IRX FOODSCORE®

Natural Nutritional Support for Nerve Health & Peripheral Neuropathic Pain

Evidence matrix and food-based strategy for adults 55+

Executive Summary

Peripheral nerve pain in the legs and feet—burning, tingling, electric-shock sensations, pins-and-needles, numbness or hypersensitivity — is common but is not simply a normal consequence of aging. Causes can include diabetes or prediabetes, vitamin deficiencies, chemotherapy, medications, alcohol exposure, thyroid or kidney disorders, nerve compression, autoimmune conditions and other neurological disorders. ***Nutrition should therefore be viewed as supportive, not as a substitute for identifying and treating the underlying cause.***

The strongest human clinical evidence among the natural compounds reviewed is for ***alpha-lipoic acid*** (ALA), ***gamma-linolenic acid*** (GLA), ***acetyl-L-carnitine*** (ALCAR), and ***vitamin B12*** — particularly when B12 is inadequate. ***Vitamin D***, ***NAC***, ***tocotrienols*** and ***curcumin*** have promising but more limited or mixed evidence. ***Omega-3 fatty acids*** and ***magnesium*** are valuable nutritional components, but their direct evidence for peripheral neuropathy is weaker.

Important terminology

ALA can mean two different compounds. Alpha-lipoic acid (ALA) is the antioxidant/mitochondrial compound studied for neuropathic symptoms. ***Alpha-linolenic acid*** is a plant omega-3 fatty acid found in foods such as walnuts, flax and chia. They are chemically and biologically different.

IRX FOODSCORE® Evidence Matrix

Ingredient	Clinical	Mechanism	Bio-availability	Food	Safety	Drug-Interaction Safety	55+ Relevance	Formulation	Overall
Alpha-Lipoic Acid (ALA)	94	96	78	35	86	78	94	97	**88**
Gamma-Linolenic Acid (GLA)	88	90	88	42	86	72	91	94	**84**
VIT B12 / Methyl-cobalamin	88	94	93	82	97	94	98	96	**93**
Acetyl-L-Carnitine (ALCAR)	76	92	85	68	85	82	91	94	**83**
Vitamin D3	73	82	88	48	84	76	96	94	**82**
N-Acetyl-cysteine (NAC)	71	91	62	30	83	75	87	95	**77**
Tocotrienol - rich VIT E	69	87	76	58	81	67	90	96	**78**
Curcumin	62	90	38*	80	82	66	86	98	**75**
CoQ10	55	89	62	52	89	70	90	93	**72**
Omega-3 EPA/DHA	48	85	88	96	91	72	94	94	**76**
Magnesium	43	78	70	88	88	73	96	91	**74**
Benfotiamine	45	84	91	62	91	91	88	90	**74**

*Conventional curcumin. Enhanced-bioavailability formulations can score materially higher on bioavailability dimension.

How to interpret the scoring

- 90–100: Core IRX FOODSCORE® candidates.
- 80 – 89: High-potential candidates.
- 70 – 79: Supporting candidates.
- Below 70: Research/support category.

Drug-Interaction Safety is inverse-scored: 100 means the lowest interaction concern. Scores are a structured research/product-development framework, not medical efficacy ratings or regulatory claims.

Ingredient Profiles

1. Alpha-Lipoic Acid (ALA): Overall 88/100

Best-supported nutraceutical for neuropathic symptom relief. Human trials, including SYDNEY 2, support 600 mg/day as a favorable dose for reducing burning, paresthesia, numbness and related symptoms. A 2026 meta-analysis found 19 of 23 analyzed outcomes favored ALA, while objective nerve-conduction improvements remained inconclusive. Strong candidate for symptom-support positioning.

2. Vitamin B12 / Methylcobalamin: Overall 93/100

Foundational nutrients for myelin and neuronal metabolism. Particularly important when B12 status is low or marginal. A 2026 randomized trial in people with diabetic neuropathy and low B12 found benefit with 1,000 and 2,000 micrograms/day. Strong age-55+ relevance, excellent safety and formulation characteristics.

3. Gamma-Linolenic Acid (GLA): Overall 84/100

Omega-6 fatty acid involved in lipid signaling and inflammatory regulation. Trials using approximately 320–480 mg/day GLA have reported improvements in symptoms and some neurological parameters. A randomized comparison with ALA 600 mg/day found GLA noninferior for the primary pain outcome. Strong complementary candidate.

4. Acetyl-L-Carnitine (ALCAR): Overall 83/100

Supports mitochondrial fatty-acid transport and neuronal energy metabolism. Clinical reviews and trials show possible pain reduction, but evidence certainty is lower than for ALA. Interesting candidate for a mitochondrial/nerve-energy pathway.

5. Vitamin D3: Overall 82/100

Relevant to neuromuscular and neuroimmune function. A 2025 meta-analysis reported short-term reductions in painful diabetic neuropathy, but trials were heterogeneous. Best used as a deficiency-correction strategy rather than indiscriminate high-dose supplementation.

6. N-Acetylcysteine (NAC): Overall 77/100

Glutathione precursor with an attractive oxidative-stress/NRF2 mechanism. A 2025 randomized study reported improvements in pain, neuropathy and antioxidant/inflammatory markers. Promising, but the clinical evidence base is smaller than ALA's.

7. Tocotrienol-rich Vitamin E: Overall 78/100

Lipid-soluble antioxidant family. A 2026 meta-analysis of five RCTs and 660 participants reported improvements in several nerve-conduction velocities. An emerging candidate for objective nerve-function support.

8. Curcumin/Turmeric: Overall 75/100

Mechanistically attractive for inflammatory signaling & oxidative stress. Earlier nano-curcumin research was positive, while a 2025 randomized trial was negative. Conventional curcumin has poor bioavailability; makes delivery technology important.

9. CoQ10: Overall 72/100

Mitochondrial electron-transport and antioxidant compound. Human neuropathy results are limited and mixed. Better positioned as mitochondrial support than as a primary neuropathic-pain ingredient.

10. Omega-3 EPA/DHA — Overall 76/100

Strong general nutritional value and food availability, especially from oily fish. Direct peripheral-neuropathy evidence is low-certainty. Best viewed as foundational neuro-metabolic nutrition rather than a primary neuropathy active.

11. Magnesium: Overall 74/100

Important for ATP metabolism, neuronal excitability and muscle function. Direct evidence for peripheral neuropathy is limited. Particularly relevant when dietary intake or status is inadequate.

12. Benfotiamine: Overall 74/100

Mechanistically supports thiamine-dependent glucose pathways and has good bioavailability. Earlier evidence was promising, but the 2026 BOND trial found no significant long-term benefit over placebo on key neurological outcomes. Not a first-tier active based on current evidence.

Biological Pathway Map

- Oxidative stress: ALA + NAC + tocotrienols
- Mitochondrial function: ALA + ALCAR + CoQ10
- Nerve membrane/lipid biology: GLA + EPA/DHA + tocotrienols
- Myelin/neuronal metabolism: B12
- Inflammatory signaling: GLA + curcumin + EPA/DHA
- Nutritional deficiency correction: B12 + vitamin D + magnesium
- Nerve-conduction support: GLA + B12 + tocotrienols
- Neuropathic symptom reduction: ALA + GLA + ALCAR

IRX FOODSCORE® Core Six

For a first-generation research formulation, the strongest multi-pathway architecture would be ALA + GLA + methylcobalamin/B12 + ALCAR + NAC + a clinically characterized enhanced-bioavailability curcumin. This is a formulation-development concept, not a treatment recommendation.

Top 20 Natural Foods Supporting the Target Nutrients

Rank	Food	Relevant nutrients/compounds
1	Salmon	EPA/DHA, B12, vitamin D, protein, selenium
2	Sardines	EPA/DHA, B12, vitamin D, CoQ10
3	Mackerel	EPA/DHA, B12, vitamin D, CoQ10
4	Beef liver	B12, CoQ10, iron, B vitamins
5	Clams	Very high B12, iron, protein
6	Oysters	B12, zinc, selenium, copper
7	Grass-fed beef	B12, carnitine, CoQ10, protein
8	Eggs	B12, choline, protein
9	Spinach	Magnesium, folate, antioxidants, some ALA
10	Broccoli	Alpha-lipoic acid in small amounts, magnesium, vitamin C
11	Brussels sprouts	Alpha-lipoic acid in small amounts, vitamin C, antioxidants
12	Peas	Alpha-lipoic acid in small amounts, magnesium, plant protein
13	Tomatoes	Alpha-lipoic acid in small amounts, lycopene, vitamin C
14	Pumpkin seeds	Magnesium, zinc, protein, vitamin E
15	Almonds	Magnesium, vitamin E, healthy fats
16	Walnuts	Alpha-linolenic acid, magnesium, polyphenols
17	Turmeric	Curcuminoids
18	Avocado	Magnesium, healthy fats, folate, potassium
19	Garlic	Sulfur compounds and antioxidant compounds
20	UV-exposed mushrooms	Vitamin D, B vitamins, ergothioneine

Food Sources by Target Nutrient

Vitamin B12

- Clams → liver → oysters → sardines → mackerel → salmon → beef → eggs.

EPA/DHA

- Sardines → mackerel → salmon → herring → anchovies.

Magnesium

- Pumpkin seeds → spinach → almonds → cashews → legumes → avocado.

Vitamin E

- Almonds → sunflower seeds → hazelnuts → avocado → spinach.

Curcumin

- Turmeric.

Dietary alpha-lipoic acid

- Small amounts occur in foods including spinach, broccoli, peas, tomatoes and organ meats; clinical supplement doses are much higher.

Carnitine

- Beef → lamb → pork → fish → poultry.

Practical Food Pattern

A food-first pattern can emphasize oily fish, eggs, leafy greens, cruciferous vegetables, nuts and seeds, legumes, avocado, turmeric-spiced vegetables and occasional shellfish or lean animal foods where appropriate. This provides multiple nutrients rather than relying on one compound.

Safety and Clinical Considerations

- Persistent neuropathy should not automatically be attributed to aging. The cause should be evaluated.
- Consider discussing glucose/HbA1c, vitamin B12 and methylmalonic acid when appropriate, vitamin D, thyroid function, kidney function, CBC, metabolic panel and medication history with a clinician.
- Do not automatically add high-dose vitamin B6 to a nerve formula. Excess supplemental B6 can itself cause peripheral neuropathy.
- ALA may affect glucose levels and can cause gastrointestinal symptoms.
- Vitamin D should generally be guided by status and appropriate monitoring rather than indiscriminate high dosing.
- GLA, vitamin E/tocotrienols, curcumin and omega-3s may warrant medication review in people taking anticoagulant or antiplatelet drugs.
- NAC can cause gastrointestinal effects and may interact with some medicines.
- Kidney impairment is important when considering magnesium and several supplements.
- Urgent medical evaluation is warranted for rapidly progressive weakness, major balance problems, bowel/bladder changes, severe asymmetric symptoms, or significant foot wounds.

Appendix A — Core PubMed Clinical Evidence

1. **Alpha-lipoic acid — SYDNEY 2 — PMID 17065669 —** https://pubmed.ncbi.nlm.nih.gov/17065669/
2. **Alpha-lipoic acid — NATHAN 1 — PMID 21775755 —** https://pubmed.ncbi.nlm.nih.gov/21775755/
3. **Alpha-lipoic acid — 2026 systematic review/meta-analysis — PMID 41619689 —** https://pubmed.ncbi.nlm.nih.gov/41619689/
4. **Alpha-lipoic acid — oral treatment systematic review/meta-analysis — PMID 37630823 —** https://pubmed.ncbi.nlm.nih.gov/37630823/
5. **Alpha-lipoic acid — earlier meta-analysis — PMID 14984445 —** https://pubmed.ncbi.nlm.nih.gov/14984445/
6. **GLA — 360 mg/day trial — PMID 2159860 —** https://pubmed.ncbi.nlm.nih.gov/2159860/
7. **GLA — 480 mg/day multicenter trial — PMID 8380765 —** https://pubmed.ncbi.nlm.nih.gov/8380765/
8. **GLA versus ALA randomized trial — PMID 31701699 —** https://pubmed.ncbi.nlm.nih.gov/31701699/
9. **GLA/ALA network meta-analysis — PMID 38295879 —** https://pubmed.ncbi.nlm.nih.gov/38295879/
10. **ALCAR — systematic review/meta-analysis — PMID 31118753 —** https://pubmed.ncbi.nlm.nih.gov/31118753/
11. **ALCAR — Cochrane review — PMID 31201734 —** https://pubmed.ncbi.nlm.nih.gov/31201734/
12. **ALCAR — long-term randomized trial — PMID 12455197 —** https://pubmed.ncbi.nlm.nih.gov/12455197/
13. **B12 — 2026 randomized trial — PMID 41548600 —** https://pubmed.ncbi.nlm.nih.gov/41548600/
14. **B12 — one-year randomized trial — PMID 33513879 —** https://pubmed.ncbi.nlm.nih.gov/33513879/
15. **Methylcobalamin diabetic neuropathy trial — PMID 11798619 —** https://pubmed.ncbi.nlm.nih.gov/11798619/
16. **B12 systematic review — PMID 16008162 —** https://pubmed.ncbi.nlm.nih.gov/16008162/
17. **Vitamin D — 2025 systematic review/meta-analysis — PMID 41139799 —** https://pubmed.ncbi.nlm.nih.gov/41139799/
18. **NAC — 2025 randomized trial — PMID 40038825 —** https://pubmed.ncbi.nlm.nih.gov/40038825/
19. **Nano-curcumin diabetic polyneuropathy trial — PMID 30935539 —** https://pubmed.ncbi.nlm.nih.gov/30935539/
20. **Nanocurcumin — 2025 randomized trial — PMID 40682175 —** https://pubmed.ncbi.nlm.nih.gov/40682175/
21. **Tocotrienol-rich vitamin E — 2026 meta-analysis — PMID 41528693 —** https://pubmed.ncbi.nlm.nih.gov/41528693/
22. **CoQ10 — 200 mg/day randomized trial — PMID 26255546 —** https://pubmed.ncbi.nlm.nih.gov/26255546/
23. **CoQ10 + pregabalin trial — PMID 36273066 —** https://pubmed.ncbi.nlm.nih.gov/36273066/
24. **Omega-3 — Cochrane review — PMID 40990181 —** https://pubmed.ncbi.nlm.nih.gov/40990181/
25. **Magnesium — clinical study — PMID 15319143 —** https://pubmed.ncbi.nlm.nih.gov/15319143/
26. **Magnesium and diabetic neuropathy review — PMID 39891959 —** https://pubmed.ncbi.nlm.nih.gov/39891959/
27. **Benfotiamine — 2026 BOND trial — PMID 41571333 —** https://pubmed.ncbi.nlm.nih.gov/41571333/