AACT Herbal Dietary Supplement Section Abstracts

April 2026-June 2026

Surveillance, Product Quality, and Contamination

1. Disproportionality analysis of dietary supplement adverse events in the FDA CAERS database, 2004-2025.

Journal/date: Food Chem Toxicol. 2026 Sep;215:116225. doi: 10.1016/j.fct.2026.116225. Epub 2026 Jun 20.

Authors: Farquhar H

Abstract:

Dietary supplements are consumed by over half of US adults, yet post-market safety surveillance remains limited. We applied four disproportionality methods (PRR, ROR, GPS, BCPNN), CUSUM temporal detection, and demographic stratification to 48,840 dietary supplement adverse event reports from the FDA CAERS database (2004-2025). Analysis was conducted at the product-name level, not the ingredient level, and the signals reported below are product-name-level signals to be interpreted as flags for further investigation rather than confirmed ingredient-specific risks. Of 4779 product-adverse event pairs, 3017 (63.1%) were detected by three or more methods. After variant-name consolidation of the most heavily fragmented products (Section 4.4 and Supplementary Material 4), this resolves to an estimated 1800-2200 distinct product-level signals. Kratom dominated the critical risk tier, with Kratom-Death ranked highest (PRR 19.7, N = 178). Hepatotoxicity signals clustered in herbal/botanical and weight loss products. Herbal/botanical supplements carried the highest serious outcome rate among classifiable products (78.0%; adjusted OR 2.08, 95% CI 1.53-2.84); the 54% "Other"-category share, however, limits the generalisability of category-specific estimates to all supplements within each nominal category. CUSUM detected 451 temporally emerging signals including preliminary hepatic enzyme elevations for AG1 and Nutrafol (2023-2025). Of consensus signals, 97.3% survived false discovery rate correction; 81% of established international supplement safety signals were recovered. These findings support regulatory prioritisation of herbal/botanical and weight loss supplement categories and identify emerging signals warranting continued monitoring.

DOI: 10.1016/j.fct.2026.116225 | *PMID: 42323077*

2. Not so natural: hidden NSAID in traditional medicine causing granulomatous interstitial nephritis.

Journal/date: Clin Kidney J. 2026 Jun 23;19(7):sfag212. doi: 10.1093/ckj/sfag212. eCollection 2026 Jul.

Authors: Le Moal P, Alvarez JC, Duguès P, Batton R, Mussini C, Galichon P

Abstract:

Acute interstitial nephritis (AIN) is a common finding on kidney biopsies indicated for acute kidney injury (AKI). Histologically, it translates into an interstitial inflammatory infiltrate. In less than 1% of biopsy-confirmed nephropathies, this interstitial nephritis presents as granulomas form [1]. AIN can result from multiple causes, including autoimmune diseases, infections, and drug side effects. Here, we report an original case illustrating the importance of a tenacious etiological investigation. A 39-year-old patient using traditional Sri Lankan medicine required intensive care for severe AKI with the need for dialysis, associated with other visceral and skin manifestations. Kidney biopsy revealed AIN with many

eosinophilic neutrophils and perivascular granulomas, which were suspected to be allergic in origin. His recovery with corticosteroid therapy enabled us to stop dialysis and achieve full renal recovery. We decided to analyze these traditional medicines that the patient provided and of unknown composition. To this end, we used high-resolution mass spectrometry, which enabled us to identify many chemicals known in Western societies to be nephrotoxic and which could lead to severe allergies.

DOI: 10.1093/ckj/sfag212 | PMCID: PMC13355527 | PMID: 42436948

3. Assessment of mutagenic potential of puberulic acid contaminated in red yeast rice (beni-koji) health food supplements.

Journal/date: Mutagenesis. 2026 Apr 24;41(3):110-118. doi: 10.1093/mutage/geag005.

Authors: Sugiyama KI, Furuhama A, Horibata K et al

Abstract:

In March 2024, a food poisoning incident in Japan was traced to red yeast rice (beni-koji) supplements contaminated with puberulic acid (PA), a mycotoxin produced by Penicillium adametzioides. Although PA was implicated in renal dysfunction in both humans and rats, its mutagenic potential had not been clarified. Here, we comprehensively assessed the mutagenicity of PA using a tiered approach that combined in silico, in vitro, and in vivo methods. In silico quantitative structure-activity relationship analyses predicted PA to be mutagenic, and in vitro Ames tests confirmed the positive finding. In contrast, in vivo assays, including the transgenic rodent gene mutation assay in mice and the Pig-a assay in rats, demonstrated no induction of mutations in kidney, glandular stomach, and blood cells, even at high exposure levels. Collectively, these findings indicate that PA is mutagenic in vitro bacterial tests, but not in mammalian in vivo systems, suggesting that the overall concern for mutagenicity in humans is low.

DOI: 10.1093/mutage/geag005 | PMCID: PMC13107177 | PMID: 41641978

Kratom, Plant Alkaloids, and Cardiovascular/Withdrawal Toxicity

4. Ventricular Tachycardia Following Kratom Ingestion Requiring Extracorporeal Membrane Oxygenation in a Young Woman: Case Report.

Journal/date: Clin Pract Cases Emerg Med. 2026 May;10(2):204-207. doi: 10.5811/cpcem.51542.

Authors: McLin-Evans M, Tiscareno J, Beneke LL

Abstract: INTRODUCTION: Kratom (Mitragyna speciosa) is an unregulated herbal supplement increasingly associated with severe toxicity. Concentrated liquid formulations pose risks, with emerging reports of seizures, hepatotoxicity, and arrhythmias. CASE REPORT: A previously healthy 24-year-old woman ingested a highly concentrated kratom extract and developed seizure-like activity followed by pulseless monomorphic ventricular tachycardia. She underwent approximately 45 minutes of resuscitation, including multiple defibrillations, dual-sequential shocks, amiodarone, lidocaine, magnesium, calcium, sodium bicarbonate, potassium repletion, epinephrine, and esmolol. Persistent instability prompted consultation with cardiology and cardiothoracic surgery, and she was cannulated for venoarterial extracorporeal membrane oxygenation (ECMO) in the emergency department. Lab studies showed profound hypokalemia, acidosis, and elevated lactate. Urine toxicology confirmed mitragynine. She stabilized on ECMO, was decannulated on hospital day two, extubated on day three, and discharged home neurologically intact on day seven. CONCLUSION: Concentrated kratom extracts

can precipitate life-threatening ventricular arrhythmias in previously healthy individuals. Emergency physicians should consider kratom in unexplained cardiac arrests and recognize the role of advanced support, including ECMO, in refractory toxicologic arrests.

DOI: 10.5811/cpcem.51542 | PMCID: PMC13135438 | PMID: 42377231

5. The Bitter Aftertaste of Kratom: A Toxicologic and Neurologic Challenge.

Journal/date: Cureus. 2026 Jun 30;18(6):e111809. doi: 10.7759/cureus.111809. eCollection 2026 Jun.

Authors: Lal Vallath A(1), Pippari R(2), Yadav R(2), Bass M(3), Deyulis M(1)

Abstract:

Kratom (Mitragyna speciosa) is an increasingly used botanical substance with opioid-like properties. Products containing 7-hydroxymitragynine (7-OH), a potent μ-opioid receptor agonist, have been associated with severe toxicity, though clinical data remain limited. We report the case of a woman with polysubstance use disorder who presented following intentional ingestion of a large quantity of 7-OH. She developed profound central nervous system depression, marked QTc prolongation, and prolonged encephalopathy requiring intensive care admission and airway protection. Her hospital course was complicated by persistent neuropsychiatric symptoms, prompting extensive neurologic and psychiatric evaluation, including electroencephalography and cerebrospinal fluid analysis. Findings were consistent with a multifactorial encephalopathy related to toxic exposure, withdrawal, and underlying psychiatric illness, with possible infectious contribution. She improved with supportive care, cardiac monitoring, antimicrobial therapy, and psychiatric intervention, and was ultimately transferred to inpatient psychiatric care and substance-use rehabilitation. This case highlights the potential for severe and prolonged neurocardiac and neuropsychiatric toxicity following 7-OH ingestion and underscores the importance of clinical awareness of kratom-related complications, particularly in patients with polysubstance use and psychiatric comorbidities.

DOI: 10.7759/cureus.111809 | PMCID: PMC13422049 | PMID: 42534824

6. When "Kava" Isn't Kava: Opioid-like Withdrawal Responsive to Buprenorphine: A Case Study.

Journal/date: J Addict Med. 2026 Jun 29. doi: 10.1097/ADM.0000000000001748. Online ahead of print.

Authors: Malhotra A, McPherson GE, Scott KS, Li L

Abstract:

We report a case of severe opioid-like withdrawal symptoms following cessation of a commercially available beverage marketed as a "kava" product. A 36-year-old White male with opioid use disorder in sustained remission developed rapid tolerance, frequent redosing, nocturnal withdrawal, prominent gastrointestinal and autonomic symptoms, and generalized pruritus after heavy use of a gas-station-sold "kava" shot. Symptoms were refractory to benzodiazepines but improved rapidly with buprenorphine/naloxone; this suggests μ-opioid receptor-mediated dependence. The clinical presentation was inconsistent with kava withdrawal, which is typically mild and anxiety predominant. Review of product labeling indicated the presence of akuamma (Picralima nitida), a botanical containing μ-opioid receptor-active alkaloids; secondary qualitative testing of independently purchased samples of the same product by the UAB toxicology lab confirmed the presence of kratom (Mitragyna speciosa) derivatives and kavalactones. In the context of kratom prohibition in Alabama and overlapping manufacturer product lines, this case highlights the risks of mislabeled or adulterated polyherbal

products and underscores the need for clinicians to consider opioid-mediated mechanisms and symptom-guided treatment when evaluating withdrawal from purported nonopioid supplements.

DOI: 10.1097/ADM.0000000000001748 | PMID: 42372078

7. Successful Rescue of Malignant Cardiac Dysrhythmia and Cardiogenic Shock Induced by Severe Aconitine Poisoning: The Pivotal Role of Early Veno-Arterial Extracorporeal Membrane Oxygenation as a Bridge to Recovery.

Journal/date: J Emerg Med. 2026 Sep;88:22-28. doi: 10.1016/j.jemermed.2026.05.032. Epub 2026 Jun 9.

Authors: Wang YJ, Wang P, Hu RM, Zhang LB, Hou SY, Zhang WZ, Chen YW

Abstract:

BACKGROUND: Aconitine alkaloids, present in herbs like Shengchuanwu and Shengcaowu, are highly cardiotoxic. We describe a rare case of life-threatening aconitine poisoning following the intentional oral ingestion of ``Fufang Jingjie for Fumigation and Washing''-a topical herbal preparation-and highlight the pivotal role of veno-arterial extracorporeal membrane oxygenation (VA-ECMO) as rescue therapy. CASE REPORT: A 65-year-old female presented with cardiogenic shock and refractory ventricular tachycardia after orally ingesting 10 g of the herbal agent. The concentration of aconitine in her serum was critically elevated at 108 ng/mL. Despite initial aggressive management including antidysrhythmic drugs (lidocaine, amiodarone), vasopressors, and hemoperfusion, her hemodynamic status worsened rapidly. As a salvage therapy, VA-ECMO was initiated 6.5 h post-exposure. This intervention promptly stabilized her hemodynamics, and sinus rhythm was restored 6 h later. The patient was weaned from ECMO after 24 h and discharged without sequelae. WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?: Acute aconitine poisoning can result in extremely high serum toxin levels and rapidly progressive, treatment-resistant cardiogenic shock. When conventional therapies fail, early and prompt initiation of VA-ECMO serves as a crucial ``time-buying'' bridge, sustaining cardiopulmonary function and allowing for endogenous toxin clearance, thereby facilitating survival and excellent recovery even in the most severe cases.

DOI: 10.1016/j.jemermed.2026.05.032 | PMID: 42501675

8. Phenethylamines in pre-workout supplements alter arterial pressure, heart rate, and body temperature in rats.

Journal/date: Eur J Pharmacol. 2026 Jun 10;1026:178966. doi: 10.1016/j.ejphar.2026.178966. Epub 2026 May 12.

Authors: Pinckaers NET, Blankesteijn WM, Peeters R, et al

Abstract:

Phenethylamine (PEA) and its analogues are frequently present in pre-workout and weight loss food supplements and share structural similarity with amphetamine and the endogenous catecholamines (nor)adrenaline and dopamine, suggesting potential sympathomimetic activity. Multiple adverse cardiovascular events have been associated with the use of food supplements containing these ingredients, while knowledge of the underlying pharmacology and toxicology of such food supplements and their ingredients remains limited. Therefore, the aim of the current study was to investigate the acute cardiovascular effects of a selection of PEAs in conscious rats. Heart rate (HR), arterial pressure (AP) and body temperature were continuously, and wirelessly, monitored using pressure telemetry in Wistar-Kyoto rats that were intravenously exposed to cumulative doses of PEA and seven commonly

used analogues: BMPEA, halostachine, higenamine, isopropyloctopamine, p-octopamine, p-synephrine and p-tyramine. All PEAs, except PEA itself and BMPEA, significantly altered AP with maximal absolute increases between 65 and 103 mmHg. Maximal absolute increases in HR induced by higenamine and isopropyloctopamine were found to be 110 and 123 beats per minute, respectively. The PEA analogues BMPEA, p-octopamine, halostachine and p-synephrine, instantly lead to reduced body temperatures, ranging from minus 0.5 to minus 1.5 °C. This study demonstrates that several PEAs, exert pronounced and rapid effects on AP, HR and body temperature in rats. The magnitudes of these effects were similar to or even higher than the cardiovascular changes induced by adrenaline, suggesting that combining these substances with physical exercise may amplify sympathetic load and pose a serious health risk, particularly for individuals with underlying cardiovascular vulnerabilities.

DOI: 10.1016/j.ejphar.2026.178966 | PMID: 42128191

9. Potential Cardiovascular Risks of Phenethylamine Analogues in Food Supplements: Evidence from Vasocontraction of Rat Artery Segments.

Journal/date: Cardiovasc Toxicol. 2026 Apr 4;26(4):36. doi: 10.1007/s12012-026-10109-8.

Authors: Pinckaers NET, Blankesteijn W, Leenders P et al

Abstract:

Phenethylamine (PEA) and alkylamine (AA) analogues are frequently present in pre-workout food supplements and share structural similarity with amphetamine and the endogenous catecholamines (nor)adrenaline and dopamine, suggesting potential sympathomimetic activity. The present study investigated the vasoactive properties of PEA and AA analogues in isolated Wistar Kyoto rat mesenteric arteries, renal arteries and aorta. Our findings provide evidence that several analogues induced concentration-dependent contraction of isolated blood vessels, with potency (EC50) values ranging from 0.906 µM to 550 µM. p-Synephrine and p-octopamine were the only two substances that induced contraction of the mesenteric artery segments, whereas 6 out of 12 PEA analogues, including p-synephrine, p-octopamine, halostachine, β-methylphenethylamine, phenethylamine and dimethylphenethylamine, induced contraction of aorta and renal artery segments. These effects were largely attenuated by the α1-adrenergic receptor (ADR) antagonist prazosin, implicating ADRα1 involvement, while partial modulation by the trace amine associated receptor 1. The demonstrated vasocontractility of these compounds highlights the potential influence on the vascular tone and blood pressure regulation and the deleterious consequences for cardiovascular health in humans. These risks may be particularly pronounced in exercising individuals that have an already activated sympathetic nervous system or those with underlying cardiovascular disease.

DOI: 10.1007/s12012-026-10109-8 | PMCID: PMC13050348 | PMID: 41934574

Hepatotoxicity and Liver Injury

10. Rarely reported cases of hepatotoxicity associated with turmeric- and curcuminoid-containing dietary supplements: a comprehensive review by USP.

Journal/date: Pharm Biol. 2026 Dec;64(1):866-901. doi: 10.1080/13880209.2026.2693375. Epub 2026 Jun 27.

Authors: Akhtar N, Barnes J, Gardiner P, Gurley BJ et al

Abstract:

BACKGROUND: The United States Pharmacopeia (USP) Dietary Supplement Admission Evaluation and Labeling Expert Committee (DSAEL EC) routinely monitors safety-related literature for dietary

ingredients covered by USP monographs. Following multiple reports of hepatotoxicity associated with turmeric- or curcuminoid-containing products, the DSAEL EC conducted a comprehensive evaluation. OBJECTIVE: To assess the safety of turmeric and curcuminoids and determine whether cautionary labeling should be added to the USP monographs for these ingredients. METHODS: Following USP Guidelines, the DSAEL EC reviewed safety and toxicological information. RESULTS AND DISCUSSION: Hepatotoxicity has been observed with high-dose turmeric rhizome powder or extract in a few rodent toxicology studies. Numerous clinical trials involving turmeric- or curcuminoid-containing supplements have not reported organ toxicity or serious adverse events. Published case reports of clinically apparent liver injury often involve concomitant medications or supplements. Reported hepatotoxicity typically occurs after 1 to 4 months of use and generally resolves upon discontinuation; cases of acute liver failure have been reported albeit rarely. Proposed mechanisms include idiosyncratic, immune-mediated injury, and emerging evidence suggests possible genetic susceptibility. CONCLUSIONS: The USP DSAEL EC recommends adding the following cautionary statement to its turmeric and curcuminoids monographs: Liver problems have been reported very rarely in people taking supplements containing turmeric and/or curcuminoids. Consult your health-care practitioner before using this product if you have a history of liver problems. Stop using this product if you develop symptoms such as abdominal pain, dark urine, or jaundice (yellowing of the skin or eyes), and seek medical advice.

DOI: 10.1080/13880209.2026.2693375 | PMCID: PMC13312837 | PMID: 42364655

11. Ashwagandha (Withania somnifera)-Associated Liver Injury: A Scoping Review of Clinical Characteristics and Safety Considerations.

Journal/date: Cureus. 2026 May 27;18(5):e109764. doi: 10.7759/cureus.109764. eCollection 2026 May.

Authors: McIntyre D, Nguyen P, Kim Y, Meyer B, Salloum M

Abstract:

BACKGROUND: Ashwagandha (Withania somnifera) is a widely used herbal supplement marketed for stress relief and wellness. Although generally perceived as safe, accumulating reports of ashwagandha-associated liver injury have raised concern for hepatotoxic potential. MATERIALS AND METHODS: We conducted a global scoping review of the peer-reviewed clinical literature to systematically map and synthesize reports of ashwagandha-attributed liver injury. PubMed, Ovid MEDLINE(R) ALL, and MEDLINE Ultimate were searched through December 2025, with supplementary reference list screening. Eligible studies included peer-reviewed case reports and case series describing liver injury associated with single-ingredient ashwagandha products or multi-ingredient formulations containing ashwagandha. Non-peer-reviewed sources and non-English publications were excluded. RESULTS: Thirteen publications met the inclusion criteria, encompassing 25 patients across multiple global regions. Liver injury typically develops after weeks of use. Cholestatic or mixed biochemical phenotypes predominated, commonly presenting with jaundice and pruritus; purely hepatocellular injury was less frequent. When applied, causality assessments generally classified ashwagandha as a probable or likely cause. Most patients recovered following discontinuation and supportive care, usually over weeks to months. Severe outcomes included one case of acute liver failure requiring transplantation and three deaths among patients with pre-existing cirrhosis who developed decompensation. CONCLUSIONS: The published literature supports the existence of a reproducible clinical syndrome of idiosyncratic, frequently cholestatic, ashwagandha-associated liver injury. Routine assessment of herbal supplement exposure is warranted in unexplained hepatitis or cholestasis, and patients with advanced chronic liver disease should be counseled to avoid

ashwagandha. These findings suggest improved supplement traceability and strengthened pharmacovigilance to mitigate herbal-induced liver injury.

DOI: 10.7759/cureus.109764 | *PMCID: PMC13309169* | *PMID: 42367407*

12. Methylprednisolone for Swietenia macrophylla seeds-induced liver injury: A report of two cases.

Journal/date: Hepatol Forum. 2026 Apr 15;7(2):163-166. doi: 10.14744/hf.2025.18282. eCollection 2026.

Authors: Huang ZY, Zhang XJ, Tong XC, Xue Y

Abstract:

Swietenia macrophylla seeds (SMS), as a traditional medicine, are widely used against diabetes, hypertension, and malaria. To date, knowledge about the safety of human consumption remains limited. We herein reported two cases of drug-induced liver injury (DILI) caused by SMS. Both patients had positive antinuclear antibodies. Hepatotoxicity of SMS is characterized by elevated alanine aminotransferase and obvious autoimmune-like hepatitis. Furthermore, the 2nd biopsy at the 3rd year of methylprednisolone treatment showed normal liver tissue, and then methylprednisolone was withdrawn. No recurrence occurred during one-year follow-up after methylprednisolone withdrawal. SMS may increase the risk of liver damage for patients with potential immune disorders, and patients with SMS-related DILI may benefit from methylprednisolone.

DOI: 10.14744/hf.2025.18282 | *PMCID: PMC13442719* | *PMID: 42564421*

13. Pyrrolizidine Alkaloid-Induced Hepatotoxicity: A Narrative Review on Molecular Mechanisms and Detoxification Strategies.

Journal/date: Antioxidants (Basel). 2026 May 16;15(5):635. doi: 10.3390/antiox15050635.

Authors: Fang Y, Zhang X, Dai C, Hao Z

Abstract:

Pyrrolizidine alkaloids (PAs), a category of naturally occurring secondary metabolites, are commonly found in various botanical sources. Accumulating evidence indicates that PAs and their biologically active metabolites can interact with cellular components and trigger a variety of toxic effects in animals and humans. Notably, PAs exhibit significant hepatotoxic potential via nutritional supplements, environmental dissemination, food chain contamination, and broader ecological pollution. In this review, we summarize PA-induced hepatotoxicity in humans and animals and the underlying molecular mechanisms. It involves oxidative stress, mitochondrial dysfunction, apoptosis, ER stress, inflammation, autophagy, and ferroptosis. Several key signaling pathways, such as nuclear factor-erythroid 2 related factor 2 (Nrf2), mitogen-activated protein kinase (MAPK), protein kinase RNA-like endoplasmic reticulum kinase (PERK), toll like receptor 4 (TLR4), nuclear factor kappa-B (NF-κB), transforming growth factor beta (TGF-β), p53, farnesoid X receptor (FXR), and pregnane X receptor (PXR), are also implicated. Furthermore, this review discusses diagnostic approaches, metabolic activation pathways, and detoxification strategies targeting PA-induced liver injury. Collectively, this review provides a comprehensive understanding of the molecular basis of PA hepatotoxicity and underscores the urgent need for improved risk assessment, early diagnosis, and effective detoxification interventions to mitigate PA-related liver diseases in humans and animals.

DOI: 10.3390/antiox15050635 | *PMCID: PMC13203324* | *PMID: 42193256*

Herb-Drug Interactions, Bleeding, and Nutritional Safety Signals

14. Possible Interaction Between Hibiscus and Warfarin Resulting in Severe International Normalized Ratio Elevation: A Case Report.

Journal/date: Cureus. 2026 May 28;18(5):e109805. doi: 10.7759/cureus.109805. eCollection 2026 May.

Authors: Bani Yaseen K, Al-Radaideh M, Almadaineh M, Haddad AW(1)

Abstract:

Warfarin has a narrow therapeutic window and is susceptible to interactions with medications, foods, and herbal products. We describe the case of a 59-year-old woman with a mechanical mitral valve receiving chronic warfarin therapy who developed a markedly elevated international normalized ratio (INR) after recently consuming hibiscus tea. No other clear precipitating factor for the supratherapeutic INR was identified. Warfarin was temporarily withheld, hibiscus intake was discontinued, and oral vitamin K was administered with subsequent normalization of the INR. This case highlights the importance of obtaining a thorough dietary and herbal history in patients receiving warfarin therapy and raises awareness of a possible interaction between warfarin and hibiscus products.

DOI: 10.7759/cureus.109805 | *PMCID: PMC13310002* | *PMID: 42367450*

15. Overdiagnosed and oversupplemented: the iatrogenic rise of vitamin D toxicity.

Journal/date: Eur J Endocrinol. 2026 Jun 1;194(6):K21-K25. doi: 10.1093/ejendo/lvag088.

Authors: Fabregat-Bolufer AB, Martín-Alonso C, Escolà-Rodríguez A, Morales-Ruiz M

Abstract:

Spanish pharmacovigilance alerts have highlighted vitamin D overdosing. We retrospectively analysed adult serum 25(OH)D results from a Barcelona tertiary hospital (2020-2025), measured using a VDSCP-certified immunoassay. For results >100 ng/mL (250 nmol/L), concomitant calcium, phosphorus, albumin, alkaline phosphatase and parathyroid hormone were retrieved. Hypercalcemia was defined as albumin-corrected calcium >10.5 mg/dL. Among 185 604 results, annual testing increased by 54.1% and median 25(OH)D rose from 25.3 to 28.6 ng/mL. Very high results more than doubled (31 [0.14%] to 108 [0.31%]; n = 393). Calcium was available in 324/393 results, and hypercalcemia occurred in 14/324 (4.3%). Calcifediol was documented in 183/201 (91.0%) hypervitaminosis D patients with available supplementation data and in 12/14 (85.7%) hypercalcemic cases, often in short-interval dosing regimens. Rapid test growth paralleled a rightward shift and expanding high-concentration tail, supporting evidence-based requesting, clearer intermittent-dosing and supplementation instructions, and selective serum calcium surveillance when 25(OH)D is greatly elevated.

DOI: 10.1093/ejendo/lvag088 | *PMID: 42145024*

16. Third-trimester polyunsaturated fatty acid supplementation and increased blood loss at vaginal delivery: A prospective birth cohort study.

Journal/date: Eur J Obstet Gynecol Reprod Biol. 2026 Aug;324:115266. doi: 10.1016/j.ejogrb.2026.115266. Epub 2026 Jun 21.

Authors: Pasanen J, Nuttunen P, Hakkarainen J, Keski-Nisula L, Hantunen S

Abstract:

The association between polyunsaturated fatty acid (PUFA) supplementation, particularly omega-3 and omega-6 fatty acids, during the third trimester of pregnancy and obstetric outcomes is not well established. This prospective birth cohort study included 12,050 women who delivered at Kuopio University Hospital (KUH) between 2013 and 2024, and completed a questionnaire about supplementation after 28 weeks of gestation. Data were obtained from the KUH Birth Register and the questionnaire. The primary outcomes were maternal blood loss and the incidence of postpartum haemorrhage (PPH), while secondary outcomes included pregnancy complications and neonatal well-being. Approximately 10 % of women reported daily PUFA supplementation during the third trimester. Regular daily use was associated with significantly greater blood loss in vaginal deliveries, although the increase was modest. A trend towards increased PPH was observed among PUFA users, whereas no similar association was found among women undergoing caesarean delivery. PUFA users tended to have a lower prevalence of pre-eclampsia, and their newborns had fewer low Apgar scores at 1 and 5 min, whereas no significant differences in umbilical artery pH or base excess values were observed between PUFA users and non-users. Discontinuing PUFA supplementation approximately 1 month before the expected date of delivery or elective caesarean delivery may be reasonable. However, the potential beneficial effects of PUFA supplementation on the development of pre-eclampsia warrant further investigation in future studies.

DOI: 10.1016/j.ejogrb.2026.115266 | PMID: 42341514

Probiotics, Neurotoxicity, and Metal-Associated Toxicity

17. A double-edged sword of probiotic: Alkalihalobacillus clausii bacteremia in a child.

Journal/date: Indian J Med Microbiol. 2026 May-Jun;61:101117. doi: 10.1016/j.ijmmb.2026.101117. Epub 2026 Apr 15.

Authors: Gopakumar M, Sebastian A, Aroor S, Eshwara VK

Abstract:

Invasive infections by the probiotic bacteria are a rare occurrence. We report a case of bacteremia by Alkalihalobacillus clausii in a 5-month-old child with leukocyte adhesion defect. The child had developed recurrent infections, and failure to thrive, requiring multiple hospitalizations. He was being treated with probiotics for diarrheal illness and subsequently developed severe respiratory distress, elevated inflammatory markers and marked leukocytosis. Blood culture grew a Gram-positive bacillus identified as Alkalihalobacillus clausii. Child showed symptomatic improvement after antimicrobial therapy. This case highlights cautious use of probiotics in an immunocompromised host, and early detection of probiotic organisms as pathogens in such cases.

DOI: 10.1016/j.ijmmb.2026.101117 | PMID: 41990996

18. Acute neurotoxicity in a child following multi-component medicinal fungi supplementation: a case report.

Journal/date: BMC Complement Med Ther. 2026 Apr 30;26(1):214. doi: 10.1186/s12906-026-05367-6.

Authors: Melek Arsoy HE, Özdemir Ö

Abstract: BACKGROUND: Medicinal fungi supplements have gained widespread recognition, increasing off-label use in pediatric populations. However, their safety profile remains inadequately characterized, and the potential for toxic effects, including neurotoxicity, is underrecognized in clinical practice. Here we report a pediatric case of suspected multi-component medicinal fungi supplement-related neurotoxicity, in which the parents were aware that the ingredient was a mushroom for their son's alternative treatment. CASE PRESENTATION: We report acute neurotoxicity in a 9-year-old boy with prematurity, cerebral palsy, and well-controlled epilepsy presenting with generalized myoclonic seizures, hallucinations, and altered mental status following ingestion of multiple medicinal fungi supplements, including Ganoderma lucidum and Cordyceps sinensis. Comprehensive investigations, including laboratory studies and neuroimaging, excluded infectious, structural, and metabolic etiologies. The temporal relationship between dose escalation of the supplement and symptom onset, combined with resolution upon discontinuation, suggested a supplement-related mechanism. CONCLUSIONS: This case highlights the potential neurotoxic effects of mushroom supplements containing both Ganoderma lucidum (reishi mushroom) and Cordyceps sinensis in children with underlying neurological disorders. The temporal association between dose escalation and symptom onset, with complete symptom resolution upon discontinuation, suggests a supplement-related mechanism. Given the increasing use of medicinal fungi in complementary medicine, greater clinical vigilance and public awareness of their potential risks are essential.

DOI: 10.1186/s12906-026-05367-6 | PMCID: PMC13281238 | PMID: 42063068

19. Occult cirrhosis presenting as progressive tremor: acquired hepatocerebral degeneration induced by traditional Chinese medicine and natural health products, aggravated by manganese supplements: A case report.

Journal/date: Medicine (Baltimore). 2026 May 8;105(19):e48686. doi: 0.1097/MD.0000000000048686.

Authors: Liu C, Wang R, Li X, Ni W, Liu G, Dong Y

Abstract: RATIONALE: Acquired hepatocerebral degeneration (AHD) is a rare neurological complication of chronic liver disease or portosystemic shunting, typically characterized by extrapyramidal symptoms and manganese accumulation in the basal ganglia. Its diagnosis is particularly challenging in patients with occult cirrhosis and complex exposure histories, especially when traditional Chinese medicines (TCM) and natural health products (NHPs) contribute to hepatotoxicity. PATIENT CONCERNS: A 66-year-old woman presented with a 2-year history of progressive postural and intention tremor, with marked worsening over the preceding 2 months, interfering with daily activities. DIAGNOSES: Laboratory tests indicated hepatic dysfunction and cirrhosis, while neuroimaging revealed bilateral T1 hyperintensity in the basal ganglia. Extensive evaluation excluded viral hepatitis, alcohol-related liver disease, autoimmune liver disease, Wilson disease, and occupational toxic exposure. Whole-blood manganese was markedly elevated. Detailed history-taking revealed long-term use of hepatotoxic TCM (notably Psoralea corylifolia) and manganese-containing supplements. A diagnosis of manganese-related AHD secondary to cirrhosis, likely induced by chronic TCM/NHPs exposure, was established. INTERVENTIONS: Management included discontinuation of hepatotoxic agents and manganese-rich supplements, implementation of a low-manganese diet, hepatoprotective therapy, ammonia-lowering treatment, symptomatic control of

tremor (clonazepam and trihexyphenidyl), and chelation therapy with dimercaptosuccinic acid. OUTCOMES: At follow-up, liver function and ammonia levels improved, whole-blood manganese levels decreased but remained elevated, and tremor severity was significantly reduced with corresponding functional improvement. LESSONS: This case highlights that AHD may arise in the setting of occult cirrhosis related to long-term TCM/NHPs use, with additional manganese exposure acting as a precipitating factor. Clinicians should routinely screen for liver dysfunction in patients with unexplained extrapyramidal symptoms, incorporate manganese testing and basal ganglia magnetic resonance imaging into diagnostic evaluation, and systematically inquire about TCM/NHPs use. Multidisciplinary management is crucial, particularly in regions with widespread use of TCM and NHPs.

DOI: 10.1097/MD.0000000000048686 | *PMCID: PMC13166699* | *PMID: 42116385*