Cumin

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HEAVY METAL INDEX · INGREDIENT PROFILE

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Abstract

Cumin in the HMI library has 141 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, Co, Cu, Fe, Mn, Zn, V, Se, Be and Sr from 14 sources. WHO gems/food submissions reported lead in cumin as sold from 308 results in 5 reporting regions, with subgroup medians from 65.8 to 780 µg/kg. For cadmium, GEMS/Food gave subgroup medians from 52 to 80.6 µg/kg from 83 results.

1 | Cumin 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 1,100 µg/kg (Angelon-Gaetz et al. 2018) to 1,400 µg/kg (Mercan 2022).[2,3] For cadmium, 4 studies on a dry-weight basis reported means and medians from 26 µg/kg (Cicero et al. 2022) to 157 µg/kg (Matloob 2016).[4,6]

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

2 | What counts as cumin

This page covers cumin in 2 forms kept separate in every comparison: cumin as sold (119 results) and cumin powder or ground (22 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 cumin

No study in the library compared cumin 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 cumin as sold pools 37 subgroup units from 1 sampling family, with a median of between 120 and 125 µg/kg and a middle half spanning between 60.5 and 72 (lower quartile) and 218 µg/kg (upper quartile).[1] for lead in cumin as sold, the reference median was 120 µg/kg, with a middle half from 68.5 to 220 µg/kg across 12 units.[1] for cadmium in cumin as sold, the reference median was 48.8 µg/kg, with a middle half from 29.1 to 62 µg/kg across 12 units.[1]

Among GEMS/Food reporting regions, cumin as sold had the lowest lead subgroup median in PAHO (65.8 µg/kg) and the highest in PAHO (312 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in EMRO (52 µg/kg) and the highest in PAHO (80.6 µg/kg).[1]

In one study, lead across 13 groups of cumin ranged from 300 µg/kg (Branded category, sample 6) to 2,800 µg/kg (Branded category, sample 2); the lowest is the lowest observed in that study, not an established sourcing preference.[7] In another study, lead across 4 groups of cumin ranged from 168 µg/kg (US baby-food manufacturer B, ingredient lot, test date 11/3/2017) to 645 µg/kg (US baby-food manufacturer B, ingredient lot, test date 5/21/2018); 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 cumin

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 cumin for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1.7 µg/kg (WHO GEMS/Food) to 270 µg/kg (Alam et al. 2022), so a non-detect from a less sensitive method says much less.[1,7] Reporting limits for cadmium ranged from 10 µg/kg (WHO GEMS/Food) to 50 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 25 µg/kg (WHO GEMS/Food) to 500 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 cumin

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

10 | Exposure from cumin

No source in the library converted cumin 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 cumin 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 | Cumin FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, Co, Cu, Fe, Mn, Zn, V, Se, Be and Sr in cumin, most often lead, cadmium and total arsenic.[1,2,3,4] WHO gems/food submissions reported lead in cumin as sold from 308 results in 5 reporting regions, with subgroup medians from 65.8 to 780 µg/kg.[1]

Among GEMS/Food reporting regions, cumin as sold had the lowest lead subgroup median in PAHO (65.8 µg/kg) and the highest in PAHO (312 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in EMRO (52 µg/kg) and the highest in PAHO (80.6 µg/kg).[1]

Inorganic arsenic, the more toxic form, was measured in 2 results from 2 sources, far fewer than total arsenic.[1,10] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 152 µg/kg (mean) in cumin as sold from European dietary-survey occurrence data.[10]

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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/cumin#sources.

PUBLICATION HISTORY

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