Supplementary Tables
List of References for information is Supplemantary Tables A - H

Supplementary Table A. Food Additives. Synthetic and natural colorants which may have potentially harmful side-effects.

Synthetic Colorants	Food Additive	Not Approved for use in the following countries	Potential links to the following harms
E102	Tartrazine / FD&C Yellow 5	Norway, Austria	Allergies, hyperactivity, thought to be contaminated with benzidine or other carcinogens, may be detrimental to the development of tumors and other cancer, may be linked to white blood cell damage
E104	Quinoline Yellow / FD&C Yellow 10	Norway, USA, Austria and Japan	Hyperacitivty and behavioral effects in children
E106	Riboflavin-5-sodium phosphate	None	Eye health, headaches
E107	Yellow 2G	Norway, USA, Japan, Sweeden, Switzerland	Allergic reactions, intolerant among asthmatics and those with an aspirin intolerance
E110	Sunset Yellow FCF / FD&C Yellow 6	Norway, Sweden, Austria, Switzerland, Japan and USA	Allergic and intolerant reactions, nasal congestion, hives, abdominal pain, nausea, and GI complaints, migranes, hormonal changes, kidney tumors, swelling of skin, hyperactivity in children
E122	Azorubine / Food Red 3	USA and Sweden	Rashes (hives), sensitivity by those with asthma, allergic reactions such as swelling of the skin. May cause hyperactivity and water retention
E123	Amaranth	Norway and USA	Suspected carcinogen which is linked to cancer
E124	Ponceau 4R	Norway and USA	Links to cancer and hyperactivity in children
E127	Erythrosine / FD&C Red 3	EU and UK (restricted use, permitted in cocktail and candied cherries)	Links to thyroid toxicity, possible links to inattention and hyperactivity in children
E128	Red 2G	Norway, USA, Japan, Sweeden, Switzerland, Austria and Australia	May interfere with blood haemoglobin and it is not recommended for consumption in children
E129	Allura Red AC / FD&C Red 40	Denmark, Belgium, France, Germany, Switzerland, Sweeden and Austria	Linked to allergies e.g., skin irritation, sneezing, watery eyes, facial swelling, migraines and behaviour symptoms such as aggression and ADHD-type symptoms in children
E131	Patent Blue V	Norway, Australia and the USA	It is associated with allergic reactions ranging from mild urticarial rash (grade 1) to severe anaphylaxis
E133	Brilliant Blue FCF / FD&C Blue 1	Austria, Belgium, Denmark, France, Germany, Greece, Italy, Norway, Spain, Sweden and Switzerland.	Linked to asthma, hyperactivity in children, tumors and cancer
E142	Green S	Canada, United States, Japan, and Norway	Allergic reactions which can be severe when directly exposed to the skin, hyperactivity in children, tumors, GI complaints including diarrhea, nausea, vomiting and bloating
E143	Fast Green FCF / FD&C Green 3	EU	Potential tumorigenic effects in experimental animals, as well as mutagenic effects in both experimental animals and humans. It has associated risks in terms of irritation to the eyes, skin, digestive tract, and respiratory tract in its undiluted form
E151	Brilliant Black BN	United States, Switzerland and Japan	Allergies, intensified asthma, hyperactivity and ADHD in children, digestive problems, cancer
E154	Brown FK	EU, Australia, Austria, Canada, Finland, Ireland, Japan, Norway, Sweden and USA	Exacerbates asthma especially in combination with benzoates. Linked to hyperactivity in children
E155	Brown HAT	Australia, Austria, Belgium, Denmark, France, Germany, Norway, Sweden, Switzerland and USA	Allergic reactions especially in asthmatics and those sensitive to aspirin, may cause skin irritations
E180	Lithol Rubine BK	Australia	Not recommended for people who have an intolerance to salicylates. May worsen asthma and yield negative effects to those who suffer from rhinitis or the skin disease urticaria. Linked to hyperactivity in children
Natural Colorants			
E150a-d	Caramel	None	May contain potentially carcinogenic residues when processed with amonia-based colorants. The European Food Safety Authority (EFSA) has concluded that caramel colours are not carcinogenic or genotoxic
E153	Carbon	USA	Suspected as a carcinogenic agent. Linked to otential side effects including constipation, and in more serious, but rare cases, it may cause slowing or even blockage of the intestinal tract and dehydration
E161a	Flavoxanthin	USA and EU	Investigations of the safety of fucoxanthin consumption in humans is lacking
E161d	Rubixanthin	USA and EU	Less than 5 safety studies in humans
E161e	Violaxanthin	USA and EU	None known. Safety studies in humans are lacking
E161f	Rhodoxanthin	USA and EU	None known. Safety studies in humans are lacking
E161g	Canthaxanthin	Australia and New Zealand	May cause diarrhea, nausea, stomach cramps, dry and itchy skin, hives, orange or red body secretions, and other side effects. Safety studies in humans are lacking
E171	Titanium dioxide	EU	Potential genotoxicity links
E172	Iron oxides	Germany	Possible kidney damage. Suspected neurotoxin. Blindness in dog studies.
E173	Aluminum	None	Large amounts or prolonged use are linked in experimental animal studies to skeletal deformations , Alzheimer's Disease and osteoporosis in animals
E174	Silver	Australia	Regular consumption may be linked to kidney damage and a blue-grey discoloration of the eyes, nose and nasal septum, throat and skin

Supplementary Table A References. Food Additives. Synthetic and natural colorants which may have potentially harmful side-effects.

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Supplementary Table B. Food Additives. Synthetic and natural preservatives linked to potential harms

Synthetic Preservatives	Food Additive	Not Approved for use in the following countries	Potential links to the following harms
E201	Sodium sorbate	EU	Possible genotoxic effects
E203	Calcium sorbate	EU	Possible genotoxic effects
E211	Sodium benzoate	None	Inflammation, the development of ADHD related symptoms in children and college aged students, appetite control increasing risk for obesity, oxidative stress and allergies
E212	Potassium benzoate	None	Hives, chronic stuff nose and other allergic reactions, ADHD-related symptoms and hyperactivity in children
E214	Ethyl 4-hydroxybenzoate	France, Australia	Allergic skin reactions, not recommended for consumption by children
E215	Ethyl 4-hydroxybenzoate sodium salt	Australia	Thought to present with the same possible side effects of E214
E216	Propyl 4-hydroxybenzoate	EU, Australia	Possible allergen, not recommended for consumption by children
E217	Sodium salt of E216	Australia	Linked to possible eye damage, diarrhea, skin rash, numb mouth, intestinal cramping, throat irritation, upset stomach, headache, nausea, vomiting and rash
E225	Potassium sulfite	EU, USA	May cause allergic reactions in some sensitive persons and those intolerant to sulphites. Most studies report a prevalence of sulphite sensitivity of 3-10% among asthmatic subjects
E227	Calcium hydrogen sulphite	Australia	Should be avoided by individuals who are intolerant to sulphites. May cause severe allergic reactions
E230	Biphenyl	EU, Australia	Considered to be mildly toxic. May cause liver, central and peripheral nerve damage in excess amounts in some people. Other reported side effects include headaches and skin disorders, and it is classified as an irritant.
E231	2-hydroxybiphenyl	EU, Australia	Linked to nausea, vomiting and irritation to eyes and nose
E232	Sodium biphenyl-2-yl oxide	Australia and New Zealand	May cause nausea, vomiting and irritation to eyes and nose. Should be avoided by asthmatics or those sensitive to aspirin
E233	2-(Thiazol-4-yl)benzimidazole	EU, Australia and New Zealand	Considered likely to be carcinogenic at doses high enough to cause disturbance of the thyroid hormone balance. May cause nausea, vomiting, vertigo, diarrhoea
E236	Formic acid	EU, Australia and New Zealand	Considered to have low toxicity. May provoke the occurrence of allergic reactions and in high amounts may cause serious disorders of the gastrointestinal tract. Chronic exposure may cause kidney damage and allergic skin reactions
E237	Sodium formate	EU	May cause skin, eye and respiratory irritation
E238	Calcium formate	EU, Australia and New Zealand	Eye irritant, high levels linked to severe gastrointestinal lesions, powder inhalation considered potentially dangerous
E239	Hexamine	US, Russia, Australia or New Zealand	May cause respiratory problems such as chest tightness, coughing, wheezing and shortness of breath. May cause skin allergies such as itching or a rash. Not recommended for the consumption of children
E240	Formaldehyde	Restricted in several countries including EU, declared a "toxic substance" by Canada Environmental Protection Act	Possible carcinogenic to humans, considered an indoor air pollutant. When ingested may leads to intoxication, pale skin, headaches, weakness, shortness of breath, burning sensation in the throat, difficulty breathing and can trigger or aggravate asthma related symptoms. Eye and mucous membrane irritant. In rare cases is linked to leukemia, and nasal sinus cancer
E249	Potassium nitrite	None found	May affect breathing, may cause sneezing and coughing as well as irritate the throat and nose. High levels may impact the ability of the blood to carry oxygen leading to fatigue, headache, dizziness and a blue colour to the lips . Linked to behavioral problems. Potential carcinogen and prohibited for infants and young children.
E250	Sodium nitrite	Norway, Sweden, Canada and Germany	Associated with increased risk of heart disease, may cause arteries to harden and narrow. May also cause methemoglobinemia (a condition whereby haemoglobin loses its ability to carry oxygen) . Possible increased risk of pancreatic cancer
E924	Potassium bromate	EU, Argentina, Brazil, Canada	Possibly carcinogenic to humans
Natural Preservatives			
E284	Boric acid	China, Australia, New Zealand and Canada. Permitted to be used in caviar in the EU	Animal studies have indicated that excessive ingestion of boric acid over a prolonged period may cause adverse reproductive and developmental effects
E285	Sodium tetraborate (Borax)	EU, USA, UK	Considered harmful if swallowed and should be kept away from children. Skin irritant. Linked to respiratory problems, effects to male reproduction system, may cause vomiting, nausea, diarrhea, headaches, lightheadedness and weakness

Supplementary Table B References. Food Additives. Synthetic and natural preservatives linked to potential harms

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Supplementary Table C. Food Additives. Synthetic and natural antioxidants linked to potential harms

Synthetic Anti-Oxidants, Stabilizers & Emulsifiers	Food Additive	Not Approved for use in the following countries	Potential links to the following harms
E310	Propl gallate	None found	Not recommended for use in children. Derived by gallic acid which may be linked to eczema, stomach complaints, hyperactivity and skin sensitivity. May act as an estrogen antagonist.
E312	Dodecyl gallate	Philippines	Skin contact may cause rashes, burning, irritation and redness. Should be avoided by asthamatics, those senstive to aspirin. Gallates are not permitted in foods for infants and small children because of their potential tendency to cause the blood disorder, methemoglobinemia
E320	Butylated hydroxyanisole (BHA)	Japan, Europe, Canada, Australia, and New Zealand. The state of California list BHA as a carcinogen	May promote tumor growth and impair blood clotting. The National Institutes of Health (NIH) report that BHA is reasonably anticipated to be carcinogenic to humans based on experimental animal studies
E321	Butylated hydroxytoluene (BHT)	Australia, Canada, New Zealand, Japan. The UK have banned the use of BHA in infant food	Concerns have been raised by WHO about its use for human consumption. As above, in high quantities may impair blood clotting and promote tumor growth.
E370	1,4-Heptonolactone	Australia and New Zealand	May cause allergies and adverse reactions
E381	Ammonium ferric citrate	EU	May irritate the skin and eyes and cause respiratory problems in some people
E388	Thiodipropionic acid	EU, Australia and New Zealand	Potential to cause eye damage, skin irritation, harmful to aquatic life
Natural Anti-Oxidants, Stabilizers, and Emulsifiers			
E426	Soybean hemicellulose	Australia and New Zealand. The FDA has issued warnings about certain confectionary products (jelly type sweets) containing soybean hemicellulose	Contains potentially allergenic proteins. Risk of choking in infants, children and the elderly in specific jelly-like sweets containing soybean hemicellulose

Supplementary Table C References. Food Additives. Synthetic and natural antioxidants linked to potential harms

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Supplementary Table D. Food Additives. Synthetic and natural thickening agents and emulsifiers linked to potential harms

Synthetic Thickening Agents and Emulsifiers	Food Additive	Not Approved for use in the following countries	Potential links to the following harms
E432	Polyoxyethylene-20-sorbitan monolaurate	Australia in dairy products	The acute toxicity is considered very low. People intolerant of propylene glycol should also avoid the group of 430-E436
E434	Polyoxyethylene-20-sorbitan monopalmitate	Australia and New Zealand	Public health concerns regarding two carcinogens: ethylene oxide, 1,4-dioxane as well as potential for blood brain barrier disruption, and some allergic symptoms
E459	Beta-cyclodextrin	Australia and New Zealand	May cause respiratory tract irritation. May be harmful to the skin if absorbed. May be an irritant to the eyes.
E469	Enzymatically hydrolysed carboxy methyl cellulose	Australia and New Zealand	Case report data of severe allergic reactions (although considered uncommon), may alter gut microbiota, may trigger inflammatory bowel disease, may cause inflmaation of the gut. On-going research
E474	Sucroglycerides	Australia	Can be derived from both plant and animal fat, Should be avoided by vegans. May be linked to food intolerances
E493	Sorbitan monolaurate	Australia and New Zealand	Sorbitol is associated with gastrointestinal complaints including gas and diarrhoea. Not permitted in infants and young children. May be an irritant to the skin and eyes
E494	Sorbitan monooleate	Australia and New Zealand	May be an irritant to the skin and eyes
E495	Sorbitan monopalmitate	Australia and New Zealand	Possible mild irritant if in direct contat with skin
Natural Thickening Agents and Emulsifiers			
E303	Potassium ascorbate	UK, USA and EU	May cause allergic skin and eye reactions in some people although carries a low risk. Evaluation of potential harms and safety currently incomplete
E350i	Sodium hydrogen DL malate	EU, Australia and New Zealand	Malic acid and its salts are considered as strongly irritant to the skin and mucosa and as a particular risk to the eyes.
E350ii	Sodium DL malate	Australia and New Zealand	Excessive consumption may cause irritation of the mouth
E356	Sodium adipate	Australia and New Zealand	May cause eye irritation, may cause respiratory irritation. Considered harmful to aquatic life
E387	Oxystearin	Australia and New Zealand	Prepared from both plant and animal origin. Should be avoided by vegans

Supplementary Table D References. Food Additives. Synthetic and natural thickening agents and emulsifiers linked to potential harms

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2. (Pillai, Hothi et al. 2014)
3. Science direct link: https://www.sciencedirect.com/topics/medicine-and-dentistry/propylene-glycol
4. European Medicines Agency online article: https://www.ema.europa.eu/en/documents/report/propylene-glycol-used-excipient-report-published-support-questions-answers-propylene-glycol-used_en.pdf
5. (Fowles, Banton et al. 2013)
6. (Cawley 2001)
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8. (Gould and Scott 2005)
9. (Juśkiewicz and Zduńczyk 2004)
10. (Miclotte, De Paepe et al. 2020)
11. (Naimi, Viennois et al. 2021)
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13. (Holder, Peters et al. 2019)
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17. https://www.ewg.org/skindeep/ingredients/705225-potassium_sorbate
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Supplementary Table E. Food Additives. Synthetic sweeteners and natural flavor enhancers linked to potential harms

Natural Flavor Enhancers	Food Additive	Not Approved for use in the following countries	Potential links to the following harms
E626	Guanylic acid (and its salts which include sodium guanylate (E627), di-potassium guanylate (E628) and calcium guanylate (E629)	Australia and New Zealand	Should be avoided by those suffering with asthma or gout. Frequently used in combination with MSG. GMO
E627	Sodium guanylate	Australia and New Zealand	It is not permitted for use in babies under 12 weeks of age. Guanylic acid and guanylate should be avoided by asthma sufferers and those with gout. As a food additive, guanylic acid produced by sardines would not be suitable for vegans or vegetarians
E628	Di-potassium guanylate	Australia and New Zealand	As above
E629	Calcium guanylate	Australia and New Zealand	As above
E630	Inosinic acid	Australia and New Zealand	Asthmatic's and those with gout should avoid the consumption of inosinates. They should not be in included in products for babies under 12 weeks of age
E634	Calcium ribonucleotides	Australia and New Zealand	Guanylates and inosinates should not be used in products for babies under 12 weeks of age
Synthetic Sweeteners	**Food Additive**		
E952	Cyclamates	USA	Has been banned for human consumption since 1970 by the U.S. Food and Drug Administration due health concerns ans potential links to cancer

Supplmentary Table E References. Food Additives. Synthetic sweeteners and natural flavor enhancers linked to potential harms

1. (Kallscheuer 2018)
2. (Baines and Brown 2016) - Science Direct: https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/guanosine-monophosphate
3. (Kurihara 2015)
4. (Gregson and Simmonds 1971)
5. (Maiuolo, Oppedisano et al. 2016)
6. (Mahbub, Yamaguchi et al. 2017)
7. (1999)(1999). "Cyclamates." IARC Monogr Eval Carcinog Risks Hum **73**: 195-222.

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Supplementary Table F. Criteria to escape Tier III

Criterion	Comment
No added trans-fats or artificially hydrogenated or partially hydrogenated vegetable oils or margarine	
No more than 2 g of added fructose per serving, whole fruit excluded	
(Target of) no more than 4 g of added glucose per serving	• AHA: 6 tsp for women, 9 tsp for men = 25 – 37.5g of added sugar/day • WHO (rescinded guidelines): 5% of daily calories (2000) = 25g of added sugar/day • AAP: 6 tsp = 25g of added sugar/day • USDA 2020-2025 guidelines: 6% of daily calories (2000) = 30g of added sugar/day
No additives with health risks No synthetic emulsifiers in fermented milk products	See **Supplementary Tables 1-4**
Less than 3:1 ratio of omega-6 to omega-3 fatty acids per serving No more than 5g of omega-6 fatty acids per serving	
Less than 2:1 ratio of kilocalories to milligrams of sodium	With a recommended range of 1,600 to 2,400 daily calorie consumption for the majority of consumers, the recommendation of 2,300 milligrams of daily sodium would be a ratio of approximately 1:1. Given the variation in KDD products, the proposed ratio of 2:1 allows for improved sodium targets in the product range
No more than 0.02 ppm of lead	10% of WHO threshold for milk
No more than 0.03 ppm of cadmium	10% of WHO threshold for cocoa
No more than 0.01 ppm of arsenic	10% of WHO threshold for rice
No more than 0.05 ppm of mercury	10% of WHO threshold for fish
No more than 0.04 ppm of glyphosate	4% of 1 mg of glyphosate per kg of bodyweight per day. See doi:10.1289/EHP6990
Below minimum thresholds of toxic substances: • agrochemicals and atrazine in products • obesogens bisphenol A + S (BPA, BPS), phthalates, per- and polyfluoroalkyl substances (PFAS) in packaging • antibiotics • BST	

Supplementary Table F References. Food Additives. Criteria to escape Tier III

No additives with health risks – please see Word documents titled Supplementary Tables A-E

No synthetic emulsifiers in fermented milk products

1. (Chassaing, Compher et al. 2022)
2. (Partridge, Lloyd et al. 2019)
3. (Rousta, Oka et al. 2021)
4. (Chassaing, Koren et al. 2015)
5. (Chassaing, Van de Wiele et al. 2017)
6. (Bancil, Sandall et al. 2021)
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Supplementary Table F. Food Additives. Criteria to escape Tier III

Added Fructose: No more than 2 g of added fructose per serving, whole fruit excluded

1. (Herman and Birnbaum 2021)
2. (Shi, Liu et al. 2021)
3. (Smith, Dyson et al. 2022)
4. (Merino, Fernández-Díaz et al. 2019, Muriel, López-Sánchez et al. 2021)
5. (Hannou, Haslam et al. 2018)
6. (Febbraio and Karin 2021)
7. (Spagnuolo, Iossa et al. 2020)
8. (Jung, Bae et al. 2022)
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Supplementary Table F. Food Additives. Criteria to escape Tier III

(Target of) no more than 4 g of added glucose per serving

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1. (Johnson, Appel et al. 2009)
2. (Vos, Kaar et al. 2017)
3. (Pan and Hu 2011)
4. (Malik and Hu 2022)
5. (Hu 2013)
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7. (Calcaterra, Cena et al. 2023)
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Supplementary Table F References. Food Additives. Criteria to escape Tier III

Heavy metals: *No more than 0.02 ppm of lead (refs 1-10); No more than 0.03 ppm of cadmium; No more than 0.01 ppm of arsenic; No more than 0.05 ppm of mercury* and: *No more than 0.04 ppm of glyphosate*

Lead References: 1-10

1. FDA government online article: https://www.fda.gov/food/environmental-contaminants-food/lead-food-foodwares-and-dietary-supplements
2. FDA government online article: https://www.fda.gov/food/environmental-contaminants-food/what-you-can-do-limit-exposure-arsenic-and-lead-juices
3. (Vasconcelos Neto, Silva et al. 2019)

4. (Cabrera, Gallego et al. 2020)
5. (Kumar, Kumar et al. 2020)
6. European Commission online article: https://food.ec.europa.eu/safety/chemical-safety/contaminants/catalogue/lead_en#:~:text=Cereal%20products%20and%20grains%2C%20vegetables,of%20the%20general%20adult%20population.
7. (Union 2006)
8. Environmental Defense Fund online article: https://www.edf.org/health/lead-food-hidden-health-threat
9. (Ciobanu, Slencu et al. 2012)
10. (Yao, Shao et al. 2022)

Cadmium: Refs 11-20

11. (Kim et al., 2019)
12. (Awata, Linder et al. 2017)
13. (Abt, Fong Sam et al. 2018)
14. (Alves Peixoto, Oliveira et al. 2018)
15. (Abt and Robin 2020)
16. (Genchi, Sinicropi et al. 2020)
17. (Kumar and Sharma 2019)
18. (Huang, He et al. 2017)
19. FDA Government online article: https://www.fda.gov/science-research/peer-review-scientific-information-and-assessments/external-peer-review-fdas-draft-toxicological-reference-value-cadmium
20. FDA online article: https://www.fda.gov/food/conversations-experts-food-topics/what-fda-doing-protect-consumers-toxic-metals-foods

Arsenic: Refs 21-30

21. FDA government online article: https://www.fda.gov/food/environmental-contaminants-food/arsenic-food-and-dietary-supplements
22. FDA guide to reducing inorganic arsenic in apple juice: https://www.fda.gov/media/86110/download
23. (Jomova, Jenisova et al. 2011)
24. (Hughes 2002)
25. (Medina-Pizzali, Robles et al. 2018)
26. (Brandon, Janssen et al. 2014)
27. (Mania, Rebeniak et al. 2015)
28. (Rahman, Granberg et al. 2017)
29. (Rehman, Khan et al. 2021)
30. European Commission Food Safety Government online article: https://food.ec.europa.eu/safety/chemical-safety/contaminants/catalogue/arsenic_en

Mercury: refs 31-40

31. European Commission for Food Safety online article: (EFSA Dietetic Products and Allergies 2014)
32. European Commission setting maximum levels for certain contaminants in foodstuffs: http://data.europa.eu/eli/reg/2006/1881/oj
33. (Padmakumar, Premkala Raveendran et al. 2019)

34. (Collado-López, Betanzos-Robledo et al. 2022)
35. (Bernhoft 2012)
36. (Oken and Bellinger 2008)
37. (Deroma, Parpinel et al. 2013)
38. (Castoldi, Johansson et al. 2008)
39. (Mendola, Selevan et al. 2002)
40. (Bjørklund, Chirumbolo et al. 2019)

Glyphosate: refs 41-45

41. (Myers, Antoniou et al. 2016)
42. (Milesi, Lorenz et al. 2021)
43. (Soares, Silva et al. 2021)
44. (Peillex and Pelletier 2020)
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EFSA: Lead in food. https://food.ec.europa.eu/safety/chemical-safety/contaminants/catalogue/lead_en#:~:text=Cereal%20products%20and%20grains%2C%20vegetables,of%20the%20general%20adult%20population

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Supplementary Table F References. Food Additives. Criteria to escape Tier III

Less than 3:1 ratio of omega-6 to omega-3 fatty acids per serving (refs 1-10) and *No more than 5g of omega-6 fatty acids per serving (11-20)*

1. (Simopoulos 2002)
2. (Simopoulos 2008)
3. (Simopoulos 2006)
4. (Simopoulos 2010)
5. (Elbandy 2022)
6. (Elbandy 2022)
7. (Gómez Candela, Bermejo López et al. 2011)
8. (Simopoulos 2016)
9. (Van Name, Savoye et al. 2020)
10. (Jang and Park 2020)
11. (Blasbalg, Hibbeln et al. 2011)
12. (Ramsden, Zamora et al. 2013)
13. (Román, Jackson et al. 2019)
14. (Selmin, Papoutsis et al. 2021)
15. (Rousseau 2021)
16. (Gow and Hibbeln 2014)
17. (Hallahan, Ryan et al. 2016)
18. (Gow and Hibbeln 2014)
19. (Hibbeln and Gow 2014)
20. (Lewis, Hibbeln et al. 2011)

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Supplementary Table F References. Food Additives. Criteria to escape Tier III

Less than 2:1 ratio of kilocalories to milligrams of sodium

1. (Rust and Ekmekcioglu 2017)
2. (Fodor, Whitmore et al. 1999)
3. (Aliasgharzadeh, Tabrizi et al. 2022)
4. (Jafarnejad, Mirzaei et al. 2020)
5. (He, Li et al. 2013)
6. (He and MacGregor 2004)
7. (Neal, Wu et al. 2021)
8. (Fulgoni, Agarwal et al. 2014)
9. Action on salt consumer group report: https://www.actiononsalt.org.uk/media/action-on-salt/awareness/shake-the-salt-habit2022/Roundtable-Report_Accelerating-Salt-Reduction-in-the-UK.pdf
10. World Health Organization (WHO) online article\: https://www.who.int/europe/news/item/20-12-2018-european-salt-action-network-restates-its-support-for-who-goal-of-reducing-salt-intake-to-5-g-per-day-or-less

11. Johns Hopkins Bloomberg School of Public Health: https://globalhypertensionathopkins.org/courses/sodium

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Supplementary Table F References. Food Additives. Criteria to escape Tier III

Criterion: Trans fats

1. (Pipoyan, Stepanyan et al. 2021)
2. (Wallis, Bengtsson et al. 2022)
3. (Micha and Mozaffarian 2008)
4. (Micha and Mozaffarian 2008)
5. (Amico, Wootan et al. 2021)
6. (Hyseni, Bromley et al. 2017)
7. (Vinikoor, Millikan et al. 2010)
8. (de Souza, Mente et al. 2015)
9. (Oteng, Loregger et al. 2019)
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Supplementary Table G. Criteria to achieve Tier II

Criterion	Comment	Tier II C	Tier II B	Tier II A
Escapes Tier III by scientific evidence of absence of detrimental health effects		●	●	●
No oil that has more than 40% omega-6 fatty acids (sunflower, cottonseed, soybean, canola/rapeseed, or corn oil)			●	●
At least 950 IU (= 285 mcg of retinol) of vitamin A per serving	50% AR adult males		at least one	●
At least 45 mg of vitamin C per serving	50% AR adult males			●
At least 400 IU (= 10 mcg) of vitamin D per serving	50% RDA adults			●
At least 9.69 IU (= 6.5 mg of α-tocopherol) of vitamin E per serving	50% AI adult males			●
At least 200 mg of elemental calcium per serving (equivalent to 0.5 g of calcium carbonate or 2 g of calcium citrate/calcium citrate malate)	50% RDA adults			●
At least 200 µg of folate per serving	50% RDA adults			●
At least 4 mg of elemental iron per serving	50% RDA children			●
At least 175 mg of magnesium per serving	50% AI adult males			●
At least 5.5 mg of zinc per serving	50% RDA adult males			●
At least 250 mg of combined EPA/DHA per serving	50% RDA adults			●
At least 1 g of ALA per serving	50% RDA adults			●
Dietary fiber ratio (to carbohydrate) >1:10				●

Supplementary Tables References

Supplementary Table G. Criteria to achieve Tier II

No oil that has more than 40% omega-6 fatty acids
(sunflower, cottonseed, soybean, canola/rapeseed, or corn oil)

1.(Simopoulos 2016)
2. (Hibbeln, Nieminen et al. 2006)
3. (Patterson, Wall et al. 2012)
4. (Ascherio and Willett 1997)
5. (Tarrago-Trani, Phillips et al. 2006)
6. (Misra, Singhal et al. 2010)
7. (Wendell, Baffi et al. 2014)
8. (Fernandes 1994)
9. (Berger, Smesny et al. 2017)
10. (Loef and Walach 2013)
11. (Lauretti and Praticò 2017)
12. (Golomb and Bui 2015)
13. (Golomb, Evans et al. 2012)
14. (Alvheim, Malde et al. 2012)
15. (Deol, Evans et al. 2015)
16. (Deol, Evans et al. 2015)
17. (Rudolph, Young et al. 2017)

18. (Simopoulos 2016)
19. (DiNicolantonio and O'Keefe 2018)
20. (Patterson, Wall et al. 2012)

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Supplementary Table H1. Health criteria to achieve Tier I

Criterion	Tier I B	Tier I A
At least 0.75 mg of vitamin B6 (pyridoxine) per serving	●	●
At least 2 µg of vitamin B12 (cobalamin) per serving	●	●
Information about the presence/absence of "Big 8" allergens (milk, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat, and soybean)	●	●
Positive health effects supported explicitly by scientific evidence	●	●
The product has been chemically tested by an independent body		●
Only cold-pressed plant-based oils		●
At least 88 mg of tryptophan per serving		●

Supplementary Table H1 References. Health criteria to achieve Tier I

Refs 1-5: At least 0.75 mg of vitamin B6 (pyridoxine) per serving

1. (Ueland, McCann et al. 2017)
2. (Selhub, Byun et al. 2013)
3. (Wan, Zheng et al. 2022)
4. (Stach, Stach et al. 2021)
5. National Institutes of Health, US Department of Health & Human Services online article: https://ods.od.nih.gov/factsheets/VitaminB6-HealthProfessional

Refs 6-10: At least 2 µg of vitamin B12 (cobalamin) per serving

6. National Institutes of Health, US Department of Health & Human Services online article: https://ods.od.nih.gov/factsheets/VitaminB12-HealthProfessional/
7. (Stach, Stach et al. 2021)
8. (Rahman and Baumgartner 2019)
9. (Hossain, Amarasena et al. 2022)
10. (Mikkelsen and Apostolopoulos 2018)

Refs 11-15: Only cold-pressed plant-based oils

11. (Durazzo, Fawzy Ramadan et al. 2021)
12. (Fratianni, d'Acierno et al. 2021)

13. (De Santis, Cariello et al. 2019)
14. (Romani, Ieri et al. 2019)
15. (Prescha, Grajzer et al. 2014)

Refs 16-20: At least 88 mg of tryptophan per serving

16. (Kikuchi, Tanabe et al. 2021)
17. (Kałużna-Czaplińska, Gątarek et al. 2019)
18. (Gibson 2018)
19. (Dell'Osso, Carmassi et al. 2016)
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Supplementary Table H2. Environmental, sustainability and market criteria to achieve Tier I

Criterion	Tier II B	Tier II A
Products sourced from humanely raised animals (continuous pasture access, independently verified)	●	●
Certified organic	as many as possible	as many as possible
Non-GMO		
Traceable sourcing		
Recyclable or compostable packaging in line with current KDD efforts		
Sets a standard for the entire industry		
Transform the portfolio of products sold in KDD retail outlets		
Marketing values that align with current best practices		
Environmentally sourced (small production, processing, distribution, carbon footprint, etc.)		
Meets UN Sustainable Development Goals (SDGs) No. 3 ("Ensure healthy lives and promote well-being for all at all ages") and No. 12 ("Ensure sustainable consumption and production patterns")		

Supplementary Table H2 References. Environmental, sustainability and market criteria to achieve Tier I

Refs 1-4 Humane Farming

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2. The Humane Farming Association: https://www.hfa.org
3. Compassion in world farming: https://www.ciwf.org.uk/research/solutions-for-humane-and-sustainable-agriculture
4. Humane Society International: https://www.hsi.org/issues/factory-farming

Refs 5-8 Organic Foods

5. (Mie, Andersen et al. 2017)
6. (Hurtado-Barroso, Tresserra-Rimbau et al. 2019)
7. (Brantsæter, Ydersbond et al. 2017)
8. Soil Association online article: The Benefits of Organic Farming: file:///Users/rachelvictoria/Downloads/the-benefits-of-organic-farming-april-2018%20(1).pdf and https://www.soilassociation.org/policy-reports

Refs 9-12: Non-GMO

9. (Salt 2023)
10. (Buchholzer and Frommer 2023)
11. The Non-GMO Project: https://www.nongmoproject.org/gmo-facts/what-is-gmo
12. Center for Food Safety: https://www.centerforfoodsafety.org/press-releases/3766/are-gmos-safe-no-consensus-in-the-science-scientists-say-in-peer-reviewed-statement

Refs 13-16: Recyclable or compostable packaging

13. Online article: https://wrap.org.uk/resources/guide/compostable-plastic-packaging-guidance
14. European bioplastics: https://www.european-bioplastics.org/faq-items/what-are-the-required-circumstances-for-a-compostable-product-to-compost
15. Food Standards Agency: https://www.food.gov.uk/sites/default/files/media/document/bio-based-materials-for-use-in-food-contact-applications_0.pdf
16. European Economic and Social Committee: https://www.eesc.europa.eu/sites/default/files/files/qe-03-20-534-en-n.pdf

Refs 17-19: Environmentally sourced

17. (Karwacka, Ciurzyńska et al. 2020)
18. (Xu, Sun et al. 2015)
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