Functional nutrients for healthy aging in women*:
Emerging concepts and new research
Tori S. Hudson, N.D.
Women’s Health: Special Needs

• Key Areas of Interest:
  • Cardiovascular Health*
  • Bone Support*
  • Healthy Vision*
  • Weight Management*†

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

†Provides weight management support as part of a healthy lifestyle with a reduced calorie diet and regular exercise.
Cardiovascular Health*

- CoQ\textsubscript{10}
- Bergamot
- EFAs

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Sustained release CoQ₁₀

SR-CoQ₁₀ Absorption in Human Volunteers

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
SR-CoQ$_{10}$ w/PQQ

• Clinically researched, nanosized, sustained release CoQ$_{10}$
• PQQ (pyrroloquinoline quinone), a powerful antioxidant that complements CoQ$_{10}$ by promoting the synthesis of *new* mitochondria*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*
The VESIisorb® technology

- Colloidal system designed for fat soluble and partially soluble bioactives
- Based on the science of micelles (water-soluble exterior and oily core)
- Sequesters the bioactive until the site of absorption is reached*
- Small size: <100 nanometers in diameter
- Even dispersal in the GI tract*
- Easy penetration of the unstirred water layer*
- Maximal access the absorptive surface*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
How is cholesterol synthesized?

Carbohydrates & fat → HMG-CoA → Mevalonate → Cholesterol

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Clinical Study: Bergamonte™

• 238 human subjects
• Placebo, 500 or 1000 mg Bergamonte™ per day
• Outcome measures: Total lipid profile and blood glucose
• Results
  • Bergamonte™ maintained healthy triglyceride and lipid profiles*
  • Changes in parameters were 0-1% in placebo and 19-40% with Bergamonte™*
  • Significant support for blood glucose homeostasis: 0.5% change in placebo, 19-22% with Bergamonte™*
  • Effects were statistically and clinically significant at 30 days*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Cardiovascular Health and Omega-3 Fatty Acids*

Mechanisms:
- Moderate platelet aggregation*
- Promote vasodilation*
- Support endothelial function*
- Maintain membrane composition*
- Lipid/triglyceride benefits*
- Rhythm regularity*
- Arterial elasticity*
- Healthy blood pressure*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Cardiovascular Health*

- A review of 25 trials that evaluated the risk of CHD related to the body’s omega-3 levels = inverse relationship with major CV events and tissue levels of EPA and even more so, with DHA.*

- In the Diet and Reinfarction Trial,[ii] men with recent MI showed that omega-3 PUFA either in dietary oily fish or fish oil capsules, but far more in the fish oil capsules, improved cardiovascular health and longevity by 29%.*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Recommended doses for primary and secondary prevention:
1,000 mg/day of combined EPA/DHA

Cardiovascular Health*

- GISSI [iii] randomized 11,323 post MI patients with 1 capsules of 850 mg EPA/DHA in a 1.2:1 ratio versus customary care. After one year, patients taking the fish oil experienced a 30% improvement in CV health.*

- The JELIS trial [iv] included a total of 18,645 subjects (men aged 40-75 and postmenopausal women aged ≥75 and a mean age of 61 years and 31% men). randomized to pravastatin 10mg/day or simvastatin 5mg/day or the same statin doses with 1,800 mg/day of EPA. After 5 years, those in the EPA group showed a significant improvement in cardiac health.*

**Recommended doses for primary and secondary prevention:**

1,000 mg/day of combined EPA/DHA


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*
Nurses Health Study

- Dietary consumption of 85,000 healthy female nurses was followed for 16 years.
- Higher consumption of fish and omega-3 associated with better overall cardiovascular health.*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
**Cranial Vessel Health**

- Significant inverse association between omega-3 fatty intake from fish or fish oil supplements and cranial vascular health.*
  - 22% improvement if fish 1x/wk*
  - 52% improvement if fish \( \geq 5x/\)week*
  - 30% improvement if Fish oils 500mg/day or more vs 100 mg/day*

---

*JAMA 2001;285*
Cranial Vessel Health*

- A 2003 study found that the supplemental fish oil had been incorporated into the plaques and had resulted in thick fibrous caps that were stable and had less macrophages. Plaques from the placebo and sunflower oil were thinner and less stable. The 6 fish oil capsules provided a total of 850 mg EPA and 500 mg DHA.*


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Fish Oils and Triglyceride Metabolism*

- And in a review of human trials, 4 g/day of omega-3 fatty acids from fish oil was reported to support triglyceride metabolism by 25–30%.* It appears that both EPA and DHA have supportive benefits.*

  *Am J Clin Nutr 1997*

- Ideal Dose? N=23 men and 3 women with triglycerides 150-500 mg/dL. Tx= 1,000 mg/day fish oil (540 mg EPA/360 mg DHA or 3.4gm EPA/DHA or placebo x 8 weeks).*


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Vascular Function*

- Numerous studies have indicated support for vascular relaxation and circulatory function with intake of omega-3 fatty acids.* [i], [ii], [iii], [iv]

- Higher doses have greater effects and DHA may have a greater benefit than EPA.*[v]

Recommended dose: 3 gm/day of EPA/DHA


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
**Recommended Dosing Guidelines**

- **Lipid and Triglyceride Support:**
  
  2–4 g/day of omega-3 fatty acids daily
  
  1.5–2.4 gm EPA/1-1.6 g DHA

- **Vascular Relaxation and circulatory Function:**
  
  Average dose 3.6 g/day

- **Cranial Vessel Health:**
  
  850 mg EPA/day and 500mg DHA/day

- **General Cardiovascular Health:**
  
  as little as 1g/day omega-3 from fish oil; cons/ 3g/day

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*
Bone Health*

- EFAs
- Polyphenols

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Fatty acids and osteoporosis*

• Association between dietary polyunsaturated fatty acid and fish intakes and hip bone mineral density at baseline and changes 4 y.o. later in 623 adults with a mean age of 75 y.o. in the Framingham Osteoporosis Study.

• 3 or more servings/wk of fish relative to lower intakes were associated with a maintenance of femoral neck BMD in men and in women.

• In women with EPA and DHA intakes at or above the median, those with the highest AA intakes had a higher mean baseline femoral neck BMD than did those with the lowest intakes. In men with the lowest EPA and DHA intakes, those with the highest intakes of AA lost more FN-DMB than did men with the lowest intakes of AA. LA intake tend to be associated with FN-BMD loss in women.*


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Beyond essential nutrients: Polyphenols and bone health*

- In epidemiological studies, fruit and vegetable intake has been positively associated with healthy bone density.
- This effect has been partially ascribed to the polyphenol content.
- Polyphenols favorably influence bone cell metabolism in a way that calcium and other essential nutrients do not.
- Examples of polyphenol-rich dietary supplements include green tea, grape seed, pine bark, resveratrol, curcumin, green tea. Mechanisms of green tea polyphenols include antioxidant effects and modulation of cytokines and prostaglandins in bone cells.

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Green tea and bone health

Animal and Laboratory findings:

In general, tea and its bioactive components might modify the risk of fracture by improving bone mineral density and supporting osteoblastic activities while suppressing osteoclastic activities.*


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Green Tea and Bone Health

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Postmenopausal cohort from WHI Observational Study

• Habitual consumption of regular tea was assessed with a structured questionnaire at baseline
• Suggested positive trend of increased total body bone mineral density with tea drinking
• No significant association between tea drinking and the risk of fractures at the hip and forearm/wrist
• Effect of habitual tea drinking on bone density is small; no effect on fracture rates

American J Epid. 2003; 158 (8): 772-781
Green Tea and bone health*

In vitro

• EGC, boosted the activity of a key enzyme that promotes bone growth by up to 79 percent*
• EGC also significantly supports bone mineralization in the cells*
• High concentrations of ECG moderate the activity of osteoclasts*


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Polyphenols support osteoclast/osteoblast balance*

- Cytokine balance*
- Reduced oxidative stress*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Eye Health*

- Lutein
- Zeaxanthin
- Minerals
- Vitamins

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Estimates suggest 8 million people over the age of 55 are concerned with eye health

Nutrients offer targeted benefits for vision and eye health:

- Antioxidants and carotenoids help filter light and promote antioxidant defenses*
- Essential fatty acids support moisture retention, inflammatory balance and eye comfort*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Nutrients for ocular health*

• Clinical research indicates a critical role of vitamin C, vitamin E, zinc and copper*

• A 5:1 ratio of lutein and zeaxanthin (typically 10 mg lutein, 2 mg zeaxanthin) has been thoroughly substantiated by clinical research on retinal health*

• Studies also indicate that vitamin D, vitamin A, taurine, alpha lipoic acid and resveratrol support healthy vision*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Lutein and Zeaxanthin

Studies have found that lutein and zeaxanthin support the eyes in numerous ways*:

• Filter the high-energy blue wavelengths of light, preserving visual function in part by minimizing retinal glare*
• Supports light filtering in the eye to maintain healthy photoreceptor function and color vision*
• Provide antioxidant defenses to protect ocular tissue from oxidative stress*
• Promote gap junction communications, resulting in improved signal efficacy in the retina*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Weight Management*†
- Protein
- Fucoxanthin
- Green Tea

†Provides weight management support as part of a healthy lifestyle with a reduced calorie diet and regular exercise.
*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
The importance of protein

- Clinical studies suggest higher levels of protein may modulate the glycemic response
- Protein is also an effective tool in weight management
- Practitioners encounter difficulties recommending lean, high-protein foods and expecting compliance
- Solution: A lean protein supplement suitable for even the most sensitive and complex patients

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Fucoxanthin

Carotenoid pigment in edible seaweeds *Undaria pinnatifida* and *Laminaria japonica*

Xanthigen®: Patented fucoxanthin complex

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*
Xanthigen®: Clinical research

Randomized, double-blind trial of 151 obese women

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Study results

• **Xanthigen® produced an average weight loss of 14.5 lbs compared to 3 lbs in placebo***

• Additional metabolic effects were also significant*
  • Hepatic fat metabolism
  • Triglycerides
  • C-reactive protein (CRP)

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
Green Tea

• An increase in fat and calorie metabolism may be caused by the caffeine, catechin and theanine constituents*
  • Support thermogenesis/fat burning*
  • May moderate fat absorption*

• Individuals who take green tea extract have been observed to expend more energy and burn more calories than those who do not*
  • The higher dose used contained 50 mg of caffeine and 90 mg of EGCG per 2 capsules. Dose = 2 caps with breakfast and 2 caps with lunch.


*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
GreenSelect® Phytosome: Clinical research

Randomized, multicenter study

- 100 overweight subjects following a hypocaloric diet
- 150 mg GreenSelect® or placebo b.i.d. for 90 days
- Outcome measures
  - Body weight, waist circumference, BMI
  - Lean mass
  - Triglycerides
  - Cortisol

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
GreenSelect® Phytosome: Study results

GreenSelect® group lost an average of 30.5 lbs compared to 10.1 lbs in placebo*

• 12% reduction in BMI*
• 14% reduction in waist circumference in males*
• Supported healthy cortisol and triglyceride balance*

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
GreenSelect® Phytosome: Clinical research

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
THANK YOU