

Nutritional Intake of Omega-3 Polyunsaturated Fatty Acid, Selenium, Vitamin C and Vitamin E and Disease Activity in Patients with SLE

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Introduction

In addition to conventional pharmacologic therapies for Systemic Lupus Erythematosus (SLE), many patients implement a complementary and alternative medicine (CAM) approach to their treatment regimen. There is growing evidence that several macro- and micronutrients, in the patient's diet, as part of CAM therapy, may impact SLE activity¹; however there is a paucity of data on the baseline dietary intake by patients with SLE.

Materials and Methods

Patients completed dietary journals noting their food and beverage intake for a minimum of five days over a two week time frame. The data was analyzed using Nutrilog Analysis Software® generating a breakdown of macro- and micronutrients. SLE disease activity via Systemic Lupus Erythematosus Disease Activity Index (SLEDAI) scoring were obtained, separating them into 2 groups, those with SLEDAI equal or greater than 4 and those with less than 4 (scores higher than 4 reflect active disease).

Results

From our patient sample, 73% consume less omega 3 polyunsaturated fatty acids, 66% less vitamin C and 87% less vitamin E than 80% of patients meet the recommended daily selenium intake (Table 1) according to dietary references by the Food and Nutrition Board of the Institute of Medicine.

Patients with SLEDAI scores lower than 4 have in average more vitamin C intake (241.89mg vs 55.40 mg). Also, a higher percentage of patients with SLEDAI scores lower than 4 meet daily recommendations for vitamin C (50% vs 22%). (Table 2)

Conclusions

In this small descriptive analysis, our results demonstrate a higher percentage of adequate vitamin C intake with lower SLEDAI scores. Further studies are recommended to identify nutritional deficiencies in patients with SLE and evaluate any possibly association with clinical disease activity.

| Patient | SLEDAI | Omega 3* | Selenium (µg) | Vitamin C (mg) | Vitamin E** |
|---------------------------------------|--------|--------------------|--------------------|--------------------|--------------------|
| 1 | 12 | 0.79% | 133.8 | 20.9 | 4.5 |
| 2 | 12 | 0.43% | 27.9 | 7.3 | 1.2 |
| 3 | 12 | 0.33% | 67.8 | 25.5 | 3.4 |
| 4 | 12 | 0.31% | 56.8 | 13.1 | 3.0 |
| 5 | 10 | 1.21% | 70.6 | 55.3 | 5.5 |
| 6 | 10 | 0.30% | 14.6 | 178.9 | 3.2 |
| 7 | 8 | 0.36% | 142.9 | 60.1 | 19.0 |
| 8 | 8 | 0.76% | 78.6 | 34.0 | 3.2 |
| 9 | 7 | 0.28% | 67.3 | 103.4 | 2.8 |
| 10 | 3 | 0.43% | 83.3 | 51.7 | 6.9 |
| 11 | 2 | 1.09% | 148.8 | 66.5 | 4.9 |
| 12 | 0 | 0.35% | 94.1 | 889.2 | 3.9 |
| 13 | 0 | 0.25% | 79.6 | 146.7 | 15.6 |
| 14 | 0 | 0.53% | 43.5 | 55.4 | 1.5 |
| 15 | 0 | 0.38% | 121.3 | 126.8 | 4.3 |
| Mean | 6.4 | 0.52% | 82.1 | 122.3 | 5.5 |
| Recommended dietary intake*** | | 0.6-1.2% | 55 | 75 | 15 |
| Meet recommended daily intake | | 4/15 (27%) | 12/15 (80%) | 5/15 (33%) | 2/15 (13%) |
| Below recommended daily intake | | 11/15 (73%) | 3/15 (20%) | 10/15 (66%) | 13/15 (87%) |

*Omega 3 polyunsaturated fatty acid as percentage (0-100%) of daily caloric intake
**Vitamin E as alpha tocopherol in mg
*** Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes and Acceptable Macronutrient Distribution Ranges, as per the Food and Nutrition Board, Institute of Medicine, National Academies

Table 1: Macro and micronutrient intake, recommended daily intake and percentage of patients that meet or are below recommendations.

| Mean nutrient daily intake | | | | |
|----------------------------|----------|---------------|----------------|-------------|
| SLEDAI SCORE | Omega 3* | Selenium (µg) | Vitamin C (mg) | Vitamin E** |
| >=6 | 0.00530 | 73.38 | 55.40 | 5.09 |
| <6 | 0.00530 | 89.87 | 241.89 | 6.54 |

| Percentage of patients that meet recommended daily intake | | | | |
|---|----------|---------------|----------------|-------------|
| SLEDAI SCORE | Omega 3* | Selenium (µg) | Vitamin C (mg) | Vitamin E** |
| >=6 | 33% | 78% | 22% | 11% |
| <6 | 17% | 83% | 50% | 17% |

*Omega 3 polyunsaturated fatty acid as percentage of daily caloric intake
**Vitamin E as alpha tocopherol in mg

Table 2: Mean anti-inflammatory daily intake and percentage of patients that meet recommended intake divided by SLEDAI score

Reference

1. Aparicio-Soto M, Sánchez-Hidalgo M, Alarcón-de-la-Lastra C. An update on diet and nutritional factors in systemic lupus erythematosus management. *Nutrition Research Reviews*. 2017;30(1):118-137. doi:10.1017/S0954422417000026