Rapeseed Oil

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Abstract

Rapeseed oil in the HMI library has 112 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, Co, Cu, Fe, Mn, Zn, V, As and Ba from 10 sources. WHO GEMS/Food submissions reported lead in rapeseed oil from 411 results in 2 reporting regions, with a subgroup median of 10 µg/kg. For cadmium, GEMS/Food gave subgroup medians below 5 µg/kg, mostly non-detects from 420 results.

1 | Rapeseed oil 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 1.03 µg/kg (S-T et al. 2024) to 61 µg/kg (Matei et al. 2025).[3,4] For cadmium, 2 studies on an as-sold or fresh-weight basis reported means and medians from 5 µg/kg (Matei et al. 2025) to 6.33 µg/kg (Zhu et al. 2011).[3,5] Higher results came from contaminated or exposed settings rather than ordinary supply. Rapeseed oil from pressed raw oil, fraction 1, one production lot had Fe higher at 3,250 µg/kg, against 630 µg/kg for extraction in the same study.[6]

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

2 | What counts as rapeseed oil

This page covers rapeseed oil in 2 forms kept separate in every comparison: rapeseed oil (108 results) and rapeseed oil as sold (4 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 rapeseed oil

The evidence on how metals reach rapeseed oil comes from studies that compared exposed and ordinary settings. Rapeseed oil from pressed raw oil, fraction 1, one production lot had Fe higher at 3,250 µg/kg, against 630 µg/kg for extraction 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 rapeseed oil pools 26 subgroup units from 1 sampling family, with a median of below 16 µg/kg and a middle half spanning below 10 (lower quartile) and below 20 µg/kg (upper quartile).[1] for lead in rapeseed oil as sold, the reference median was below 30 µg/kg, with a middle half from below 10 to below 90 µg/kg across 7 units.[1] for cadmium in rapeseed oil, the reference median was below 1.2 µg/kg, with a middle half from below 1 to below 1.87 µg/kg across 23 units.[1]

5 | Processing, cooking and preparation

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

6 | Mitigation for rapeseed oil

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 rapeseed oil for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 2.5 µg/kg (WHO GEMS/Food) to 100 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 92 µg/kg (Ashraf 2012), so a non-detect from a less sensitive method says much less.[1,2] Reporting limits for total arsenic ranged from 5 µg/kg (WHO GEMS/Food) to 160 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 rapeseed oil

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

10 | Exposure from rapeseed oil

No source in the library converted rapeseed oil 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 rapeseed oil was decided on its content: 10 occurrence extracted, 10 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 | Rapeseed oil FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, Co, Cu, Fe, Mn, Zn, V, As and Ba in rapeseed oil, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in rapeseed oil from 411 results in 2 reporting regions, with a subgroup median of 10 µg/kg.[1]

In the studies available, rapeseed oil from contaminated or exposed settings carried more metal than rapeseed oil from the same study's control.[6] rapeseed oil from extraction had cadmium higher at 90 µg/kg, against 80 µg/kg for pressed bleached oil, fraction 4, one production lot in the same study.[6]

Inorganic arsenic, the more toxic form, was measured in 2 results from 2 sources, far fewer than total arsenic.[1,7] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 8.3 µg/kg (mean) in rapeseed oil from european dietary-survey occurrence data.[7]

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] Levels of Selected Heavy Metals in Varieties of Vegetable Oils Consumed in Kingdom of Saudi Arabia and Health Risk Assessment of Local Population
Ashraf MW · Asian Journal of Chemistry (Uncorrected Proof) · 2012
PEER-REVIEWED

[3] Physicochemical Properties, Trace Elements, and Health Risk Assessment of Edible Vegetable Oils Consumed in Romania
Matei N, Birghila S, Dobrinas S, Soceanu A, Popescu V, and Zaharia (Pricopie) R-G · Applied Sciences · 2025 · doi.org/10.3390/app15116269
PEER-REVIEWED

[4] Determination, distribution, and health risk assessment of 12 heavy metals in various edible oils in Taiwan
Lin S-T, Liao K-W, Xuan T-C, Chiou T-Y, Lin Z-E, and Lee W-J · JSFA Reports · 2024 · doi.org/10.1002/jsf2.186
PEER-REVIEWED

[5] Health risk assessment of eight heavy metals in nine varieties of edible vegetable oils consumed in China
Zhu F, Fan W, Wang X, Qu L, and Yao S · Food and Chemical Toxicology · 2011 · doi.org/10.1016/j.fct.2011.09.019
PEER-REVIEWED

[6] A comparative study of the content of heavy metals in oils:
Unknown authors · Peer-reviewed article · 2016 · doi.org/10.1515/aep-2016-0029
PEER-REVIEWED

[7] 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

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DATA AVAILABILITY

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

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