrVI, Hg, Mo, Sr, Ti and Tl from 34 sources. WHO gems/food submissions reported lead in yogurt as sold from 1,053 results in 3 reporting regions, with subgroup medians from 2.5 to 5.5 µg/kg. In the US Total Diet Study, yogurt as sold had a median lead result below 4 µg/kg across 3 composites from 2018-2020.

1 | Yogurt overview

Across 5 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 0.01 µg/kg (Basaran 2025) to 418 µg/kg (AAEM et al. 2021).[3,5] For cadmium, 6 studies on an as-sold or fresh-weight basis reported means and medians from 0.02 µg/kg (Basaran 2025) to 63 µg/kg (Nwoke et al. 2021).[5,7] Higher results came from contaminated or exposed settings rather than ordinary supply. Yogurt as sold from commercial/retail, conventional, packaged had total arsenic higher at 3.6 µg/kg, against 1 µg/kg for Buffalo yogurt (farm-origin, Certeze area) in the same study.[6]

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

2 | What counts as yogurt

This page covers yogurt as sold (373 results).[1,2,3,4,5,6] Foods made from yogurt that have their own pages, such as frozen yogurt, are covered there.

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 yogurt

The evidence on how metals reach yogurt comes from studies that compared exposed and ordinary settings. Yogurt as sold from commercial/retail, conventional, packaged had total arsenic higher at 3.6 µg/kg, against 1 µg/kg for Buffalo yogurt (farm-origin, Certeze area) in the same study.[6]

These are observational comparisons from single studies; the size of the difference depends on the site, metal and distance.

4 | Which forms and regions measured lower

The hmi reference for lead in yogurt as sold pools 71 subgroup units from 6 sampling families, with a median of below 4 µg/kg and a middle half spanning below 4 (lower quartile) and below 10 µg/kg (upper quartile).[1,2,4,7,10,11] for cadmium in yogurt as sold, the reference median was below 1 µg/kg, with a middle half from below 1 to below 4 µg/kg across 64 units.[1,2,10,11] for total arsenic in yogurt as sold, the reference median was below 4 µg/kg, with a middle half from below 3 to below 4.21 µg/kg across 47 units.[1,2,10]

Among GEMS/Food reporting regions, yogurt as sold had the lowest lead subgroup median in WPRO (2.5 µg/kg) and the highest in WPRO (5.5 µg/kg); reporting regions are markets, not growing areas.[1]

In one study, lead across 11 groups of yogurt ranged from 4.7 µg/kg (Metn region, Lebanon) to 21.6 µg/kg (South Lebanon region, Lebanon); the lowest is the lowest observed in that study, not an established sourcing preference.[8] In another study, total mercury across 6 groups of yogurt ranged from 30 µg/kg (producer A (code 3A)) to 70 µg/kg (producer C (code 1C)); the lowest is the lowest observed in that study, not an established sourcing preference.[12]

5 | Processing, cooking and preparation

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

6 | Mitigation for yogurt

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

7 | Trade-offs and limits of controls

Avoiding exposed growing areas lowered the metal measured in the studies available, but no study measured the cost or supply effect of doing so.[6] 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 yogurt for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 0.01 µg/kg (Nwoke et al. 2021) to 3,000 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,7] Reporting limits for cadmium ranged from 0.017 µg/kg (Zmudzinska et al. 2022) to 1,000 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,13] Reporting limits for total arsenic ranged from 3 µg/kg (FDA Total Diet Study) to 200 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 yogurt

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

10 | Exposure from yogurt

No source in the library converted yogurt 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 yogurt was decided on its content: 34 occurrence extracted, 34 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 | Yogurt FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Se, Ba, CrVI, Hg, Mo, Sr, Ti and Tl in yogurt, most often lead, cadmium and total arsenic.[1,2,3,4] WHO gems/food submissions reported lead in yogurt as sold from 1,053 results in 3 reporting regions, with subgroup medians from 2.5 to 5.5 µg/kg.[1]

In the studies available, yogurt from contaminated or exposed settings carried more metal than yogurt from the same study's control.[6] yogurt as sold from commercial/retail, conventional, packaged had total arsenic higher at 3.6 µg/kg, against 1 µg/kg for Buffalo yogurt (farm-origin, Certeze area) in the same study.[6]

Among GEMS/Food reporting regions, yogurt as sold had the lowest lead subgroup median in WPRO (2.5 µg/kg) and the highest in WPRO (5.5 µg/kg); reporting regions are markets, not growing areas.[1]

Inorganic arsenic, the more toxic form, was measured in 10 results from 5 sources, far fewer than total arsenic.[1,14,15,16,17] Marín et al. 2018 reported inorganic arsenic at 0.8 µg/kg (mean) in yogurt as sold from Milk and dairy products group, Region of Valencia TDS 2010-2011.[14]

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] Lead, cadmium, and aluminum in raw bovine milk: Residue level, estimated intake, and fate during artisanal dairy manufacture
Amer AAEM, Abo El-Makarem HS, El-Maghraby MAE, and Abou-Alella SAE · Journal of Advanced Veterinary and Animal Research 8(3):454-464 · 2021 · doi.org/10.5455/javar.2021.h534
PEER-REVIEWED

[4] Evaluation of Concentrations and Health Risk Assessment of Cadmium, Lead, Chromium and Arsenic in
Unknown authors · Peer-reviewed article · 2025 · doi.org/10.4314/jasem.v29i9.58
PEER-REVIEWED

[5] Occurrence of Potentially Toxic Metals Detected in Milk and Dairy Products in Türkiye: An Assessment in Terms of Human Exposure and Health Risks
Basaran B · Foods 2025, 14, 2561 · 2025 · doi.org/10.3390/foods14152561
PEER-REVIEWED

[6] From Farm to Retail: Decoding the Elemental Landscape of Milk and Dairy Products Across Organic and Conventional Production Systems Using ICP-MS
Marcus OI, Tabaran A, Crisan Reget OL, Dan SD, Panait LC, Lacatus CM, et al. · Toxics 2026, 14, 124 · 2026 · doi.org/10.3390/toxics14020124
PEER-REVIEWED

[7] Potential Toxic Elements (PTEs) and the Health Risk Impact of Some Dairy Products Marketed in Nigeria
Nwoke SU, Ekere NR, Abugu HO, Ihedioha JN, Ezike CC, Odum PU, et al. · Eurasian Journal of Analytical Chemistry 2021, 16(2): 01-09 · 2021 · eurasianjournals.com
PEER-REVIEWED

[8] Heavy Metal Contamination in Yogurt from Lebanon: Evaluating Lead (Pb) and Cadmium (Cd) Concentrations Across Multiple Regions
Sarkis S, Kashmar R, Tzenios N, Hoteit M, Tannous T, and Matta J · Toxics · 2025 · doi.org/10.3390/toxics13060499
PEER-REVIEWED

[9] Hazard and Health Risk Assessment of Heavy Metals in Non-Alcoholic Beverage Consumed in Abia State, Nigeria
Ogoko EC, Aletan UI, Osu CI, Kelle HI, Iroegbulem I, Emeziem D, et al. · J. Appl. Sci. Environ. Manage. 28(9): 2575-2583 · 2024 · doi.org/10.4314/jasem.v28i9.1
PEER-REVIEWED

[10] Inorganic Contaminants in Plant-Based Yogurts Commercialized in Brazil
Ana Paula Rebellato, Maria Isabel Andrekowisk Fioravanti, Raquel Fernanda Milani, and Marcelo Antonio Morgano · International Journal of Environmental Research and Public Health · 2023 · doi.org/10.3390/ijerph20043707
PEER-REVIEWED

[11] 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

[12] Monitoring of total mercury level in selected dairy products from the south-east regions of Poland
Pankiewicz U · Ecological Chemistry and Engineering A · 2012 · doi.org/10.2428/ecea.2012.19(01)014014)
PEER-REVIEWED

[13] Health Safety Assessment of Ready-to-Eat Products Consumed by Children Aged 0.5–3 Years on the Polish Market
Zmudzinska A, Puscion-Jakubik A, Bielecka J, Grabia M, Soroczynska J, Mielcarek K, et al. · Nutrients 14(11):2325 · 2022 · doi.org/10.3390/nu14112325
PEER-REVIEWED

[14] Assessment of metal levels in foodstuffs from the Region of Valencia (Spain)
Marín S, Pardo O, Sánchez A, Sanchis Y, Vélez D, Devesa V, et al. · Toxicology Reports 5 (2018) 654-670 · 2018 · doi.org/10.1016/j.toxrep.2018.05.005
PEER-REVIEWED

[15] Total Diet Study of metals and other elements in food
Baxter M and Brereton N · Food and Environment Research Agency report for the UK Food Standards Agency, Fera report 15/06, project FS102081 · 2015 · www.food.gov.uk
GOVERNMENT

[16] The First Hong Kong Total Diet Study: Inorganic Arsenic
Centre for Food Safety FEHD HKSAR · Centre for Food Safety, Food and Environmental Hygiene Department, Government of the Hong Kong Special Administrative Region · 2012 · www.cfs.gov.hk
GOVERNMENT

[17] 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

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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/yogurt#sources.

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