Red wine

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CORRESPONDENCE

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

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Abstract

Red wine in the HMI library has 53 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium and V from 6 sources. WHO GEMS/Food submissions reported lead in red wine as sold from 3,025 results in 3 reporting regions, with subgroup medians from 4.68 to 10 µg/kg. In the US Total Diet Study, red wine as sold had a median lead result of 4.4 µg/kg across 3 composites from 2018-2020.

1 | Red wine overview

Spungen et al. 2024 reported lead at 5.3 µg/kg (mean) in red wine as sold from all samples.[3] Centre for Food Safety FEHD HKSAR 2012 reported inorganic arsenic at 5 µg/kg (mean) in red wine as sold from all samples (4 sampling occasions, composites).[6]

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

2 | What counts as red wine

This page covers red wine as sold (53 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 red wine

No study in the library compared red wine 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 red wine as sold pools 37 subgroup units from 2 sampling families, with a median of between 4.4 and 7.25 µg/kg and a middle half spanning below 4.4 (lower quartile) and between 7.1 and 16.5 µg/kg (upper quartile).[1,2] for cadmium in red wine as sold, the reference median was below 1 µg/kg, with a middle half from below 1 to below 1 µg/kg across 30 units.[1,2,3] for total arsenic in red wine as sold, the reference median was between 4.3 and 6.7 µg/kg, with a middle half from below 5 to between 5.5 and 10 µg/kg across 20 units.[1,2]

Among GEMS/Food reporting regions, red wine as sold had the lowest lead subgroup median in PAHO (7.4 µg/kg) and the highest in WPRO (10 µg/kg); reporting regions are markets, not growing areas.[1]

Targeted red wine as sold samples in WPRO had lead lower at 4.68 µg/kg, against 10 µg/kg for WPRO in the same study.[1]

5 | Processing, cooking and preparation

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

6 | Mitigation for red wine

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 red wine for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 0.5 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 0.5 µg/kg (WHO GEMS/Food) to 30 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 2,250 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 red wine

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

10 | Exposure from red wine

No source in the library converted red wine 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 red wine was decided on its content: 6 occurrence extracted, 6 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 | Red wine FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium and V in red wine, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in red wine as sold from 3,025 results in 3 reporting regions, with subgroup medians from 4.68 to 10 µg/kg.[1]

Among GEMS/Food reporting regions, red wine as sold had the lowest lead subgroup median in PAHO (7.4 µg/kg) and the highest in WPRO (10 µg/kg); reporting regions are markets, not growing areas.[1]

Inorganic arsenic, the more toxic form, was measured in 3 results from 2 sources, far fewer than total arsenic.[1,6] Centre for Food Safety FEHD HKSAR 2012 reported inorganic arsenic at 5 µg/kg (mean) in red wine as sold from all samples (4 sampling occasions, composites).[6]

References

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STATUS AND LICENCE

COMPETING INTERESTS

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.

DATA AVAILABILITY

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

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