

Review and Comparative Ranking of Scott's Anti-aging Herbal and Nutraceutical Combinations

"[Anti-Aging Longevity and Memory Enhancement Nutraceutical Herbal Combinations](#)" (S. Rauvers, rev. 26 June 2026)

Prepared: 3 September 2026. **Scope:** This document is an in-depth analysis from [the Anti-Aging Longevity and Memory Enhancement Nutraceutical Herbal Combinations](#) that has been revised and updated over the last decade by Scott Rauvers. This report does two things. Part I summarises what the published anti-aging, geroscience and phytochemistry literature says about why the classes of ingredient used throughout the source PDF are associated with free-radical elimination, reduced oxidative stress, telomere maintenance and lifespan extension. Part II ranks every distinct formula in the source PDF against a stated, uniform scoring rubric, strongest to weakest.

Stance: The source document is treated as data, not as a claim to be endorsed or attacked. Ranking positions describe how well each formula maps onto mechanisms that are documented in the peer-reviewed literature, and how strong that documentation is. They are not endorsements, prescriptions, or statements that a formula works in humans. Safety and drug-interaction information is reported in Appendix B as factual pharmacology, separately from the effectiveness ranking, so that it does not distort the ranking itself.

Executive Summary

The herbal formulas contained in the source PDF draw on a broad palette of plants and nutraceuticals that the modern geroscience literature has independently linked to four of the central pillars of aging biology: (a) direct neutralization of reactive oxygen and nitrogen species (free radicals); (b) up-regulation of the cell's endogenous antioxidant defenses, principally the Nrf2/ARE pathway and the superoxide-dismutase / catalase / glutathione enzyme axis; (c) preservation or even lengthening of telomeres through activation of telomerase (hTERT); and (d) modulation of the conserved longevity signaling pathways — sirtuins (SIRT1/SIR2), AMPK, mTOR, autophagy, cellular-senescence clearance (senolytics) and the Klotho longevity gene — that have been shown to extend lifespan in model organisms (yeast, *C. elegans*, *Drosophila* and mice) and in some cases in human cells.

The single most important reason these combinations appear to work is synergy. Almost every formula pairs a fat-soluble antioxidant (e.g., vitamin E, grape-seed proanthocyanidins, resveratrol) with a water-soluble one (vitamin C, aspalathin, polyphenols), and many pair a telomerase activator (*Astragalus* / cycloastragenol) with an Nrf2 inducer (sulforaphane, silymarin) and an AMPK/mTOR modulator (berberine, resveratrol). Multi-target coverage of the aging network at once — rather than a single "magic bullet" — is the signature feature that the literature identifies with the most effective anti-aging interventions (e.g., the multi-component Nrf2 activator Protandim, and the multi-herb telomerase-support blends studied by Harley et al. and others).

On the basis of how many independent, literature-supported longevity mechanisms a given formula touches, the depth of the human or model-organism evidence behind its ingredients, and the breadth of its ingredient combination, the formulas have been ranked from strongest to weakest anti-aging effectiveness. The top tier is occupied by multi-ingredient formulas built around *Astragalus* (telomerase), grape-seed proanthocyanidins (senolytic PCC1), sulforaphane (Nrf2/lifespan), berberine (AMPK/mTOR/Klotho), resveratrol (sirtuin activation) and *Chlorophytum borivilianum* (demonstrated lifespan extension in *C. elegans* and yeast). The lower tiers are formulas directed at specific, non-longevity endpoints (back-pain relief, eyesight, heat-stress, digestion) whose anti-aging contribution, while real, is narrower or indirect.

Why the Combinations Synergize

The recurring design pattern in the PDF — and the reason the combinations out-perform single herbs in the literature — is multi-pathway, multi-compartment coverage:

- Lipid-phase + water-phase antioxidants together (vitamin E + vitamin C; grape-seed polyphenols + vitamin C) so that both membranes and cytosol are protected, with the water-soluble partner regenerating the lipid-soluble one.
- Direct scavenger + Nrf2 inducer together (vitamin C/E + sulforaphane or silymarin) so that immediate radical quenching is paired with sustained endogenous enzyme up-regulation.
- Telomerase activator + senolytic + sirtuin/AMPK modulator together (Astragalus + grape-seed PCC1 + resveratrol/berberine), the three deepest tiers of the aging network addressed simultaneously — mirroring the design of studied multi-component telomerase-support blends.
- Catalysts and absorption enhancers — vitamin E flagged as a "strong catalyst," Ormus, cayenne (circulation), blackstrap molasses (iron for chi), honey, and lipid co-ingestion (olive oil, coconut oil) to improve bioavailability of lipophilic polyphenols.
- Tissue targeting — gotu kola, ginkgo and bacopa for the brain; Fo Ti for the eyes and mental endurance; cordyceps and rhodiola for mitochondria and exercise capacity; hawthorn for the heart; milk thistle for the liver (detox supporting the overall antioxidant burden).

Part I — Primary Mechanisms

Modern geroscience organises aging into a set of interacting hallmarks. The 2013 framework of Lopez-Otin and colleagues listed nine; the 2023 update ("Hallmarks of Aging: An Expanding Universe") expanded these to twelve: genomic instability, telomere attrition, epigenetic alterations, loss of proteostasis, disabled macroautophagy, deregulated nutrient sensing, mitochondrial dysfunction, cellular senescence, stem cell exhaustion, altered intercellular communication, chronic inflammation, and dysbiosis. Almost every ingredient in the source PDF that has a real literature behind it acts on one or more of the following seven mechanistic routes, which map onto those hallmarks.

1. Indirect antioxidant action via Nrf2/ARE induction

The dominant mechanism, and the one that best explains the "free radical elimination" language, is not direct radical scavenging. It is induction of the cell's own antioxidant machinery through the KEAP1-Nrf2-ARE axis. Nrf2 activity declines with age; its silencing induces premature senescence in fibroblasts, and pharmacological activation increases cellular longevity. Electrophilic and mildly reactive plant compounds modify cysteine residues on KEAP1, releasing Nrf2 to the nucleus, where it transcribes glutathione synthesis enzymes, catalase, superoxide dismutase, peroxiredoxins, heme oxygenase-1 and phase II conjugating enzymes.

Sulforaphane (broccoli) is the best-characterised example and the strongest single Nrf2 agent in the source document: it restores Nrf2/ARE binding and peroxiredoxin-6, catalase and GST expression in aged tissue, protects mitochondrial function, has roughly 80% oral bioavailability, and prevents age-associated cardiac and skeletal-muscle dysfunction in old mice. Rosemary (carnosic acid), black cumin (thymoquinone), cinnamon, schisandra (lignans), rooibos (aspalathin), goji polysaccharide, ginger and cruciferous/allium ingredients in the mixes act on the same axis with varying potency. The worm orthologue of Nrf2, SKN-1, is a validated longevity gene: moderate SKN-1/Nrf2 overexpression extends lifespan, and skn-1 deficiency shortens it.

Critically, this mechanism is hormetic and dose-shaped. Excessive or sustained Nrf2 activation can itself raise oxidative stress via NOX4, so amplitude and duration matter more than "more is better."

2. Nutrient-sensing: AMPK activation and mTOR/IIS suppression

The second major route is caloric-restriction mimicry. AMPK is an energy sensor whose activity declines with age; activating it shifts cells from anabolic to catabolic metabolism, induces autophagy through mTOR/ULK1, and promotes mitochondrial biogenesis.

- Berberine (present in the source document both as a capsule and as *Coptidis rhizoma*) activates AMPK by inhibiting mitochondrial complex I, raising the AMP:ATP ratio. It carries the strongest mammalian data of any compound in the PDF: it extended lifespan of naturally aged mice by ~16.5% and of chemotherapy-treated mice by ~52%, reduced senescence-associated beta-galactosidase-positive cells by ~72% in late-passage human fibroblasts, and downregulated p16.
- Jiaogulan / *Gynostemma pentaphyllum* gypenosides are potent, dose-dependent AMPK activators; a randomised crossover trial in healthy males found increased muscle AMPK Thr172 phosphorylation after exercise, improved 20 km time-trial performance and higher muscle oxygen flux.
- Resveratrol activates AMPK dose-dependently (SIRT1-dependent via LKB1 at low dose, SIRT1-independent at high dose). Its headline "SIRT1 activator" identity is now heavily qualified: much of the original in-vitro activation was a fluorophore-tagged-substrate assay artifact, and an 11-trial meta-analysis found no significant effect of supplementation on human SIRT1 gene, protein or serum levels.
- Salicylate from willow bark, and the downstream inflammatory suppression it produces, converge on the same AMPK/NF-kB node.

3. Insulin/IGF-1 signalling and the DAF-16/FOXO — SKN-1 — HSF-1 stress network

Invertebrate lifespan data for several PDF ingredients run through this network rather than through direct antioxidantcy. Goji (*Lycium barbarum*) polysaccharides prolong *C. elegans* lifespan under normal, oxidative and heat stress conditions by upregulating daf-16, sod-3 and hsp-16.2; whole-berry extracts extend lifespan in a sir-2.1-dependent manner and rescue hsf-1 deficiency, with the effect largest in short-lived (stressed or malnourished) animals. Berberine likewise activates the DAF-16/SKN-1/HSF-1 antioxidant network downstream of IIS inhibition, upregulating SOD-3, HSP-16.2 and GST-4 and reducing lipofuscin. *Rhodiola rosea* extends lifespan in yeast, worms and flies (up to ~24% in *Drosophila*) — notably by a mechanism independent of dietary restriction, since the effect persists when SIR2, IIS and TOR are genetically perturbed.

4. Telomere maintenance and telomerase modulation

This is the mechanism most directly relevant to the source document's telomere claims, and it is carried by a small number of ingredients:

- Astragalus (and the closely related Astragalus/Milkvetch seed used in the eyesight formulas): the triterpenoid saponins astragaloside IV and its aglycone cycloastragenol (marketed as TA-65) upregulate TERT expression, restore telomerase activity and attenuate telomere attrition under stress, apparently via ERK signalling. In one senescence model they suppressed stress-induced senescence and apoptosis while lengthening telomeres. Effects are context-dependent, and in isolated normal fibroblasts cycloastragenol alone had only a negligible effect on telomere length — combinations performed better than single components.
- Carnosine: at physiological concentration it measurably reduces the telomere shortening rate in continuously subcultured human fibroblasts, reduces accumulated telomeric DNA damage in non-proliferating cells, and

extends replicative lifespan in population doublings. This is the single most direct telomere-protective agent in the entire PDF.

- Fo-Ti / He Shou Wu (*Polygonum multiflorum*): its principal stilbene TSG (2,3,5,4'-tetrahydroxystilbene-2-O-beta-D-glucoside) shows lifespan extension, neuro- and cardioprotection, reduced bone loss, and mechanistically alleviates oxidative stress, inflammation and apoptosis while enhancing mitophagy, mitochondrial function, telomerase activity and epigenetic regulation.

A general, ingredient-independent route also applies: telomeres are unusually vulnerable to guanine oxidation, and telomeric 8-oxoguanine alone triggers ATM/ATR-p53-p21 activation and rapid premature senescence without any shortening. Anything that lowers steady-state ROS at the DNA therefore protects telomeres indirectly — which is how most of the polyphenol-heavy formulas in the PDF would exert a telomere effect if they exert one at all.

5. Senescence, SASP and inflammaging

Chronic low-grade inflammation is now a hallmark in its own right. Berberine's p16/cyclin regulation is direct senomorphic action. Quercetin — present through lovage extract, capers, apple peel, and onion in the Chitosan Mix — is the classic senolytic partner compound. Rooibos suppresses TNF-alpha, IL-1beta and IL-6 elevation and attenuates lipid peroxidation in challenge models; in a human trial in adults at cardiovascular risk it significantly lowered conjugated dienes and TBARS and improved the GSH:GSSG ratio and lipid profile. Omega-3 from cod liver oil, sardines and anchovies, and the strict sugar exclusion in the back-pain protocol, act on the same inflammatory node.

6. Mitochondrial function, mitohormesis and exercise coupling

Many of the PDF's formulas are explicitly tied to exercise, heat, or physical stress. That coupling is mechanistically coherent: mitohormesis holds that transient exercise- or xenobiotic-induced ROS is the signal that upregulates endogenous defences and mitochondrial biogenesis (PGC-1alpha). Cordyceps and Rhodiola in combination enhanced aerobic exercise capacity after short-term high-altitude training. Salidroside from Rhodiola is neuroprotective and promotes peripheral nerve regeneration in rodent crush-injury models. Heat-shock protein induction (HSP-16.2, HSP70) is the proteostasis arm of the same response and is what the "heat stress protection" formula is implicitly recruiting.

7. Microbiome, glycation and xenobiotic handling

Dysbiosis is the twelfth hallmark. Fermented dairy plus polysaccharide prebiotics (goji LBP is a documented *Bifidobacterium/Lactobacillus* prebiotic) and defined probiotic strains act here; *Bifidobacterium animalis* ssp. *lactis* HN019 has a systematic review and meta-analysis supporting improved cellular immune function in healthy elderly subjects, and a randomised placebo-controlled trial of *Salacia reticulata* extract in men aged 50-60 reported shifts in intestinal microbiota, improved T-cell proliferation index and immune-gene expression toward a younger phenotype. Separately, carnosine is a carbonyl quencher and anti-glycation agent, and goji polysaccharides reduce circulating advanced glycation end-products — glycation being a distinct, non-radical route of macromolecular aging damage.

The central caveat that shapes the ranking

The literature does not support the simple model that swallowing more antioxidant equals less oxidative damage equals longer life. Cochrane and JAMA meta-analyses covering roughly 230,000-296,000 participants found no mortality benefit from antioxidant supplementation, and in low-risk-of-bias trials beta-carotene (RR 1.05, 95% CI 1.01-1.09), vitamin E (RR 1.03-1.04) and higher-dose vitamin A were associated with increased all-cause mortality. Excessive antioxidant loading can blunt the redox signalling that adaptation depends on.

The practical consequence for ranking: formulas built on signalling-pathway modulators delivered at realistic doses (Nrf2 inducers, AMPK activators, telomerase/telomere agents, probiotics, whole-food polyphenol matrices) score higher than formulas built on stacking high-dose direct-scavenger vitamins, and much higher than formulas whose active quantities are a few drops of a tincture — several orders of magnitude below any dose tested in the cited studies.

Part II — Ranking of the Formulas

Scoring rubric

Each formula in the source PDF was scored 0-5 on four independent axes, for a maximum of 20. Ties are broken by axis B (evidence tier).

Axis	What it measures	Anchors
A	Mechanistic breadth — how many of the twelve hallmarks the formula plausibly engages	5 = engages five or more distinct hallmark pathways; 3 = two or three; 1 = none identifiable beyond general nutrition
B	Evidence tier of the principal actives	5 = human RCT or meta-analysis; 4 = mammalian lifespan/healthspan data; 3 = invertebrate lifespan or strong mechanistic in vivo; 2 = in vitro only; 1 = traditional use or unverifiable
C	Dose adequacy and bioavailability as written	5 = quantities comparable to studied doses; 3 = teaspoon-scale herb powders, plausible but unstandardised; 1 = drops of tincture, pinches, or undefined substances
D	Specificity to telomeres and cellular senescence	5 = direct telomerase or telomere-shortening-rate evidence; 3 = validated senescence marker effects; 1 = generic antioxidant only

The ranking below is of anti-aging effectiveness only, as defined by this rubric. It does not incorporate palatability, cost, legality, or risk. Risk is handled separately in Appendix B.

The Tier column refers to the ingredient-evidence tiers of Table #1 (Appendix A), indicating the strength of the underlying literature for each formula's principal actives.

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
1	The Carnosine Mix Formula	18	Tier 1	Carnosine at 1,000 mg is the only gram-scale dose in the document of a compound with direct evidence for reduced telomere shortening rate and extended replicative lifespan; supported by grape seed proanthocyanidins (senolytic PCC1), milk thistle (Nrf2/silymarin), vitamin D3, marine omega-3 and B-complex. The Klotho + telomerase + senolytic + carnosine axis makes this the deepest-acting formula in the document. (Cautions: D3 quantity, elderberry note — Appendix B.)
2	The SOD Mix	16	Tier 1	The broadest single stack in the document: reishi, cordyceps, jiaogulan (AMPK/SOD induction), Fo-Ti (TSG), grape seed (PCC1), milk thistle, ashwagandha, ginger, bromelain, burdock, creatine and brewer's yeast. Engages Nrf2, AMPK, IIS/FOXO, mitochondrial biogenesis, senolytic clearance and inflammation simultaneously, at teaspoon-scale rather than drop-scale doses.
3	Mental Strength (Berberine-based)	16	Tier 2	Built around berberine, the compound in the PDF with the strongest mammalian lifespan data (~16.5% in naturally aged mice; ~72% reduction in SA-beta-gal-positive senescent fibroblasts; p16 downregulation; Klotho up-regulation). AMPK/complex I, mTOR, autophagy, DAF-16/SKN-1. Capsule dosing is realistic; vitamin E/C and potassium are secondary.
4	Mega Strength Body Formula	15	Tier 1	The only formula centred on sulforaphane, the best-characterised and most bioavailable Nrf2 inducer in the literature and a

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
				demonstrated lifespan extender in <i>C. elegans</i> . Schisandra lignans and cinnamon reinforce Nrf2; lovage supplies senolytic quercetin; willow bark supplies salicylate; the <i>Salacia reticulata</i> follow-up has a genuine human RCT behind it. Marked down only because the actives are delivered as 2-3 drops of extract.
5	Formula for Physical Energy #2	15	Tier 2	Astragalus (astragaloside IV / cycloastragenol — telomerase), jiaogulan (AMPK, human trial), ashwagandha (Nrf2), cordyceps (mitochondrial), ginger and Brazil nut (selenium/glutathione peroxidase) in teaspoon quantities. One of the few formulas combining a telomerase-active herb and an AMPK activator at plausible doses.
6	Yogurt Mix (Living Healthy Beyond 120 / HN019)	14	Tier 2	Contains the single ingredient in the document with the cleanest human geriatric evidence: <i>B. animalis</i> ssp. <i>lactis</i> HN019, supported by a systematic review and meta-analysis for cellular immune function in healthy elderly subjects. Adds ALA/NAC (glutathione, Nrf2), jiaogulan, cinnamon, astragalus and B6. Targets dysbiosis and immunosenescence directly.
7	The Brain Food Mix	14	Tier 1-2	Very wide polyphenol and adaptogen coverage — ginkgo (neurovascular), gotu kola (telomerase-adjacent, neurogenesis), bacopa, rosemary (carnosic acid/Nrf2), cordyceps, jiaogulan or ginseng, cat's claw, astragalus, Brazil nut selenium, ALA/NAC. Strong on neuro-healthspan and Nrf2; weaker on telomere specificity, and 15+ herbs at quarter-teaspoon each dilutes each active.
8	Goji Berry Combo (all 3 uses)	14	Tier 2	<i>Lycium barbarum</i> has among the better invertebrate anti-aging datasets of any ingredient here: lifespan extension via daf-16, sod-3 and hsp-16.2 upregulation; sir-2.1-dependent effects; reduced advanced glycation end-products, raised SOD/CAT, lowered MDA; prebiotic polysaccharides. Gotu kola and carotenoids add neuro and ocular support; the resveratrol variant adds a sirtuin/AMPK arm.
9	Room Temperature Probiotic / Bone & Immune Probiotic	14	Tier 3	Live-culture dairy or polyphenol base plus olive leaf (oleuropein), astragalus (telomerase), coriander, cinnamon, and in the extract versions hawthorn, <i>Salacia reticulata</i> and elderberry. Combines a probiotic vehicle, a telomerase-associated herb and Nrf2-active spices at half-teaspoon scale. Sound on dysbiosis, inflammation and immunosenescence; the pure-extract variants are limited by drop-scale dosing and absence of live organisms.
10	Regenerative / Heat Stress Protection	13	Tier 2	Mung bean vitexin, hawthorn proanthocyanidins, rooibos aspalathin, cat's claw and Fo-Ti root, with reishi and quercetin extracts and vitamin E. Recruits the heat-shock/proteostasis arm (HSF-1, HSP induction) that the goji and berberine literature also implicates, plus polyphenol redox buffering and cardioprotection. Coherent with the mitohormesis rationale for taking it around exertion and heat.
11	Major Detox Formula	13	Tier 2	Sulforaphane capsule (Nrf2, phase II, lifespan), limonene, alpha-lipoic acid (glutathione recycling, metal chelation, regenerates C and E), radish glucosinolates, senolytic quercetin and flax lignans. A well-constructed phase I/II xenobiotic and redox formula; scores lower than the Mega Strength formula only on breadth of hallmark coverage.

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
12	Horsetail Energy & Skin Rejuvenation Formula	13	Tier 3	Ginkgo at 10 parts is the dominant active (flavonol glycosides, terpene lactones, anti-inflammatory and microvascular), with rosemary (Nrf2), alpha-lipoic acid, choline bitartrate, D3 and bamboo/horsetail silica for connective tissue. Powder ratios give realistic doses. Little direct senescence or telomere action.
13	Sleep Enhancing Formula / Raspberry Recovery	13	Tier 2	Carnosine at teaspoon scale (telomere protection, anti-glycation), freeze-dried raspberry melatonin (mitochondrial antioxidant, circadian), vitamin C, milk thistle (Nrf2), brewer's yeast, D3 and grape seed (senolytic/SOD). Sleep consolidation is itself a legitimate healthspan lever; the melatonin + carnosine + grape-seed triad is the notable element.
14	Black Cumin Exercise Recovery Formula	13	Tier 2-3	Nigella sativa thymoquinone is a documented Nrf2 activator and NF-kB suppressor; combined with carnosine (anti-glycation), vitamin C and selenium (glutathione peroxidase cofactor) and ginger. Tight, non-diluted formula. The self-imposed 4-days-on/3-days-off cycling is consistent with hormetic dosing logic.
15	Exercise Recovery Formula #3 (Rhodiola + Astragalus)	13	Tier 2	Pairs the document's best invertebrate lifespan herb (Rhodiola: yeast, worm and fly lifespan extension, dietary-restriction-independent) with its best telomerase herb (Astragalus: astragaloside IV / cycloastragenol, TERT upregulation), plus resveratrol (sirtuin/AMPK), cayenne and vitamin C. Compact but contains three deep-mechanism agents; penalised only on dose form.
16	Sexual Endurance (Jiaogulan + Schisandra + Rhodiola)	13	Tier 4	AMPK activation and SOD induction (gypenosides), Nrf2 induction (schisandra lignans) and the Rhodiola stress-resistance/mitochondrial lifespan pathway in one three-herb stack. Mechanistically one of the cleaner combinations in the document despite its narrow stated purpose.
17	Natural Probiotic Formula	12	Tier 2	Defined probiotic capsule (HN019/HN109) plus hawthorn, astragalus (telomerase), Salacia reticulata and elderberry, with optional jiaogulan and ALA. Gut-immune longevity axis is well covered; the extract drops contribute little quantitatively.
18	Allergy Eliminator & Metal Chelation Mix	12	Tier 5	Garlic organosulfurs, rosemary, coriander, clove eugenol, Brazil nut selenium, bromelain, parsley apigenin, yerba mate and echinacea, taken with vitamin C and cod liver oil. Genuine phase II and glutathione support at teaspoon doses; "chelation" is better described as enhanced conjugation and excretion than as true chelation therapy. Supports the overall oxidative-stress burden indirectly.
19	NZT Super Neurocognition Enhancer	12	Tier 1	Gotu kola (asiaticosides), mucuna (L-DOPA), butterfly pea anthocyanins, rosemary, cordyceps, plus a Fo-Ti/goji/Coptis base and vitamin E as catalyst. Contains three genuinely anti-aging-relevant actives (goji polysaccharide, TSG from Fo-Ti, berberine from Coptis), but at 0.5 drop of Coptis and a few drops of each extract the delivered quantities are negligible relative to studied doses. Acute nootropic effect and anti-aging effect are being conflated.
20	Exercise Recovery Formula #2	11	Tier 2	Cordyceps plus Rhodiola is the pairing shown to enhance aerobic capacity after short-term high-altitude training; walnuts with grape

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
				seed add senolytic proanthocyanidins and ALA, with rooibos and cacao. Sound mechanism, small delivered dose (6-8 drops).
21	COVID-19 Resistance Formula	11	Tier 5	Selenium and vitamin D are the two components with real immune-function evidence; ajwain thymol has antioxidant and DNA-damage-protective data, including shielding of DNA from heavy-metal injury. The formula is defensible as general immune support; the author explicitly states it has not been tested against the stated indication.
22	Yogurt Mix #2	11	Tier 3	Live cultures with blackstrap molasses (iron, minerals), astragalus (telomerase), cinnamon, flax lignans and spirulina (beta-carotene, phycocyanin). Microbiome plus Nrf2 plus phytoestrogenic lignans at realistic quantities; simpler than Yogurt Mix #1 and lacking the defined probiotic strain.
23	Long Term Lasting Energy (Chlorophytum tuberosum)	10	Tier 1	Chlorophytum borivilianum polysaccharides have a published lifespan-extension result in C. elegans and S. cerevisiae, combined here with resveratrol (sirtuin), grape seed (senolytic PCC1), gotu kola, magnolia bark, cacao and limonene (a documented protector against oxidative stress with better stability at high temperature). One of the strongest for direct lifespan evidence; marked down because the key herb is poorly standardised and the supporting extracts are 1-3 drops.
24	St. Germain Rejuvenation Combination	10	Tier 3	The sequenced version scores above the base formula because it adds resveratrol, astragalus (telomerase), elderberry anthocyanins, cod liver oil and D3 to a fermented-dairy base. The senna core still contributes laxation and damp-clearing rather than any anti-aging mechanism.
25	Simple Memory Improvement Tincture	10	Tier 3	Ginkgo, gotu kola, peppermint and rosemary. A compact, well-precedented neuro-longevity tincture with real anti-inflammatory, microvascular and telomerase-adjacent (gotu kola) mechanisms, but nothing acting on nutrient sensing or senescence clearance.
26	"Feeling Old?" Combination	10	Tier 3	Cordyceps, Rhodiola, goji tea with rosemary, and walnuts with grape seed — a compact adaptogen plus telomerase-adjacent plus senolytic combination. The individual ingredients are among the better-evidenced in the document; delivered as 6-7 drops of extract, the quantities are the limiting factor.
27	Brain Lightening Formula	8	Tier 3	Guarana/kola caffeine plus a broad traditional nervine blend (valerian, skullcap, gotu kola, sarsaparilla, dandelion, mullein, Oregon grape root, St John's wort, lobelia). Acute CNS formula with a narrow longevity footprint. Gotu kola and the berberine in Oregon grape root are the only anti-aging-relevant constituents. Significant interaction profile (Appendix B).
28	Concentration Boost	8	Tier 4	Carob polyphenols, vitamin E and blackstrap molasses (iron, magnesium, potassium). Reasonable as micronutrient and acute-energy support; no nutrient-sensing, senescence or telomere action.
29	Emerald Tablets Exercise Strengthening Formula	7	Tier 4	Ginkgo and Rhodiola drops with carob, black molasses, limonene and cayenne, taken around a Qi Gong practice. Antioxidant plus adaptogen, exercise-amplifying; the exercise component is the substantive part and the herbal quantities are small. Enhanced post-

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
				exercise nutrient absorption is real for some nutrients but not as broadly as stated.
30	Neurocognition Protector	7	Tier 4	Apple peel polyphenols (Nrf2, quercetin, ursolic acid) and carnosine (anti-glycation, senescence delay) are both mechanistically appropriate, but a "pinch" of carnosine is three orders of magnitude below the 1,000 mg used elsewhere in the same document, and Ormus is not a characterised substance. Dose adequacy is the binding constraint.
31	How to Use Fo Ti (Fo Ti Root Tea)	9	Tier 4	Single-herb longevity tonic. TSG has a real anti-aging literature (lifespan extension, mitophagy, telomerase activity, epigenetic regulation) and the whole-root decoction is a traditional, well-regarded preparation; the author's own guidance on small amounts, simplicity and liver load is consistent with the pharmacology. Narrow single-agent footprint, and substantially constrained by the hepatotoxicity profile in Appendix B.
32	To Remove Summer Heat Stress	8	Tier 4	Vitamin C and E do interact regeneratively (tocopheroxyl radical recycling), and ginkgo plus electrolyte replacement is reasonable for heat strain. Narrow and seasonal; scores low on aging specificity, and pairs two of the supplements flagged in the Bjelakovic mortality analyses.
33	Eyesight Restorer / Strengtheners (#1-#3)	8-9	Tier 4	#2 (chrysanthemum luteolin/apigenin, astragalus, Milkvetch seed) is the strongest of the three, since two of its ingredients are Astragalus species and it therefore touches the astragaloside/telomerase axis. #3 (limonene, Milkvetch seed, Spanish moss) is thinner, with Spanish moss essentially uncharacterised. #1 (radish with Banisteriopsis caapi and Syrian rue) contributes beta-carboline MAO inhibition, which has no established anti-aging or ocular mechanism and carries the interaction profile in Appendix B. Primarily eye-targeted with a narrow anti-aging footprint.
34	Zeolite Detoxification Formula	8	Tier 5	Vitamin C (also a metal chelator), parsley apigenin and cayenne are mechanistically defensible; clinoptilolite zeolite's heavy-metal binding in vivo is weakly evidenced and contested, and the document's own observation that excess is simply excreted is consistent with limited systemic action. Supports oxidative-stress burden indirectly rather than acting on an aging pathway.
35	Life Restoring Chitosan Mix	7	Tier 5	Onion quercetin, brewer's yeast B-vitamins, lecithin choline, parsley apigenin and oat beta-glucan are all defensible. Chitosan primarily binds dietary fat and, with it, fat-soluble vitamins and carotenoids — which works against the rest of the document's strategy. Detox and rest oriented, with a modest direct longevity mechanism. Comfrey is the limiting problem (Appendix B).
36	Meal Combo / Bone Strength / Sore-Back Protocol	11-14	Tier 5	Supportive dietary combinations whose primary aim is structural rather than systemic. The Sore-Back protocol scores highest of the three (up to 14) on its non-herbal components — graded exercise (mitohormesis, PGC-1alpha), strict sugar exclusion (glycation, inflammation) and collagen peptides, which have a randomised trial supporting increased spinal bone mineral density. Bone Strength (capers quercetin/rutin, sardines or oysters, olive oil polyphenols) scores well on the food-matrix argument. The Meal Combo

Ranked— from strongest herbal formula to weakest

#	Formula Name	Score /20	Tier (Table #1)	Basis for placement
				(spirulina, oatmeal beta-glucan, egg choline, sunflower seed) has good dose realism but modest mechanistic ambition; astragalus and spirulina in the dinner yogurt contribute the antioxidant and telomerase activity.

Appendix A — Ingredient-level evidence tiers

The formula ranking is largely driven by which of the following ingredients a formula contains, in what quantity. This table summarises the underlying evidence for the ingredients that carry the most weight. It is the Table #1 referenced by the Tier column above.

Ingredient	Principal active(s)	Documented anti-aging mechanism	Highest evidence tier
Berberine (also via Coptidis rhizoma, Oregon grape root)	Berberine	AMPK activation via complex I inhibition; autophagy; p16 downregulation; DAF-16/SKN-1/HSF-1; reduced lipofuscin	Mammalian lifespan (naturally aged mice, ~16.5%)
Astragalus / Milkvetch seed	Astragaloside IV, cycloastragenol (TA-65)	TERT upregulation via ERK; telomere attrition attenuated; senescence and apoptosis suppression	In vitro plus small human telomere studies
Carnosine	L-carnosine dipeptide	Reduced telomere shortening rate and telomeric DNA damage; extended replicative lifespan; carbonyl quenching / anti-glycation	In vitro human fibroblast lifespan
Sulforaphane (broccoli)	Sulforaphane	KEAP1-Nrf2-ARE induction of Prdx6, catalase, GST; mitochondrial protection; ~80% oral bioavailability	Mammalian healthspan (aged mice, heart and skeletal muscle)
Fo-Ti / He Shou Wu	TSG (tetrahydroxystilbene glucoside)	Lifespan extension; mitophagy; telomerase activity; epigenetic regulation; reduced oxidative stress and apoptosis	Systematic review of preclinical data (2025)
Goji / Lycium barbarum	LBP polysaccharides, zeaxanthin, flavonoids	daf-16, sod-3, hsp-16.2 upregulation; sir-2.1-dependent lifespan; reduced AGEs; raised SOD/CAT; prebiotic	Invertebrate lifespan plus rodent
Rhodiola rosea	Salidroside, rosavins	Lifespan extension in yeast, worm and fly, independent of dietary restriction; reduced mitochondrial ROS; nerve regeneration	Invertebrate lifespan (~24% Drosophila)
Jiaogulan / Gynostemma	Gypenosides	Dose-dependent AMPK activation; autophagy; mitochondrial biogenesis; SIRT1/AMPK/mTOR; SOD induction	Human RCT (muscle AMPK, exercise performance)
Grape seed	Procyanidin C1 (PCC1), proanthocyanidins	Senotherapeutic clearance of senescent cells; increased lifespan in mice; SOD support	Mammalian lifespan (Nature Metabolism, 2021)
Rooibos	Aspalathin, nothofagin, quercetin	Raised GSH:GSSG; reduced TBARS and conjugated dienes; SOD induction; TNF-alpha, IL-1beta, IL-6 suppression	Human trial (adults at cardiovascular risk)
Cordyceps	Cordycepin, polysaccharides	Mitochondrial function and aerobic capacity; combined with Rhodiola improved	Human trial (exercise performance)

Ingredient	Principal active(s)	Documented anti-aging mechanism	Highest evidence tier
		performance after high-altitude training	
Resveratrol	trans-Resveratrol	AMPK activation (dose-dependent); metabolic improvement in dysmetabolic populations. Direct SIRT1 activation now regarded as substantially an assay artifact	Human RCTs on surrogate markers; no lifespan endpoint
Chlorophytum borivilianum	Polysaccharide fraction	Lifespan extension in <i>C. elegans</i> and <i>S. cerevisiae</i>	Invertebrate and yeast lifespan
Probiotics (HN019, HN109)	<i>B. animalis</i> ssp. <i>lactis</i> HN019	Improved cellular immune function in healthy elderly; dysbiosis hallmark	Systematic review and meta-analysis
Salacia reticulata	Salacinol, kotalanol	Intestinal microbiota shift, improved T-cell proliferation index and immune-gene expression toward younger phenotype	Randomised placebo-controlled trial
Collagen peptides (bone broth)	Glycine-rich collagen peptides	Increased spinal bone mineral density (reported up to ~3%)	Randomised controlled trial
Beta-carotene, vitamin E, high-dose vitamin A	Direct-scavenging vitamins	Direct radical scavenging; interferes with adaptive redox signalling at supplemental doses	Meta-analyses showing increased all-cause mortality
Ormus / monatomic gold	Not characterised	No established composition, pharmacokinetics or mechanism in the peer-reviewed literature	None identified

Formula-by-Formula Mechanism Notes

The following notes record, for each distinct formula in the PDF, the anti-aging mechanisms its ingredients engage according to the literature. They are the evidentiary basis for the ranking above.

The SOD Mix

Brewer's yeast, Bromelain, Ashwagandha, Cumin, Fo-Ti, Milk Thistle (silymarin), Creatine, Reishi, Ginger, Grape seed, Burdock, Cordyceps, Basil, Jiaogulan. Built to raise endogenous superoxide-dismutase. Engages Nrf2 (silymarin, ashwagandha/withaferin A), telomerase support (Fo-Ti, Astragalus-adjacent), senolytic (grape-seed PCC1), adaptogen/mitochondrial (cordyceps, rhodiola-adjacent, jiaogulan SOD induction), hepatoprotection (milk thistle). A broad-spectrum multi-target longevity formula.

The Carnosine Mix Formula

Milk Thistle, Carnosine 1000 mg, Vitamin C, Cod Liver Oil (D), D3 7000 IU, Grape seed 200 mg, Brewer's Yeast, Honey; optional Elderberry, Astragalus, Milk Thistle extract, Cayenne, Ormus. The PDF states it "stimulates the klotho gene" and is followed by berberine for myelin repair. Engages: telomerase (Astragalus), senolytic + SOD induction (grape-seed PCC1), Nrf2 (silymarin), anti-glycation / senescence-delay (carnosine quenches 4-HNE/MDA), Klotho (per PDF; berberine up-regulates Klotho), telomere preservation (D3). The Klotho + telomerase + senolytic + carnosine axis makes this one of the deepest-acting formulas.

NZT Super Neurocognition Enhancer / Neurocognition Enhancer

Butterfly pea, Gotu kola, Mucuna pruriens (L-dopa), Rosemary, Cordyceps, Fo Ti, Goji Berry, Coptidis Rhizoma (berberine source), Vitamin E catalyst. Engages: telomerase (gotu kola asiaticosides, Fo-Ti), neurogenesis (gotu kola, bacopa-adjacent), mitochondrial (cordyceps), antioxidant polyphenols (rosemary, goji, butterfly-pea anthocyanins), berberine (AMPK/mTOR/Klotho via Coptis), vitamin E lipid protection. A strong neuro-longevity formula with multiple deep mechanisms.

Long Term Lasting Energy (Chlorophytum Tuberosum / C. borivilianum)

Chlorophytum tuberosum (~ C. borivilianum / safed musli), liquorice root, Gotu Kola, Limonene, Mucuna pruriens, Grape seed, Sweet Black Museli (safed musli), Magnolia bark, Cacao, Resveratrol synergy. The headline ingredient has a published lifespan-extension result in C. elegans and yeast (PMC5519035); combined with resveratrol (sirtuin), grape-seed PCC1 (senolytic), gotu kola (telomerase/neurogenesis), and limonene (oxidative-stress protection). One of the strongest for direct lifespan evidence.

Mega Strength Body Formula

Sulforaphane, Willow bark (salicin), Lovage (quercetin), Schisandra, Cinnamon, Brewer's Yeast, Flax seeds, Salacia reticulata follow-on. Sulforaphane is a demonstrated lifespan extender in C. elegans and a potent Nrf2/SKN-1 inducer; quercetin is a senolytic; Schisandra is a lignan-rich adaptogen with antioxidant and liver-protective action; Salacia reticulata shifts intestinal microbiota and immune gene expression toward a "younger phenotype" (Oda et al., 2015). A focused detox/Nrf2/senolytic/lifespan formula.

Major Detox Formula

Limonene, Sulforaphane, Alpha Lipoic Acid, Radish extract, Flax seed, Lovage (quercetin), Cacao. Sulforaphane (Nrf2/lifespan) + ALA (universal-phase antioxidant, metal chelation, recycles C/E/GSH) + quercetin (senolytic) + limonene (oxidative stress). Strong mechanistically though narrower (detox-oriented) than the SOD/Carnosine mixes.

Regenerative / Heat Stress Protection

Mung bean, Hawthorn berry, Rooibos, Cat's claw, Fo Ti, Reishi, Lovage (quercetin), Hawthorn extract, Mung bean extract, Vitamin E. Engages Nrf2 (reishi, mung-bean polyphenols), senolytic (quercetin), cardioprotection (hawthorn), antioxidant tea (rooibos aspalathin), telomerase-adjacent (Fo-Ti), immune (cat's claw). Broad-spectrum but heat-stress focused.

Brain Food Mix

Rosemary, Skullcap, Cat's Claw, Basil, Brazil Nut (selenium), Mullein, Slippery Elm, Astragalus, Gotu Kola, Cordyceps, Jiaogulan/Ginseng, Echinacea, Ginkgo, optional Bacopa, Dang Gui, Papaya enzyme, ALA/NAC. Telomerase (Astragalus, gotu kola), Nrf2 (bacopa, ALA/NAC), neurovascular (ginkgo), mitochondrial (cordyceps, jiaogulan), selenium (glutathione peroxidase cofactor). Very broad multi-target neuro-longevity formula.

Horsetail Energy & Skin Rejuvenation Formula

Ginkgo 10 parts, Horsetail 3, Bamboo (silica), Choline, Rosemary, Alpha Lipoic Acid, Basil, D3. Ginkgo (antioxidant/anti-inflammatory/neuro), rosemary (polyphenol/Nrf2), ALA (universal antioxidant), D3 (telomere). Moderate, tissue-targeted (skin/joints/energy).

Goji Berry Combo (3 uses)

Goji berry, Gotu kola, Coconut oil, Apricots; resveratrol + lemon for exercise recovery. Goji LBP (ROS scavenging, SOD induction), gotu kola (telomerase/neurogenesis), resveratrol (sirtuin). Strong neuro-eye-recovery combination.

St. Germain Formula & Rejuvenation Combination

Senna, Elderberry, Fennel, Star Anise; synergy with Rosemary, Ginger, Carrot, Creatine, D3, Cod Liver Oil; Rejuvenation adds Elderberry, Cayenne, Vitamin C, Astragalus, Honey. Elderberry (anthocyanin antioxidant, white-blood-cell support), Astragalus (telomerase, in the Rejuvenation combo), D3 (telomere). Primarily a colon/digestive/damp-clearing formula with anti-aging co-benefits in the Rejuvenation add-on.

Sleep Enhancing Formula / Raspberry Recovery

Freeze-dried Raspberry (melatonin), Vitamin C, Milk Thistle, Brewer's Yeast, Carnosine, B1, B12, D3, Grape seed; Xylitol + Beet. Melatonin (mitochondrial antioxidant, circadian anti-aging), carnosine (anti-glycation/senescence), silymarin (Nrf2), grape-seed (senolytic/SOD), D3 (telomere). Sleep + recovery + antioxidant; the melatonin + carnosine + grape-seed triad is notable.

Formula for Physical Energy #2

Astragalus, Ashwagandha, Jiaogulan, Ginger, Bromelain, Cordyceps, Basil, Brazil Nut. Telomerase (Astragalus), Nrf2 (ashwagandha), SOD induction (jiaogulan), mitochondrial (cordyceps), selenium (Brazil nut). Solid multi-target energy/longevity formula.

Natural Probiotic Formula

Hawthorn, Astragalus, Salacia reticulata, Elderberry, HN019 probiotic, optional Jiaogulan, ALA. Telomerase (Astragalus), microbiome/immune-youthening (Salacia, HN019), antioxidant (elderberry, hawthorn, ALA), SOD (jiaogulan). Gut-immune longevity axis.

Exercise Recovery Formula #3

Cayenne, Resveratrol, Astragalus, Vitamin C, Rhodiola. Telomerase (Astragalus), sirtuin (resveratrol), adaptogen/mitochondrial (rhodiola salidroside), vitamin C. Compact but contains three deep-mechanism agents.

Exercise Recovery Formula #2 (Rhodiola + Cordyceps + Grape seed + Rooibos)

Cordyceps, Rhodiola, Walnuts + grape seed, Cacao, Rooibos. Mitochondrial/adaptogen (cordyceps, rhodiola), senolytic/SOD (grape-seed PCC1), antioxidant (rooibos aspalathin), HRV/cacao. Good exercise-longevity combination.

Black Cumin Exercise Recovery Formula

Black Cumin (Nigella sativa / thymoquinone), Ginger, Carnosine, Vitamin C, Selenium. Thymoquinone is a potent Nrf2-activating antioxidant; carnosine (anti-glycation); selenium (glutathione peroxidase). Moderate, recovery-focused.

Exercise Recovery Formula #1 (Walnut + Cordyceps + Rhodiola)

Walnuts + grape seed, Cordyceps, Rhodiola. Mitochondrial + senolytic + adaptogen. Simpler version of #2.

Yogurt Mix (Living Healthy Beyond 120)

ALA/NAC, Cumin, Jiaogulan, Cinnamon, Astragalus, Vitamin B6, HN019 probiotic. Telomerase (Astragalus), Nrf2 (ALA/NAC), SOD (jiaogulan), microbiome (HN019). Broad gut-longevity formula.

Yogurt Mix #2

Blackstrap molasses (iron), Astragalus, Cinnamon, Flax, Spirulina. Telomerase (Astragalus), antioxidant/beta-carotene (spirulina), iron. Simpler than Yogurt Mix.

Concentration Boost / Brain Lightening Formula

Carob extract, Vitamin E, Blackstrap molasses; Brain Lightening adds Cayenne, Valerian, Skullcap, Gotu Kola, Sarsaparilla, Dandelion, Lobelia, Oregon Grape, Mullein, St. John's Wort, Kola Nut/Guarana. Gotu kola (telomerase/neuro), polyphenols (carob, dandelion, Oregon-grape berberine). Acute mental energy; narrower longevity footprint.

Simple Memory Improvement Tincture

Ginkgo, Gotu Kola, Peppermint, Rosemary. Neurovascular + telomerase + polyphenol. Compact neuro-longevity tincture.

Neurocognition Protector (apple + carnosine + apple peel)

Apple, Ormus, Carnosine, Apple-peel polyphenols. Carnosine (anti-glycation/senescence) + apple-peel polyphenols (Nrf2/antioxidant). Modest, acute.

To Remove Summer Heat Stress

Cayenne, Ginkgo, Himalayan salt, Vitamin C, Vitamin E. Antioxidant (C+E synergy), ginkgo (heat-stress/neuro). Narrow, seasonal.

Eyesight Restorer / Strengtheners (#1-#3)

Radish + B. Cappi + Syrian Rue; Chrysanthemum + Astragalus + Milkvetch; Limonene + Milkvetch + Spanish Moss. Astragalus (telomerase) in #2. Primarily eye-targeted; narrow anti-aging footprint.

Zeolite Detoxification / Allergy Eliminator & Metal Chelation Mix

Zeolite/Parsley/Vitamin C/Lobelia/Cayenne; and Yerba Mate, Parsley, Brewer's Yeast, Echinacea, Brazil Nut, Chili, Bromelain, Garlic, Coriander, Clove, Rosemary, Basil, Lecithin, B6. Metal chelation + detox + antioxidant. Supports the overall oxidative-stress burden indirectly.

Life Restoring Chitosan Mix

Chitosan, Himalayan salt, Lecithin, Onion, Comfrey, Brewer's Yeast, Basil, Parsley, Oat. Detox/rest; modest direct longevity mechanism.

Feeling Old? / Goji Tea + Cordyceps + Rhodiola + Rosemary + Walnut + Grape seed

Compact adaptogen + telomerase-adjacent + senolytic combo. Good but small.

Bone & Immune Probiotic / Room Temperature Probiotic #1 & #2

Coriander, Astragalus, Olive leaf, Cinnamon, Potassium; and Hawthorn, Salacia, Astragalus, Elderberry; #2 adds Allulose, Coriander, Bromelain, Olive leaf, Astragalus. Telomerase (Astragalus), microbiome (Salacia), olive-leaf (oleuropein antioxidant). Gut-immune longevity.

Mental Strength (Berberine + Potassium + Vitamin C + Cinnamon-E + Ormus)

Berberine (AMPK/mTOR/Klotho) is the deep-mechanism agent; compact but potent metabolic-longevity formula.

Emerald Tablets Exercise Strengthening Formula

Carob, Black molasses, Limonene, Cayenne, Ginkgo, Rhodiola. Antioxidant + adaptogen; exercise-amplifying.

Sexual Endurance (Jiaogulan + Schisandra + Rhodiola)

Adaptogen/SOD (jiaogulan, schisandra) + mitochondrial (rhodiola). Moderate.

How to Use Fo Ti (Fo Ti root tea)

Single-herb longevity tonic (telomerase-adjacent, antioxidant, neuro-eye). Traditional, narrow but well-regarded.

Meal Combo / Bone Strength / Sore-Back protocol / Dinner yogurt + Spirulina + Astragalus

Supportive dietary combinations; Astragalus and spirulina contribute antioxidant/telomerase activity but the primary aim is structural (back/bone) recovery.

COVID-19 Resistance Formula (St. Germain + Ajwain + Selenium + Cod liver/D3)

Ajwain/thymol (DNA-damage protection), elderberry (antioxidant), D3 (telomere), selenium (glutathione peroxidase). Immune-focused; modest direct longevity aim.

Appendix B — Pharmacological and interaction notes

These are reported as factual pharmacology, separate from the effectiveness ranking above, because several formulas score respectably on mechanism while carrying documented risks that a reader working from the source PDF alone would not see. They are not a commentary on the author's choices.

- Syrian rue (*Peganum harmala*) and Banisteriopsis caapi — used in the depression formula and Eyesight Restorer #1. Harmine and harmaline are reversible MAO-A inhibitors. Concomitant use with MAOI drugs and with tyramine-containing foods is contraindicated, and combination with serotonergic agents (SSRIs, SNRIs, triptans, tramadol, MAO-B inhibitors) can precipitate serotonin syndrome or hypertensive crisis; a published case involved a patient on rasagiline. They also interact with multiple CYP450 enzymes, which alters the metabolism of co-administered drugs — relevant given how many other substances the document combines.
- Fo-Ti / He Shou Wu (*Polygonum multiflorum*) — appears in at least five formulas. It is a recognised cause of idiosyncratic drug-induced liver injury, usually hepatocellular, with median latency around 40 days; in one series of 547 DILI hospitalisations, 29 were attributed to it. Injury is usually self-limited but can be prolonged and is occasionally fatal, and recurrence on re-exposure is common. Raw root is considerably more hepatotoxic than processed root; free anthraquinones (emodin) and naphthalenes are the leading candidate toxins.
- Senna — 3 parts of the St. Germain formula, taken every 3-4 days on an ongoing basis. Senna is a stimulant anthraquinone laxative intended for short-term use; regular use is associated with electrolyte disturbance and dependence.
- Comfrey — in the Chitosan Mix. Comfrey contains pyrrolizidine alkaloids associated with hepatic veno-occlusive disease; oral comfrey products have been withdrawn in several jurisdictions.
- Vitamin D and vitamin A load — the Carnosine Mix specifies 7,000 IU D3 plus 2-3 cod liver oil capsules, and the St. Germain follow-up adds 5,000 IU D3 with 2 cod liver oil capsules. Cod liver oil contributes preformed retinol, so the two stack. Sustained intakes at these levels exceed standard tolerable upper intake levels.
- Supplemental vitamin E and beta-carotene — used across many formulas. In low-risk-of-bias randomised trials, beta-carotene and vitamin E were associated with a small but statistically significant increase in all-cause mortality; vitamin C and selenium were not.
- St John's wort — in the Brain Lightening Formula. It is a potent inducer of CYP3A4 and P-glycoprotein and reduces plasma levels of many drugs including oral contraceptives, anticoagulants, immunosuppressants and antiretrovirals; it is also serotonergic.
- Lobelia — in the Brain Lightening and Zeolite formulas. Lobeline has a narrow margin between the intended effect and emesis and autonomic effects.
- Elderberry — the source document itself notes caution. Raw or unripe elderberry contains cyanogenic glycosides; properly prepared extracts do not.
- Bone broth heavy metals — the document's concern here is directionally supported: bone is a lead reservoir, and lead can transfer into broth. However, a "shiny gold texture" is not a validated indicator of purity; only third-party heavy-metal assay results establish that.
- Herb load and hepatic burden — the document raises this itself. It is a legitimate point: several formulas overlap in liver-metabolised constituents (Fo-Ti, berberine, kava-adjacent nervines, high-dose polyphenols), and berberine in particular is a CYP3A4 and P-gp inhibitor that raises plasma levels of co-administered drugs.

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