



HEALTHY EATING SUPPLEMENTS AND LUPUS

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Agenda

- Healthy eating
- Different types of diets
- Supplements
- Studies in SLE
- Resources



What is healthy eating?

Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level

- A variety of vegetables from all of the subgroups
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
- Oils

Vegetables

- Five vegetable subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other.
- Include all fresh, frozen, canned, and dried options in cooked or raw forms, including vegetable juices.
- Recommended amount of vegetables in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2½ cup-equivalents of vegetables per day.

Fruits

- The fruits food group includes whole fruits and 100% fruit juice.
- Whole fruits include fresh, canned, frozen, and dried forms.
- The recommended amount of fruits in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2 cup-equivalents per day.

Grains

- Grains as single foods (e.g., rice, oatmeal, and popcorns) or grains as an ingredient (e.g., breads, cereals, crackers, and pasta).
- Whole grains e.g., brown rice, quinoa, and oats
- Limit the intake of refined grains those high in saturated fats, added sugars, and/or sodium eg., cookies, cakes, and some snack foods.
- Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of this amount should be whole grains

Dairy

- Healthy eating patterns include fat-free and low-fat (1%) dairy, including milk, yogurt, cheese, or fortified soy beverages.
- The recommended amounts of dairy in the Healthy U.S.-Style Pattern is 3 cup-equivalents per day for adolescents and for adults.

Protein

- Animal and plant sources and includes several subgroups: seafood; meats, poultry, and eggs; and nuts, seeds, and soy products.
- Legumes (beans and peas) may also be considered part of the protein foods group and vegetables group.
- Recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce equivalents of protein foods per day.

Oils

- Oils are fats that contain a high percentage of monounsaturated and polyunsaturated fats and are liquid at room temperature.
- The recommendation for oils in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 27 g (about 5 teaspoons) per day.

A healthy eating pattern limits:

- Saturated fats and trans fats, added sugars, and sodium
- Consume less than 10 percent of calories per day from added sugars
- Consume less than 10 percent of calories per day from saturated fats
- Consume less than 2,300 milligrams (mg) per day of sodium
- If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of legal drinking age

Choose a variety of nutrient-dense foods from each food group in recommended amounts.

Example Meal:



Lettuce
& Celery



Whole-Grain
Bread

Apples
& Grapes



Fat-Free Milk

Chicken Breast
& Unsalted
Walnuts



Mayonnaise

Consume an eating pattern low in added sugars, saturated fats, and sodium.

Example Sources of:



Added
Sugars



Saturated
Fats



Sodium

Replace typical food and beverages choices with more nutrient-dense options. Be sure to consider personal preferences to maintain shifts over time.

Example:



Meal A



Meal B



High Calorie Snacks → Nutrient-Dense Snacks



Fruit Products with Added Sugars → Fruit



Refined Grains → Whole Grains



Snacks with Added Sugars → Unsalted Snacks



Solid Fats → Oils



Beverages with Added Sugars → No-Sugar-Added Beverages

Other measures

- Advice to quit smoking cigarettes
- Maintain a healthy weight (BMI <25 Kg/m²)
- Regular physical activity - 150 mins in a week (30 minutes over 5 days)



Why is a healthy diet important
in SLE?

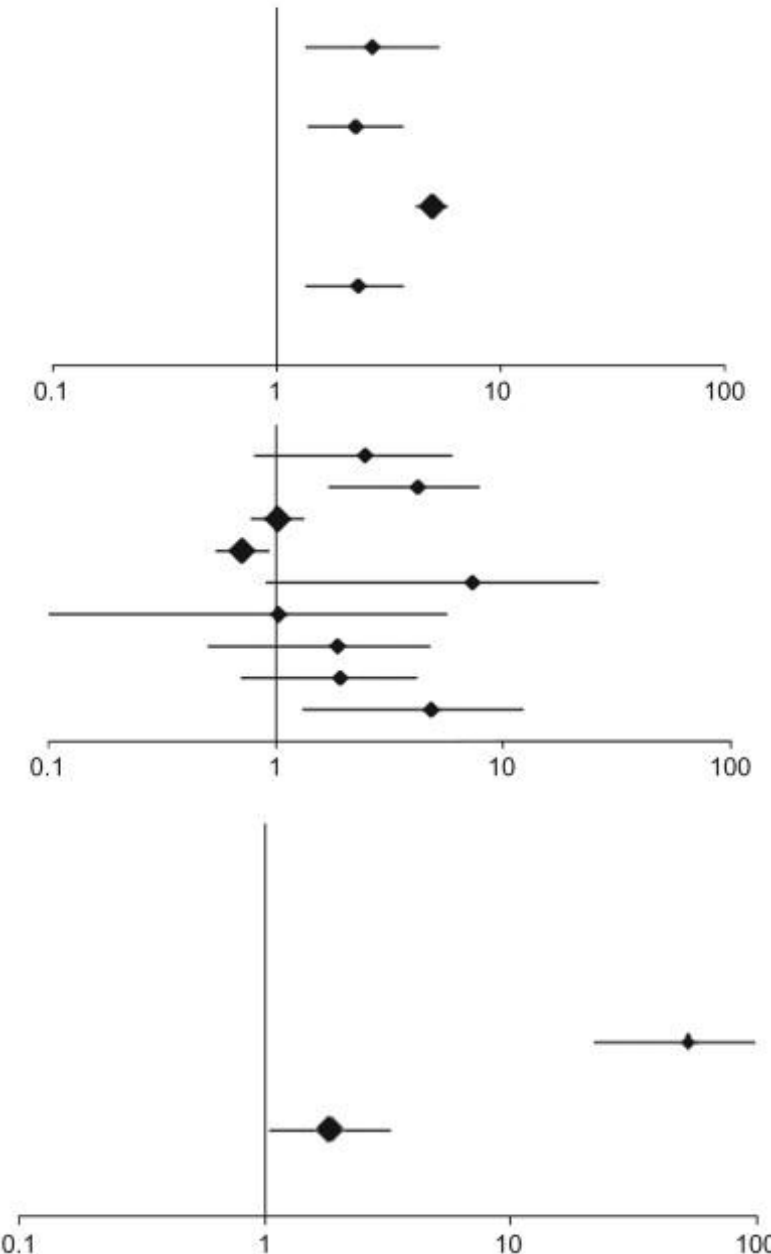
Cardiovascular disease risk in SLE

- 2-5 fold increase in the risk of cardiovascular diseases among SLE patients irrespective of age

Author	N	Group	Outcome	Risk of MI
a				
Fischer 2004 ⁹	15	<90	MI	OR 2.67 (1.34-5.34)
Hak 2009 ¹⁰	148	30-83	CHD	RR 2.25 (1.37-3.69)
Zoller 2012 ⁶	6142	<50->70	MI	SIR 4.94 (4.15-5.83)
Bengtsson 2012 ¹¹	277	30-80+	MI	SIR 2.31(1.34-3.7)

b				
Manzi 1997 ⁷	NS	45-54	MI	RR 2.47 (0.8-6)
Manzi 1997 ⁷	NS	55-64	MI	RR 4.21 (1.7-7.9)
Ward 1999 ⁸	2754	45-64	MI	PMR 1.02 (0.77-1.34)
Ward 1999 ⁸	2137	65+	MI	PMR 0.71 (0.54-0.94)
Bengtsson 2012 ¹¹	NS	40-49	MI	SIR 7.32 (0.9-26.4)
Bengtsson 2012 ¹¹	NS	50-59	MI	SIR 1.03 (0-5.7)
Bengtsson 2012 ¹¹	NS	60-69	MI	SIR 1.87 (0.5-4.8)
Bengtsson 2012 ¹¹	NS	70-79	MI	SIR 1.92 (0.7-4.2)
Bengtsson 2012 ¹¹	NS	80+	MI	SIR 4.82 (1.3-12.3)

c				
Manzi 1997 ⁷	NS	35-44	MI	RR 52.43 (21.6-98.5)
Ward 1999 ⁸	NS	18-44	MI	PMR 1.83 (1.03-3.26)



The epidemiology of atherosclerotic cardiovascular disease among patients with SLE: a systematic review. Semin Arthritis Rheum. 2013

Other co-morbidities

- Hypertension
- Dyslipidemia
- Diabetes
- Obesity
- Osteoporosis
- Anemia

More than half of SLE patients have three or more risk factors for CVD (obesity, hypertension and dyslipidemia).



Is there an anti-inflammatory diet?

Different types of diets

- Low calorie diet
- Low fat diet
- Vegetarian diet
- Semi-vegetarian diet
- Mediterranean diet
- DASH diet
- Organic diet
- Elimination diet

Mediterranean diet (Med Diet)

- It is a traditional dietary pattern based on whole or minimally processed foods and a high intake of vegetables, fruits, whole grains, fish and olive oil, with moderate consumption of red meat and wine.

Beneficial effect of Mediterranean diet on disease activity and cardiovascular risk in systemic lupus erythematosus patients: a cross-sectional study

- Study of 280 SLE patients
- Questionnaires to assess adherence with Med Diet
- Greater adherence to the Med Diet was significantly associated with fewer cardiovascular disease risk factors, and lower disease activity and damage accrual scores for SLE.

Mediterranean diet items	Active lupus (SLEDAI ≥ 5)	Inactive lupus (SLEDAI ≤ 5)	P
Using olive oil as main culinary fat, %	91.4	99.5	<0.001
≥ 4 spoons of olive oil per day, %	94.8	98.6	0.081
≥ 2 servings per day of vegetables, %	17.2	55.4	<0.001
≥ 3 fruit units per day, %	31	49.6	0.012
<1 serving per day of red meat, hamburger or meat products, %	72.4	92.3	<0.001
<1 serving per day of butter, margarine or cream, %	82.8	90.1	0.118
<1 serving per day of sweetened or carbonated beverages, %	72.4	72.8	0.476
Moderate wine consumption, %	1.7	9	0.081
≥ 3 servings of legumes per week, %	43.1	67.1	0.001
≥ 3 servings of fish per week, %	25.9	42.8	0.019
<2 times per week of commercial sweets or pastries, %	50	64.9	0.038
≥ 3 servings of nuts per week, %	20.7	46.4	<0.001
Preferring white meat over red meat, %	82.8	95	0.002
≥ 2 times per week seasoning dishes with <i>sofrito</i> ^a	68.9	87.8	<0.001

Beneficial effect of Mediterranean diet on disease activity and cardiovascular risk in systemic lupus erythematosus patients: a cross-sectional study. Rheumatology (Oxford). 2020



Are there any anti-inflammatory
supplements?

Supplements

- Omega 3 Fatty acids (Eicosapentaenoic acid – EPA and docosahexaenoic acid – DHA)
- Vitamins
- Minerals
- Herbs – Green tea, turmeric, etc

Omega 3 PUFA

- Elicit an anti-inflammatory effect by decreasing the level of C reactive protein (CRP) and other inflammatory mediators
- Regulates levels of total cholesterol, LDL-cholesterol and TG
- Protects against free radicals
- The main sources for omega-3 PUFA are krill oil, fish oil, olive oil, canola oil, flaxseed oil, fish (salmon, tuna, sardine, herring), and may be also found in primrose oil and soybean oil.
- Recommended dose for diet supplements containing long chain omega 3 FA (EPA + DHA) is 2,000 mg/ day.

Vitamin D

- Low levels of vitamin D are associated to high score of SLE activity
- Level of vitamin D in SLE patients was <30 ng/ml in 56–75% of cases
- Vitamin D supplementation improves bone health
- No definite clear role in reducing disease flares or reducing fatigue in SLE

Other vitamins

- Vitamin E - decreases levels of inflammatory cytokines
(Vegetable oils: sunflower, and safflower oils, corn and soybean oils, nuts: peanuts, hazelnuts, and almonds, sunflower seeds and green leafy vegetables)
- Vitamin C - prevents oxidative stress, reduces inflammation
(Orange juice, tangerine, papaya and broccoli)

Other vitamins

- Vitamin A – inhibits inflammation and anti-neoplastic (carrots and pumpkins, but it can be found in spinach, sweet potato and liver)
- Vitamin B complex – improves lipid profile (red meat, liver and fortified cereals, chicken, salmon, sardine, nuts, eggs, banana, and avocado)

Minerals

- Selenium has antioxidant and anti-inflammatory effects (nuts, whole cereals, eggs and ricotta).
- Calcium levels can be increased by the intake of dairy, spinach, sardine or soybean, but oral supplements are also of use.
- Calcium 800-1200 mg daily, in addition to vitamin D (800 IU) in order to help prevent bone mass loss
- Iron supplementation for patients with anemia

Sodium restriction

- Sodium intake not only has no beneficial effect but also exacerbates renal dysfunction in SLE patients, who should be advised to reduce salt and condiments from their diet.
- For these patients, sodium intake should be less than 2-3 grams/day



What about turmeric?

Turmeric

- Has anti-oxidant and anti-inflammatory actions.
- Some studies have shown benefit in pain from Osteoarthritis, Rheumatoid arthritis and controlling disease activity in lupus.
- Amount and how much is absorbed is unknown.
- Safe therapeutic dose is 400-600 mg three times daily.
- Not an alternative to your medications.

Avoid Alfalfa

- One food for people with lupus to avoid is alfalfa.
- Alfalfa tablets have been associated with reports of a lupus-like syndrome or lupus flares.
- The lupus-like effects may include muscle pain, fatigue, abnormal blood test results, changes in how the immune system functions, and kidney problems.

Dietary intervention and health in patients with systemic lupus erythematosus: A systematic review of the evidence

Borges et al.. 2016	Brazil	66 women	Omega-3 supplementation 1080mg EPA and 200 mg DHA/day No placebo group	12 weeks	Cytokines Adipokines CRP Glucose Lipid profile	Supplementation with omega-3 had no impact on serum concentrations of IL-6, IL-10, leptin and adiponectin in women with SLE and low disease activity. There was a significant decrease of CRP levels as well as evidence that omega-3 may impact total and LDL-cholesterol
Arriens et al.. 2015	United States of America	42 women and 8 men	Omega-3 supplementation 2,25g EPA and 2,25g DHA/day (fish oil group) Olive oil refined (pla- cebo group)	6 months	Quality of life Disease activity	In this randomized, placebo-controlled 6- month trial, SLE patients randomized to fish oil supplementation demonstrated improvement in their PGA, SF-36 and some circulating inflammatory markers

Dietary intervention and health in patients with systemic lupus erythematosus: A systematic review of the evidence. Crit Rev Food Sci Nutr. 2019.

Omega 3 PUFA

Bello et al.. 2013	United States of America	80 women and 5 men	Omega-3 supplementation 1,8g EPA and 1,2g DHA (fish oil group) Starch (placebo group)	12 weeks	Endothelial function Disease activity Inflammatory markers Lipid profile	Omega-3 did not improve endothelial function, disease activity, nor reduce inflammatory markers in SLE. Longer trials might be required if there are delayed clinical effects. There was evidence that omega-3 may increase LDL cholesterol, but not the LDL/HDL ratio.
Wright et al.. 2008	Ireland	56 women and 4 men	Omega-3 supplementation 1,8g EPA and 1,2g DHA (fish oil group) Olive oil (placebo group)	24 weeks	Endothelial function Disease activity Oxidative stress	Low-dose dietary supplementation with omega- 3 fish oils in SLE not only has a therapeutic effect on disease activity but also improves endothelial function and reduces oxidative stress and may therefore confer cardiovascular benefits

Vitamin D

Aranow et al.. 2015	United States of America	54 patients	Vitamin D ₃ supplementation 4.000 IU/day (high dose group) 2.000 IU/day (low dose group)	12 weeks	IFN signature Disease activity Anti-dsDNA Safety and tolerability	Impact total and LDL cholesterol Vitamin D ₃ supplementation up to 4.000 IU daily was safe and well-tolerated but failed to diminish the IFN signature in vitamin D-deficient SLE patients. Higher vitamin D levels sustained for a longer duration may be required to affect immunologic outcomes
Andreoli et al.. 2015	Italy	34 women	Vitamin D ₃ supplementation 300.000 IU at baseline and 50.000 IU/month as mainten- ance (intensive regimen-IR) 25.000 IU/month (standart regimen-SR)	24 months	Vitamin D levels Disease activity Bone metabol- ism Anti-dsDNA, C3, C4, CH50 Safety parameters	The IR was safe and effective in obtaining sufficient levels of vitamin D in most SLE patients. However, both regimens of sup- plementation did not differently affect disease activity nor SLE serology

Vitamin D

Kamen and Oates 2015	United States of America	9 women	Vitamin D ₃ supplementation 5.000 IU/day (treatment group) 400 IU/day (control group)	16 weeks	Endothelial function Vitamin D levels	These results suggest a potential role for vitamin D in SLE-related endothelial dysfunction and that an adaptive, multi-arm, treat-to-target, serum-level trial design may increase the efficiency and likelihood of success of such a study
Abou-Raya, Abou-Raya, and Helmii 2013	Egypt	228 women and 39 men	Vitamin D ₃ supplementation 2.000 IU/day (intervention group) No identified (placebo group)	12 months	Disease activity Proinflammatory cytokines Hemostatic markers	Vitamin D supplementation in patients with SLE is recommended because increased vitamin D levels seem to ameliorate inflammatory and hemostatic markers and show a tendency toward subsequent clinical improvement

RETRACTED

Turmeric

Khajehdehi et al. 2012	Iran	22 women and 2 men	Turmeric supplementation 1.500mg curcuma 66,3mg curcumina (intervention group) Starch (placebo group)	12 weeks	Proteinuria Systolic blood pressure Serum albumin Hematuria Glomerular filtration rate Blood urea nitrogen	Short-term turmeric supplementation can decrease proteinuria, hematuria, and systolic blood pressure in patients suffering from relapsing or refractory lupus nephritis and can be used as an adjuvant safe therapy.
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What about coffee?

Coffee

- Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns.
- "Everything is fine in moderation".




How can we use healthy eating to help lower blood pressure?

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- Strong evidence indicates that reductions in sodium intake can lower blood pressure among people with prehypertension and hypertension.
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Dietary Approaches to Stop Hypertension (DASH) diet

- The DASH Eating Plan is high in vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans, and nuts and is low in sweets, sugar-sweetened beverages, and red meats.
 - It is low in saturated fats and rich in potassium, calcium, and magnesium, as well as dietary fiber and protein.
 - It also is lower in sodium - 2,300 and 1,500 mg per day.
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SUMMARY

- SLE patients have co-morbidities (hypertension, diabetes, anemia) and are at high risk for cardiovascular diseases.
- Healthy eating helps control these risk factors.
- Incorporate variety of foods (vegetables, fruits, grains, dairy, protein and oils) in your diet.
- Limit sodium, saturated fats (red and processed meats and butter) and added sugars.
- Helps controlling inflammation in SLE.
- No definite recommendations for supplements because of limited evidence.

Resources

- [https://www.dietaryguidelines.gov/sites/default/files/2019-05/2015-2020 Dietary Guidelines.pdf](https://www.dietaryguidelines.gov/sites/default/files/2019-05/2015-2020_Dietary_Guidelines.pdf)
- <https://www.verywellhealth.com/lupus-management-diet-4842153>
- <https://www.healthline.com/health/lupus/diet-tips>



Questions?

Thank you!!