The IFM Cardiometabolic Food Plan; Using a Food First Approach to Supporting Metabolic Syndrome, Hypertension, and Dyslipidemia within the Functional Medicine Model

Kristi Hughes, ND
February 2016
Does food matter when it comes to heart health?
Functional Nutrition
Nutrition Assessment

- ABCD Evaluation
- Food Nutrition History
- PFC-MVP Status

A. Anthropometrics
B. Biomarkers
C. Clinical Indicators from Physical Exam
D. Diet, Nutrition, and Lifestyle Journals
Cardiovascular Functional Nutrition Evaluation (ABCDs organized by PFC-MVP)

Medical History
- Timeline
- Review of Systems
- Lifestyle Review
- Familial Pattern
- Genetics

Questionnaires
- DNL Journal
- MSQ
- Thyroid
- Sleep
- TEQ

Anthropometrics
- BMI, WC & WHR
- BIA/Body Fat
- BP & Pulse, O2,
- ECHO, CIMT
- Adv CV Metrics

Biomarkers
- CBC
- Lipid
- Particle size
- Hs-CRP
- FBS & insulin

Clinical Indicators
- Mouth Exam
- CV Exam
- Skin Exam
- Peripheral nerve exam

Vascular Immune Dysfunction

Inflammation

Oxidative Stress

Endothelial Dysfunction

Metabolic Dysfunctions

Functional Medicine – Systems Biology Primary Causes
- Defense
- Energy
- Communication
- Structure
- Transport
- Assimilation
- Detox

Identify Underlying Contributions to Primary Causes
- ATMs
- Sleep
- Movement
- Nutrition
- Stress
- Relationships

Review of Findings, Initiate Additional Evaluations & Begin Intervention

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Food Is...
Food is information, Food is medicine.

“…we are witnessing food being redefined as “information” that alters cellular function in the post-prandial state…”

Bland, J. What role has nutrition been playing in our health? The xenohormesis connection. Integrative Medicine 6(3); Jun/Jul 2007.
Poly-pills vs. Poly-meals for the Poly-ills

Statin
Three different anti-hypertensives
Aspirin
Folic acid

Food is medicine.

“Let food be your medicine and medicine be your food.”

- Hippocrates
Food is Medicine for the Heart
The Impact of Food on CVD Prevention

“Broader adherence to recommendations for daily intake of fruit, vegetables, fish and fatty acid composition *may take away as much as 20-30% of the burden of cardiovascular disease and result in approximately 1 extra life year for a 40-year-old individual.*

Promotion of a healthy diet should be given more emphasis in the prevention of cardiovascular disease.”

Choosing an IFM Food Plan
Considerations for Personalizing the Food Plans

• Choose Food List Based on Features
• Provide Tailored Food List
  – Consider Macronutrient Percentages
  – Targeted Calories when Appropriate
  – Provide Serving Allowances
  – Remove Triggering Foods
• Discuss Therapeutic Foods
• Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
Considerations for Personalizing the Food Plans

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  • Discuss Therapeutic Foods
  • Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
Functional Nutrition Dietary Interventions

**Fundamental Diets**
- Core Food Plan
- Core Food Plan - Vegan
- Core Food Plan - Vegetarian

**First Step Dietary Interventions**
- Cardiometabolic Food Plan
- Elimination Diet

**Advanced Therapeutic Interventions**
- Detox Food Plan
- GI Specific Plans
- Mito Food Plan
- ReNew Food Plan

**Personalized Nutrition Plan**

**Functional Nutrition Fundamentals**
- Food Is...
  - Energy
  - Information
  - Connection
  - Medicine

Transitional Process
# Foundational and First Step Intervention Considerations

<table>
<thead>
<tr>
<th>Chief Complaint and Medical History</th>
<th>Core Food Plan</th>
<th>Elimination Diet</th>
<th>Cardiometabolic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight Gain / Weight loss Fatigue</strong></td>
<td>Weight Gain / Weight loss Fatigue</td>
<td>GI sx-s-bloating, indigestion Joint pain Muscle aches Immune dysregulation Fatigue</td>
<td>Elevated Blood Sugar Increased Blood Pressure Increased Waist Line Fatigue</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions</th>
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<tbody>
<tr>
<td><strong>Non-specific</strong></td>
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<tr>
<td><strong>Gastrointestinal</strong></td>
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<tr>
<td>• Irritable Bowel Syndrome</td>
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<td>• Intestinal Permeability</td>
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<td><strong>Immune/Inflammation</strong></td>
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<tr>
<td>• Auto-immune Diseases</td>
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<td>• Asthma</td>
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<tr>
<td>• Atopy &amp; Skin Inflammation</td>
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<td>• Myalgias and Arthralgias</td>
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<td><strong>Mood Disorders</strong></td>
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<td>• Depression</td>
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<tr>
<th>Conditions</th>
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<tr>
<td><strong>Obesity</strong></td>
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<td><strong>Metabolic Syndrome</strong></td>
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<td><strong>Type 2 Diabetes</strong></td>
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<td><strong>Essential Hypertension</strong></td>
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<td><strong>Dyslipidemia</strong></td>
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### Functional Nutrition Patterns

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<tr>
<th></th>
<th>Core Food Plan</th>
<th>Elimination Diet</th>
<th>Cardiometabolic</th>
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</thead>
<tbody>
<tr>
<td><strong>Food Nutrition History</strong></td>
<td>Seeking Healthy Diet, All Ages, Athletic, Pregnancy, Overweight, Underweight.</td>
<td>Allergies, Atopy, Asthma, GI Distress, Pain and Fatigue, AI Diseases.</td>
<td>Metabolic Syndrome, Type 2 Diabetes, Hypertension, Dyslipidemia, Obesity</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>Seeking Healthy Diet, All Ages, Athletic, Pregnancy, Overweight, Underweight.</td>
<td>Allergies, Atopy, Asthma, GI Distress, Pain and Fatigue, AI Diseases.</td>
<td>Metabolic Syndrome, Type 2 Diabetes, Hypertension, Dyslipidemia, Obesity</td>
</tr>
<tr>
<td><strong>Anthropometrics</strong></td>
<td>Non-specific</td>
<td>Increased BMI, Increased ECW/ICW</td>
<td>Incr: BMI, WC, WHR, Fat, Blood Pressure</td>
</tr>
<tr>
<td><strong>Biomarkers &amp; Labs</strong></td>
<td>Normal screening values</td>
<td>Incr. IgG or IgE food reactions, Celiac, Autoantibodies, Dysbiosis.</td>
<td>Incr: HgbA1C, FBS, insulin, hs-CRP, Trigs Decr: HDL</td>
</tr>
<tr>
<td><strong>Clinical Indicators from Nutrition Physical Exam</strong></td>
<td>Non-specific</td>
<td>Dry Skin, thin eyebrows, Fluid retention, and skin inflammation.</td>
<td>Incr: WC and WHR Skin tags, acanthosis nigricans, peripheral neuropathy.</td>
</tr>
<tr>
<td><strong>Diet and Lifestyle</strong></td>
<td>Inadequate nutrients Prepared food</td>
<td>Food Triggers, Allergy Exposures. Excess reliance on one food.</td>
<td>Excess simple sugar High CHO intake, GI foods, low protein, excess alcohol, elevated trans fats.</td>
</tr>
<tr>
<td><strong>Functional Nutrition Status</strong></td>
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# Functional Medicine Patterns

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<td><strong>Medical History</strong></td>
<td>Seeking Healthy Diet, All Ages, Athletic, Pregnancy, Overweight, Overweight, Underweight.</td>
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<td>Metabolic Syndrome, Type 2 Diabetes, Hypertension, Dyslipidemia, Obesity</td>
</tr>
<tr>
<td><strong>ATMs (Antecedents, Triggers, and Mediators)</strong></td>
<td></td>
<td>Antibiotics, Multiple infections, Trauma, Stress, Familial allergies, Mother with Group B strep, Acid Blocking Medication, Maternal use of PPI during pregnancy</td>
<td>Family History, T2DM, CVD, HTN, Obesity, Sedentary Lifestyle, Sleep Disorder (inadequate sleep and Sleep apnea)</td>
</tr>
<tr>
<td><strong>Matrix Patterns</strong></td>
<td>Non-specific</td>
<td>Assimilation Biotransformation Communication/Defense and Repair</td>
<td>Structural Integrity Transport Defend and Repair/Communication</td>
</tr>
</tbody>
</table>
Common Dietary Approaches Utilized in Addressing and Preventing Cardiovascular Disease
Plant-Based Diets:
Cardiovascular Health Benefits for the Individual,
Sustainable Nourishment for the Planet
Eating Responsibly

Supporting Sustainability
The evidence for plant-based eating

• Convincing body of evidence to suggest that a plant-based dietary pattern beneficially impacts cardiovascular health

• Fruits & vegetables (F&V) are low in energy, sodium and fatty acids and high in nutrient density, providing significant amounts of fiber and micronutrients

The evidence for plant-based eating

- Fruit & vegetable intake > 5 servings/d is associated with the lowest risk of CVD
- Highest risk with an intake <3 servings/d.

Plant-Based Eating and Cardiovascular Risks

- F&V intake is associated with lower BP
- Greater BP effect is due to higher potassium content
- Limited evidence for an inverse trend between FV consumption and LDL levels
- Greater LDL lowering effect is due to soluble fiber and plant-based sterols

The Mediterranean Diet
Mediterranean-Style Diet

- A collection of dietary habits followed by countries bordering the Mediterranean Sea
- High olive oil, vegetables, legumes, whole grains, fruit, nuts, spices, herbs
- Moderate fish and poultry
- Low red meat and dairy
- Low to moderate alcohol (e.g., red wine)

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Where did it originate from?

• Mediterranean Diet is best described as the dietary patterns adopted in the olive growing areas during the 1950-60s.

• Diet reflects the post WWII era before fast food.
There is no “one” Mediterranean Diet

- 16 countries in the Mediterranean region
- Italy 30% total lipid intake
- Greece 40%
How is the Mediterranean Diet assessed in research studies?

- Olive oil: Score range: 0-4
- Fruit or vegetables: Score range: 0-8
- Sweet desserts: Score range: 0-4
- Fast-food or take-out food: Score range: 0-4
- Ocean fish: Score range: 0-4
- Breads or starches: Score range: 0-4
- Fried food: Score range: 0-4
- Drink with meals: Score range: 0-4
- Alcohol consumption: Score range: 0-4
- Wine: Score range: 0-2
Prospective Design Studies on Mediterranean Diet and DM

- GISSI-Prevenzione Trial
- SUN study
- Health professionals follow-up study
- EPIC
- NHS II

“reveal a 12-83% reduced risk of DM with highest adherence to the MD”
Lyon Diet Heart Study: Survival Without MI

72% Risk Reduction

Circulation. 1999; 779-785

Mediterranean Diet:
- Fruits / Veggies, Nuts, Olive Oil, Canola Oil, Fish

Prudent / AHA Step 1:
- Fats, Saturated Fat & Cholesterol; AHA Step 1
Mediterranean diet & health status

- 4,172,412 subjects
- Overall meta-analysis
- A 2-point increase in adherence resulted in:
  - 8% reduction overall mortality
  - 10% reduced risk of CVD
  - 4% reduction neoplastic disease

The effect of Mediterranean diet on metabolic syndrome and its components: a meta-analysis of 50 studies and 534,906 individuals.

Results from clinical studies revealed the protective role of the Mediterranean diet on components of MS, like:

- Waist circumference
- High-density lipoprotein cholesterol
- Triglycerides
- Systolic and diastolic blood pressure
- Glucose

PREDIMED: Mediterranean Diet vs. Low-Fat Diet

Three groups:
1. Med. Diet + EVOO (Extra Virgin Olive Oil)
2. Med. Diet + nuts
3. Low-fat diet

Conclusion: Among persons at high cardiovascular risk, a Mediterranean diet supplemented with extra-virgin olive oil or nuts reduced the incidence of major cardiovascular events.
The Mediterranean diet pattern is associated with lower plasma concentrations of inflammatory markers in patients at high risk for cardiovascular disease.

At 1 y, the MD groups had lower plasma concentrations of IL-6, TNFR60, and TNFR80 (P < 0.05), whereas ICAM-1, TNFR60, and TNFR80 concentrations increased in the LFD group (P < 0.002).
Glycemic-balanced, nutrient-dense carbohydrate
Glycemic load (GL), glycemic index (GI) and risk of cardiovascular disease

• Dose-response meta-analysis found an increased RR of 1.18 per 50 unit increment of GL with cardiac event risk in Caucasians.

• High GL and GI were associated with significant increased risk of CVDs, specifically for women.

Meta-analysis of dietary GL and GI in relation to CHD risk

<table>
<thead>
<tr>
<th></th>
<th>GL</th>
<th>GI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>1.08</td>
<td>0.99</td>
</tr>
<tr>
<td>Women</td>
<td>1.69</td>
<td>1.26</td>
</tr>
<tr>
<td>Combined</td>
<td>1.36</td>
<td>1.13</td>
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</tbody>
</table>

Unfavorable effects may be more pronounced in overweight and obese patients.

Systemic Effects of Dietary Fiber

Dietary Fibers and Cardiometabolic Diseases

“Consumption of DF has been associated to lower risk of CVD for some time, but the hypothesis that DF intake could protect directly against CVD is relatively recent.”

“Experimental data from both animals and humans suggest and association between increased DF intakes and improved plasma lipid profiles, including reduced LDL-C concentrations.”

### Table II
**Major effects of fibre related to CVD**

<table>
<thead>
<tr>
<th>Organ or body location</th>
<th>Increase</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Intake</td>
<td></td>
<td>Diet energy density</td>
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<tr>
<td>Stomach</td>
<td></td>
<td>Gastric emptying (satiety signal) Lipid emulsification</td>
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<td></td>
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<td>Lipolysis</td>
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<td>Pancreas</td>
<td>Enzyme secretion</td>
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<tr>
<td>Liver</td>
<td>Lipoprotein uptake Cholesterol synthesis Bile acid synthesis and secretion</td>
<td>Lipogenesis</td>
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<tr>
<td>Peripheral tissues</td>
<td>Insulin sensitivity</td>
<td></td>
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<tr>
<td>Plasma</td>
<td></td>
<td>Postprandial lipemia Postprandial lipoproteinemia (?)</td>
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<tr>
<td></td>
<td></td>
<td>Fasting total cholesterol Fasting LDL cholesterol</td>
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<tr>
<td>Small intestine</td>
<td>Bile acid binding Sterol binding</td>
<td>Lipid emulsification Lipolysis Mucosal uptake and re-secretion</td>
</tr>
<tr>
<td>Large intestine</td>
<td>Fermentation Short chain fatty acid production</td>
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</tr>
<tr>
<td>Feces (excretion)</td>
<td>Bile acids Sterols (?) Fat</td>
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</tbody>
</table>

(?) No clear evidence exists, although most study data suggest that this effect occurs. Modified from Lairon et al.41.
How much fiber are people eating?

- Mexican Americans (18.8 g)
- non-Hispanic whites (16.3 g)
- non-Hispanic blacks (13.1 g)

Mean dietary fiber intake averaged 15.7-17.0 g

“Low dietary fiber intake from 1999-2010 in the US, and associations between higher dietary fiber and a lower prevalence of cardiometabolic risks suggest the need to develop new strategies and policies to increase dietary fiber intake.”

Risk of CVD across increasing levels of total fiber intake

BMJ. 2013 Dec 19;347:f6879. doi: 10.1136/bmj.f6879.
Functional Medicine Prescription

Patient Name: ___________________________ Date of Birth ___________________

Functional Nutrition Prescription

☐ Phytonutrient Spectrum
☐ Core Food Plan (CFP)
☐ CFP modified: ________________

First Step Interventions
☐ Elimination Diet
☐ Food Reintroduction
☐ Cardiometabolic Food Plan

Advanced Interventions
☐ GI Specific Food Plans
☐ Detox Food Plan
☐ Mito Food Plan

Personal Dietary Recommendations
Macronutrient Distribution:
☐ 45/25/30 □ 40/30/30 □ Mild/Strict Keto □ Intermittent Fasting ___________ days/wk
Target Calories:
☐ 600 □ 1000-1200 □ 1200-1400 □ 1400-1800 □ 1800-2200 □ 2200-2500

Lifestyle Prescription

☐ Sleep:

☐ Exercise: Risk Assessment:
☐ Low Risk □ Medium Risk □ High Risk
Clearance:
☐ Yes □ No ________________

Exercise Prescription:

<table>
<thead>
<tr>
<th>F = Frequency</th>
<th>Cardio/Aerobic</th>
<th>Strength/Resistance</th>
<th>Flexibility/Stretching</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workouts per week</td>
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</tbody>
</table>

I = Intensity (e.g., low, moderate, vigorous)

T = Time/duration (minutes each day)

T = Type (e.g., walking, jogging, swimming)

☐ Stress management: ________________

Supplements/Medications Prescription

<table>
<thead>
<tr>
<th>Supplement/Medication</th>
<th>On rising</th>
<th>Breakfast</th>
<th>Mid-morning</th>
<th>Lunch</th>
<th>Mid-afternoon</th>
<th>Dinner</th>
<th>Mid-evening</th>
<th>Before bed</th>
</tr>
</thead>
</table>

Additional Comments

____________________________________________________________________________

Prescribed by: ___________________________ Date: ___________________________

Follow-up Appointment: ___________________________

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Your Functional Medicine Prescription

Functional Nutrition Prescription

- Phytonutrient Spectrum
- Core Food Plan (CFP)
- CFP, modified: ___________

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- Food Reintroduction
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IFM
Your Functional Medicine Prescription

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- CFP, modified: ______________

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- 2200–2500

Prescribed by ______________________ Date ____________________
Follow-up Appointment ______________________

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Introducing the Cardiometabolic Food Plan

Implementing a low glycemic, anti-inflammatory, phytonutrient-rich diet to stabilize blood sugar, minimize insulin secreted, and reduce secondary inflammation.
Choosing an Appropriate Food Plan

Medical History
- Chief Complaints
- Conditions
- Timeline and ATMs
- Medication Review

ABCDs of Nutrition Evaluation
- Anthropometrics
- Biomarkers and Labs
- Clinical Indications from NPE
- Diet and Lifestyle Review
- Matrix Review
CARDIOMETABOLIC FOOD PLAN FEATURES

- Low Glycemic Impact
- Targeted Calories
- Balances Blood Sugar
- High in Fiber
- Balanced Quality Fats
- Low in Simple Sugars
- Condition-Specific Phytonutrients
- Modified Mediterranean Approach
## Features of the IFM Food Plans

<table>
<thead>
<tr>
<th>General Features of All IFM Food Plans</th>
<th>Core</th>
<th>Core V</th>
<th>Core VS</th>
<th>Elim Diet</th>
<th>Cardio</th>
<th>ReNew</th>
<th>Detox</th>
<th>Mito</th>
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<tbody>
<tr>
<td>Focus on Whole Foods</td>
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<td>Promotes Clean and Organic</td>
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<td>Balanced Macronutrients</td>
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<td>Adequate Quality Protein</td>
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<td>Balanced Quality Fats</td>
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<td>High in Fiber</td>
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<td>Low in Simple Sugars</td>
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<td>Phytonutrient Diversity</td>
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<td>Eliminates Processed Foods</td>
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| Frequency and Calorie Features        |      |        |         |           |        |       |       |      |
| No Calorie Restriction                |     |        |         |           |        |       |       |      |
| Targeted Calories                     |     |        |         |           |        |       |       |      |
| Reduced Carbohydrates                 |     |        |         |           |        |       |       |      |
| Ketogenic Options                     |     |        |         |           |        |       |       |      |
| Intermittent Fasting with Caloric Restriction |     |        |         |           |        |       |       |      |

| Food Sensitivity Features             |      |        |         |           |        |       |       |      |
| Identifies Food Triggers              |     |        |         |           |        |       |       |      |
| Reduces Food Triggers                 |     |        |         |           |        |       |       |      |
| Dairy-Free                            |     |        |         |           |        |       |       |      |
| Gluten-Free                           |     |        |         |           |        |       |       |      |
| Grain-Free                            |     |        |         |           |        |       |       |      |
| Sugar-Free                            |     |        |         |           |        |       |       |      |
| Limited Legumes                       |     |        |         |           |        |       |       |      |
| Low-Grain                             |     |        |         |           |        |       |       |      |
| Identifies Histamines, Oxalates, & Nightshades |     |        |         |           |        |       |       |      |
| Promotes Body Awareness to Food       |     |        |         |           |        |       |       |      |

**Key:**  ■ Primary Feature  ■ Secondary Feature  ◆ Vegetarian  ◆ Vegan
<table>
<thead>
<tr>
<th>Specific Intervention Features</th>
<th>Core</th>
<th>Core V</th>
<th>Core VS</th>
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<th>Cardio</th>
<th>ReNew</th>
<th>Detox</th>
<th>Mito</th>
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<tbody>
<tr>
<td>Foundational Eating Plan</td>
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<td>Plant-Based Food Plan</td>
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<td>Reduces Inflammation</td>
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<td>Supports Healthy Microbiome</td>
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<tr>
<td>Phytonutrients to Heal the Gut</td>
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<td>Reduces Cravings &amp; Food Addictions</td>
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<td>Low Glycemic Impact</td>
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<td>Condition-Specific Phytonutrients</td>
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<td>Provides Targeted Antioxidants</td>
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<td>Protective Antioxidants</td>
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<td>Encourages Healthy Elimination of Toxins</td>
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<td>Balances Hormone Metabolism</td>
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<td>Supports Nutrient-Dependent Pathways</td>
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<td>Supports Sugar Detoxification</td>
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<td>Supports Liver Function</td>
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<td>Requires Clean and Organic</td>
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<td>Therapeutic Foods for Energy</td>
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<td>High in Quality Dietary Fats</td>
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</table>
Your Functional Medicine Prescription

Functional Nutrition Prescription

- Phytonutrient Spectrum
- Core Food Plan (CFP)
- CFP, modified: __________

First Step Interventions
- Elimination Diet
- Food Reintroduction
- Cardiometabolic Food Plan

Advanced Interventions
- GI Specific Food Plans
- Detox Food Plan
- Mito Food Plan

Personal Dietary Recommendations

Macronutrient Distribution: 45/25/30
- 40/30/30
- Mild/Strict Keto
- Intermittent Fasting _____ days/wk

Target Calories:
- 600
- 1000–1200
- 1200–1400
- 1400–1800
- 1800–2200
- 2200–2500
When to Use this Plan

• Those with **risk factors for cardiovascular disease** (CVD)
• Those with **risk factors for dysfunctional metabolism** such as metabolic syndrome and/or type 2 diabetes (T2D)
• Those with **CVD** (includes high blood pressure, high cholesterol and elevated blood fats)
• Those with **metabolic syndrome** (includes high blood sugar, increased belly fat)
• Those with **T2D**
Considerations for Personalizing the Food Plans

• Choose Food List Based on Features

• **Provide Tailored Food List**
  – Consider Macronutrient Percentages
  – Targeted Calories when Appropriate
  – Provide Serving Allowances
  – Remove Triggering Foods

• Discuss Therapeutic Foods

• Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
# Cardiometabolic Food Plan

## Proteins

**Servings/day**

Lean, free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

### Animal Proteins:
- □ Cheese (low-fat)—1 oz
- □ Cheese (hard)—½ oz
- □ Cottage cheese (low-fat)—¼ c
- □ Feta cheese (low-fat)—1 oz
- □ Parmesan cheese—2 T
- □ Ricotta cheese (low-fat)—¼ c
- □ Egg—1, or 2 egg whites
- □ Fish/Shellfish:
  - Halibut, herring, mackerel, salmon, sardines, tuna, etc.—1 oz
- □ Meat: Beef, buffalo, elk, lamb, venison, other wild game—1 oz

1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0-4 g carbs
Average protein serving is 3-4 oz (size of palm of hand).

### Plant Protein:
- □ Natto—1 oz
- □ Spirulina—2 T
- □ Tempeh—1 oz
- □ Tofu (firm/extra firm)—1.5-2 oz
- □ Tofu (soft/silken)—3 oz
- □ Protein Powder:
  - □ Check label for # grams scoop—1 protein serving = 7 g
  - □ Egg, hemp, pea, rice, soy, whey

## Dairy & Alternatives

**Servings/day**

Unsweetened, organic preferred

### Dairy:
- □ Milk: Cow, goat—8 oz
- □ Kefir (plain)—6-8 oz
- □ Yogurt, Greek (plain)—6 oz

### Dairy Alternatives:
- □ Milk: Almond, coconut, flaxseed, hazelnut, hemp, oat, soy—8 oz
- □ Yogurt, coconut or soy (cultured)—4-6 oz

1 dairy serving = 90-150 calories, 7-8 g protein, 12 g carbs
1 dairy alternative serving = 25-90 calories, 1-9 g protein, 1-4 g carbs (nutritional values vary)

### Low Glycemic Impact Recommendations

Limit to 1-2 servings per day

## Nuts & Seeds

**Servings/day**

Unsweetened, unsalted, organic preferred

### Nuts:
- □ Almonds—6
- □ Brazil nuts—2
- □ Cashews—6
- □ Chia seeds—1 T
- □ Coconut (dried) flakes—3 T
- □ Flaxseed (ground)—2 T
- □ Hazelnuts—5
- □ Hemp seeds—1 T
- □ Macadamias—2-3

1 serving = 45 calories, 4 g fat

### Oils & Seeds

**Servings/day**

Minimally refined, cold-pressed, organic, non-GMO preferred

### Fats
- □ Avocado—2 T or ¼ whole
- □ Butter—1 t, 2 t whipped
- □ Chocolate, dark (70% or higher cocoa)—1 oz
- □ Coconut milk, regular (canned)—1½ T
- □ Coconut milk, light (canned)—3 T
- □ Ghee/clarified butter—1 t
- □ Mayonnaise (unsweetened)—1 t
- □ Olives: black, green, kalamata—8
- □ Nut and seed butters—½ T
- □ Peanuts—10
- □ Pecan halves—4
- □ Pine nuts—1 T
- □ Pistachios—16
- □ Pumpkin seeds—1 T
- □ Sesame seeds—1 T
- □ Soy nuts—2 T
- □ Sunflower seeds—1 T
- □ Walnut halves—4

## Legumes

**Servings/day**

Organic, non-GMO preferred

### Legumes:
- □ Bean soups—¼ c
- □ Black soybeans (cooked)—½ c
- □ Dried beans, lentils, peas (cooked)—½ c
- □ Edamame (cooked)—½ c
- □ Flour, legume—¼ c
- □ Green peas (cooked)—½ c

1 serving = 45 calories, 4 g fat

## Items in blue indicate preferred therapeutic foods

**Notes:** Nutritional amounts are based on average values for the variety of foods within each food category. Dietary prescription is subject to the discretion of the health practitioner.
<table>
<thead>
<tr>
<th>VEGETABLES Non-starchy</th>
<th>Carbs</th>
<th>VEGETABLES Starchy</th>
<th>Carbs</th>
<th>WHOLE GRAINS (100%)</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day___________</td>
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<td>-------</td>
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<tr>
<td>□ Artichoke</td>
<td></td>
<td>□ Acorn squash</td>
<td>(cubed)—1 c</td>
<td>□ Potatoes (mashed)</td>
<td>—1/2 c</td>
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<tr>
<td>□ Arugula</td>
<td></td>
<td>□ Butternut squash</td>
<td>(cubed)—1 c</td>
<td>□ Root vegetables:</td>
<td>—1/2 c</td>
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<tr>
<td>□ Asparagus</td>
<td></td>
<td>□ Leeks</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>□ Bamboo shoots</td>
<td></td>
<td>□ Lefttuce, all</td>
<td></td>
<td></td>
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<tr>
<td>□ Beets (cubed)</td>
<td></td>
<td>□ Microgreens</td>
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<tr>
<td>□ Bok choy</td>
<td></td>
<td>□ Mushrooms</td>
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<tr>
<td>□ Broccoflower</td>
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<td>□ Okra</td>
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<td>□ Broccoli</td>
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<td>□ Onions</td>
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<tr>
<td>□ Brussels sprouts</td>
<td></td>
<td>□ Parsley</td>
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<tr>
<td>□ Cabbage</td>
<td></td>
<td>□ Peppers, all</td>
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<tr>
<td>□ Carrots</td>
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<td>□ Radicchio</td>
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<tr>
<td>□ Cauliflower</td>
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<td>□ Radishes</td>
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<tr>
<td>□ Celeriac root</td>
<td></td>
<td>□ Salsa</td>
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<tr>
<td>□ Celery</td>
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<td>□ Scallions</td>
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<td>□ Chard/Swiss chard</td>
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<td>□ Sea vegetables</td>
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<td>□ Chervil</td>
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<td>□ Shallots</td>
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<td>□ Chinese cabbage</td>
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<td>□ Snap peas/snow pe</td>
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<tr>
<td>□ Chives</td>
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<td>□ Spinach</td>
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<tr>
<td>□ Cilantro</td>
<td></td>
<td>□ Sprouts, all</td>
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<tr>
<td>□ Cucumbers</td>
<td></td>
<td>□ Squash: Delicata,</td>
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<td></td>
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<tr>
<td>□ Daikon radishes</td>
<td></td>
<td></td>
<td>pumpkin, spaghetti,</td>
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<tr>
<td>□ Eggplant</td>
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<td>yellow, zucchini, etc.</td>
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<tr>
<td>□ Endive</td>
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<td>□ Tomato</td>
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<tr>
<td>□ Escarole</td>
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<td>□ Tomato juice—1/4 c</td>
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<tr>
<td>□ Fennel</td>
<td></td>
<td>□ Turnips</td>
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<tr>
<td>□ Fermented vegetables:Kimchi, pickles, sauerkraut, etc.</td>
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<td>□ Vegetable juice—1/4 c</td>
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<tr>
<td>□ Garlic</td>
<td></td>
<td>□ Water chestnuts</td>
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<tr>
<td>□ Green beans</td>
<td></td>
<td>□ Watercress</td>
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<tr>
<td>□ Greens: Beet, collard,dandelion,kale,mustard,tump,etc.</td>
<td></td>
<td>□ 1 serving = 60 calories, 15 g carbs</td>
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<tr>
<td>Organic, non-GMO fruits, vegetables, herbs and spices preferred</td>
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</tbody>
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1 serving = 1/2 c, 1 c raw greens = 25 calories, 5 g carbs

Low Glycemic Impact Recommendations

FRUITS | Carbs
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<tbody>
<tr>
<td>Servings/day___________</td>
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<tr>
<td>□ Unsweetened, no sugar added</td>
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<tr>
<td>□ Apple—1 sm</td>
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<td>□ Applesauce—1/4 c</td>
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<tr>
<td>□ Apricots—4</td>
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<tr>
<td>□ Banana—1/2 med</td>
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<tr>
<td>□ Blackberries—1/4 c</td>
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<tr>
<td>□ Blueberries—1/4 c</td>
<td></td>
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<tr>
<td>□ Cherries—12</td>
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<tr>
<td>□ Grapes—1/2</td>
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<tr>
<td>□ Kiwi—1 med</td>
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<tr>
<td>□ Mango—1/2 sm</td>
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<td>□ Melon, all—1 c</td>
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<tr>
<td>□ Nectarine—1 sm</td>
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</tbody>
</table>

1 serving = 60 calories, 15 g carbs

Low Glycemic Impact Recommendations

Limit to 2 servings per day
Avoid dried fruit and fruit juices

Beverages, Spices & Condiments

Unsweetened, no sugar added

□ Herbs and Spices: Cayenne, cinnamon, garlic, oregano, etc.

□ Condiments: Lemon/lime juice, miso, mustard, tamari, vinegars, etc.—use sparingly, suggest 1 T or less per serving
# Cardiometabolic Food Plan

## Proteins

**Serving/Day:**

Lean, free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

- **Animal Proteins:**
  - Poultry (skinless)
  - Cheese (low-fat) – 1 oz
  - Chicken, Cornish
  - Cheese (full-fat, 1 oz)
  - Turkey
  - Pork
  - Fish/Shellfish: Hallibut, halibut, mackerel, salmon, sardines, tuna, etc.
  - Meat (Beef, buffalo, elk, lamb, venison, other wild game) – 1 oz

- **Protein Powder:**
  - Check label for grams scoop: 1 protein serving = 7 g

- **Egg:** 1 or 2 egg whites

- **Flax:**

1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0.4 g carbs

Average protein serving is 3-4 oz (size of palm of hand).

## Fats

**Serving/Day:**

Minimally refined, cold-pressed, organic, non-GMO preferred.

- **Oils:**
  - Cooking:
    - Avocado
    - Butter
    - Olive (extra virgin)
    - Ghee
    - Mayonnaise
    - Olives

- **Oils, salad:**
  - Almond, avocado, canola, flaxseed, grapeseed, hempseed, olive (extra virgin), pumpkin seed, rice bran, safflower (high-oleic), sesame, sunflower (high-oleic) walnut

## Dairy & Alternatives

**Serving/Day:**

Unsweetened, organic preferred.

- **Dairy:**
  - Milk: Cow, goat – 8 oz
  - Kefir (plain) – 6 oz
  - Yogurt, Greek (plain) – 6 oz

- **Dairy Alternatives:**
  - Milk: Almond, coconut, flaxseed, hazelnut, hemp, oat, soy – 8 oz
  - Yogurt, coconut or soy (cultured) – 4-6 oz

1 dairy serving = 90-150 calories, 7-8 g protein, 12 g carbs

1 dairy alternative serving = 25-90 calories, 1-9 g protein, 1-4 g carbs (nutritional values vary)

## Nuts & Seeds

**Serving/Day:**

Unsweetened, unsalted, organic preferred.

- **Nuts:**
  - almonds
  - Brazil nuts
  - Cashews
  - Chia seeds
  - Coconut flakes
  - Flaxseed (ground)
  - Hazelnuts
  - Hemp seeds
  - Macadamias

1 serving = 45 calories, 4 g fat

## Legumes

**Serving/Day:**

Organic, non-GMO preferred.

- **Beans:**
  - Black soybeans
  - Dried beans, lentils, peas
  - Edamame

1 serving = 45 calories, 4 g fat

## Notes:

Nutritional amounts are based on average values for the variety of foods within each food category.

Dietary prescription is subject to the discretion of the health practitioner.
### Carbs

#### VEGETABLES Non-starchy
- Artichoke
- Arugula
- Asparagus
- Bamboo shoots
- Beets (cubed)
- Bok choy
- Broccoflower
- Broccoli
- Brussels sprouts
- Cabbage
- Carrots
- Cauliflower
- Celeriac root
- Celery
- Chard/Swiss chard
- Chervil
- Chinese cabbage
- Chives
- Cilantro
- Cucumbers
- Daikon radishes
- Eggplant
- Endive
- Escarole
- Fennel
- Fermented vegetables: Kimchi, pickles, sauerkraut, etc.
- Garlic
- Green beans
- Greens: Beet, collard, dandelion, kale, mustard, turnip, etc.

#### VEGETABLES Starchy
- Horseradish
- Jicama
- Kohlrabi
- Leeks
- Lettuce, all
- Microgreens
- Mushrooms
- Okra
- Onions
- Parsley
- Peppers, all
- Radicchio
- Radishes
- Salsa
- Scallions
- Sea vegetables
- Shallots
- Snap peas/snow peas
- Spinach
- Sprouts, all
- Squash: Delicata, pumpkin, spaghetti, yellow, zucchini, etc.
- Tomato
- Tomato juice—¼ c
- Turnips
- Vegetable juice—¼ c
- Water chestnuts
- Watercress

#### WHOLE GRAINS (100%)
- Potato (mashed)—½ c
- Root vegetables: parsnip, rutabaga—½ c
- Am—½ med

#### Low Glycemic Impact Recommendations

**Short-term:** Consider removal
**Long-term:** Limit to 1 serving per day

#### FRUITS
- Unsweetened, no sugar added
  - Apple—1 sm
  - Applesauce—½ c
  - Apricots—4
  - Banana—½ med
  - Blackberries—¼ c
  - Blueberries—½ c
  - Cherries—12
  - Grapes—15
  - Grapefruit—½
  - Kiwi—1 med
  - Mango—½ sm
  - Melon, all—1 c
  - Nectarine—1 sm

#### Low Glycemic Impact Recommendations

**Limit to 2 servings per day**

Avoid dried fruit and fruit juices

#### BEVERAGES, SPICES & CONDIMENTS
- Unsweetened, no sugar added
  - Herbs and Spices: Cayenne, cinnamon, garlic, oregano, etc.
  - Condiments: Lemon/lime juice, miso, mustard, tamari, vinegars, etc.—use sparingly, suggest 1 T or less per serving

1 serving = 60 calories, 15 g carbs

Organic, non-GMO fruits, vegetables, herbs and spices preferred.
Cardiometabolic Food Plan—Bibliography

Scientific/Medical Publications

Modified Mediterranean Approach


- Pall ML, Levine S. Nrf2, a master regulator of detoxification and also antioxidant, anti-inflammatory and other cytoprotective mechanisms, is raised by health promoting factors. Sheng Li Xue Bao. 2015 Feb 25;67(1):1-18.


Low Glycemic Index and Glycemic Load


Servings/day

Lean, free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

**Animal Proteins:**
- Cheese (low-fat) – 1 oz
- Cheese (hard) – ½ oz
- Cottage cheese (low-fat) – ¼ c
- Feta cheese (low-fat) – 1 oz
- Parmesan cheese – 2 T
- Ricotta cheese (low-fat) – ¼ c
- Egg – 1; or 2 egg whites
- **Fish/Shellfish:**
  - Halibut, herring, mackerel, salmon, sardines, tuna, etc. – 1 oz
- Meat: Beef, buffalo, elk, lamb, venison, other wild game – 1 oz

- Poultry (skinless):
  - Chicken, Cornish hen, duck, pheasant, turkey, etc. – 1 oz

**Plant Protein:**
- **Natto** – 1 oz
- Spirulina – 2 T
- **Tempeh** – 1 oz
- **Tofu** (firm/extra firm) – 1.5-2 oz
- **Tofu** (soft/silken) – 3 oz

**Protein Powder:**
- Check label for
  - # grams scoop – 1 protein serving = 7 g
  - Egg, hemp, pea, rice, soy, whey

1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0-4 g carbs
Average protein serving is 3-4 oz (size of palm of hand).
## Legumes

### Proteins/Carbs

<table>
<thead>
<tr>
<th>Servings/day</th>
<th>Organic, non-GMO preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90–110 calories, 3–7 g protein, 0 fat, 15 g carbs</td>
</tr>
</tbody>
</table>

- **Bean soups**—⅞ c
- **Black soybeans** (cooked)—½ c
- **Dried beans, lentils, peas** (cooked)—½ c
- **Hummus or other bean dips**—⅓ c
- **Edamame** (cooked)—⅓ c
- **Flour, legume**—⅛ c
- **Green peas** (cooked)—⅓ c
- **Refried beans, vegetarian**—⅛ c
Dairy & Alternatives

Dairy & Alternatives  \( \text{Proteins/Carbs} \)

Servings/day _____

Unsweetened, organic preferred

**Dairy:**
- Milk: Cow, goat – 8 oz
- Kefir (plain) – 6-8 oz
- Yogurt, Greek (plain) – 6 oz

**Dairy Alternatives:**
- Milk: Almond, coconut, flaxseed, hazelnut, hemp, oat, soy – 8 oz
- Yogurt, coconut or soy (cultured) – 4-6 oz

1 dairy serving = 90–150 calories, 7–8 g protein, 12 g carbs
1 dairy alternative serving = 25–90 calories, 1–9 g protein, 1–4 g carbs (nutritional values vary)

**Low Glycemic Impact Recommendations**

Limit to 1–2 servings per day
## Nuts & Seeds

### Servings/day

**Unsweetened, unsalted, organic preferred**

- **Almonds** – 6
- **Brazil nuts** – 2
- **Cashews** – 6
- **Chia seeds** – 1 T
- **Coconut (dried) flakes** – 3 T
- **Flaxseed (ground)** – 2 T
- **Hazelnuts** – 5
- **Hemp seeds** – 1 T
- **Macadamias** – 2–3

1 serving = 45 calories, 4 g fat

- **Nut and seed butters** – ½ T
- **Peanuts** – 10
- **Pecan halves** – 4
- **Pine nuts** – 1 T
- **Pistachios** – 16
- **Pumpkin seeds** – 1 T
- **Sesame seeds** – 1 T
- **Soy nuts** – 2 T
- **Sunflower seeds** – 1 T
- **Walnut halves** – 4
**Fats & Oils**

Servings/day_____

**Minimally refined, cold-pressed, organic, non-GMO preferred**

- **Avocado**—2 T or ⅛ whole
- Butter—1 t, 2 t whipped
- Chocolate, dark (70% or higher cocoa)—1 oz
- Coconut milk, regular (canned)—1 ½ T
- Coconut milk, light (canned)—3 T
- Ghee/clarified butter—1 t
- Mayonnaise (unsweetened)—1 t
- **Olives: black, green, kalamata**—8

1 serving = 45 calories, 5 g fat

- Oils, cooking: **Avocado**, butter, coconut (virgin), grapeseed, olive (extra virgin), rice bran, sesame—1 t
- Oils, salad: Almond, avocado, canola, flaxseed, grapeseed, hempseed, olive (extra virgin), pumpkin seed, rice bran, safflower (high-oleic), sesame, sunflower (high-oleic) walnut,—1 t
## Non-Starchy Vegetables

<table>
<thead>
<tr>
<th>Servings/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Artichoke</td>
</tr>
<tr>
<td>□ Arugula</td>
</tr>
<tr>
<td>□ Asparagus</td>
</tr>
<tr>
<td>□ Bamboo shoots</td>
</tr>
<tr>
<td>□ Beets (cubed)</td>
</tr>
<tr>
<td>□ Bok choy</td>
</tr>
<tr>
<td>□ Broccoflower</td>
</tr>
<tr>
<td>□ Broccoli</td>
</tr>
<tr>
<td>□ Brussels sprouts</td>
</tr>
<tr>
<td>□ Cabbage</td>
</tr>
<tr>
<td>□ Carrots</td>
</tr>
<tr>
<td>□ Cauliflower</td>
</tr>
<tr>
<td>□ Celeriac root</td>
</tr>
<tr>
<td>□ Celery</td>
</tr>
<tr>
<td>□ Chard/Swiss chard</td>
</tr>
<tr>
<td>□ Chervil</td>
</tr>
<tr>
<td>□ Chinese cabbage</td>
</tr>
<tr>
<td>□ Chives</td>
</tr>
<tr>
<td>□ Cilantro</td>
</tr>
<tr>
<td>□ Cucumbers</td>
</tr>
<tr>
<td>□ Daikon radishes</td>
</tr>
<tr>
<td>□ Eggplant</td>
</tr>
<tr>
<td>□ Endive</td>
</tr>
<tr>
<td>□ Escarole</td>
</tr>
<tr>
<td>□ Fennel</td>
</tr>
<tr>
<td>□ Fermented vegetables: Kimchi, pickles, sauerkraut, etc.</td>
</tr>
<tr>
<td>□ Garlic</td>
</tr>
<tr>
<td>□ Green beans</td>
</tr>
<tr>
<td>□ Greens: Beet, collard, dandelion, kale, mustard, turnip, etc.</td>
</tr>
</tbody>
</table>

- □ Horseradish
- □ Jicama
- □ Kohlrabi
- □ Leeks
- □ Lettuce, all
- □ Microgreens
- □ Mushrooms
- □ Okra
- □ Onions
- □ Parsley
- □ Peppers, all
- □ Radicchio
- □ Radishes
- □ Salsa
- □ Scallions
- □ Sea vegetables
- □ Shallots
- □ Snap peas/snow peas
- □ Spinach
- □ Sprouts, all
- □ Squash: Delicata, pumpkin, spaghetti, yellow, zucchini, etc.
- □ Tomato
- □ Tomato juice—¼ c
- □ Turnips
- □ Vegetable juice—¼ c
- □ Water chestnuts
- □ Watercress

1 serving = ½ c, 1 c raw greens = 25 calories, 5 g carbs
Starchy Vegetables

**VEGETABLES** Starchy

<table>
<thead>
<tr>
<th>Servings/day</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acorn squash (cubed) – 1 c</td>
<td>Potatoes (mashed) – ½ c</td>
</tr>
<tr>
<td>Butternut squash (cubed) – 1 c</td>
<td>Root vegetables: parsnip, rutabaga – ½ c</td>
</tr>
<tr>
<td>Plantain – ½ c or ½ whole</td>
<td>am – ½ med</td>
</tr>
<tr>
<td>Potato: Purple, red, sweet, yellow – ½ med</td>
<td></td>
</tr>
</tbody>
</table>

1 serving = 80 calories, 15 g carbs

*Low Glycemic Impact Recommendations*

*Short term: Consider removal*
*Long term: Limit to 1 serving per day*
FRUITS

Servings/day _____

Unsweetened, no sugar added

- Apple – 1 sm
- Applesauce – ½ c
- Apricots – 4
- Banana – ⅔ med
- Blackberries – ¾ c
- Blueberries – ¾ c
- Cherries – 12
- Grapefruit – ½
- Grapes – 15
- Kiwi – 1 med
- Mango – ½ sm
- Melon, all – 1 c
- Nectarine – 1 sm
- Orange – 1 sm
- Papaya – 1 c
- Peach – 1
- Pear – 1 sm
- Persimmon – ½
- Pineapple – ¾ c
- Plums – 2 sm
- Pomegranate seeds – ½ c
- Raspberries – 1 c
- Strawberries – 1½ c
- Tangerines – 2 sm

1 serving = 60 calories, 15 g carbs

Low Glycemic Impact Recommendations
Limit to 2 servings per day
Avoid dried fruit and fruit juices
WHOLE GRAINS (100%)

Servings/day_____

Unsweetened, sprouted and organic preferred

Gluten-Free:
☐ Amaranth—½ c
☐ Buckwheat/kasha—½ c
☐ Millet—½ c
☐ Oats (rolled, steel-cut)—½ c
☐ Quinoa—½ c
☐ Rice: Basmati, black, brown, purple, red, wild—½ c
☐ Sorghum—½ c
☐ Teff—¾ c

All grain servings are for cooked amounts

Gluten Containing:
☐ Barley—½ c
☐ Bulgur—½ c
☐ Cereal, whole wheat—½ c
☐ Couscous—½ c
☐ Crackers, rye—4-7
☐ Kamut—½ c
☐ Semolina—¼ c
☐ Spelt—¾ c

Individual portions:
☐ Bread—1 slice
☐ Muesli—½ c
☐ Pasta—½ c
☐ Pita—½
☐ Tortilla—1, 6 in

1 serving = 75–110 calories, 15 g carbs

Low Glycemic Impact Recommendations
Short term: Consider removal
Long term: Limit to 1–2 servings per day
Beverages

BEVERAGES, SPICES & CONDIMENTS

Unsweetened, no sugar added

☐ Beetroot juice
☐ Filtered water
☐ Sparkling/mineral water
☐ Green tea
☐ Low-sodium vegetable juice

☐ Herbs and Spices: Cayenne, cinnamon, garlic, oregano, etc.
☐ Condiments: Lemon/lime juice, miso, mustard, tamari, vinegars, etc.—use sparingly, suggest 1 T or less per serving
Exploring Obstacles and Pitfalls
Common Obstacles: Cost
Common Obstacles: Time
Common Obstacles:
Portions and Serving Sizes
Common Obstacles: Understanding Fat

*Not all fats are created equal.*
Common Obstacles: Cutting Out Sweetened Drinks

Why is this important? Because sweetened beverages:

- dehydrate the body
- increase caloric intake
- increase stress hormones
- elevate blood sugar
- cause damage to cells
Common Obstacles: Increasing Water Intake

Body weight (pounds) ÷ 2 = Daily water intake (ounces)

Example: Amy weighs 128 pounds. Amy’s recommended daily water intake is 64 ounces (128 ÷ 2 = 64).
Alternatives to Sweetened Drinks

- Mineral water flavored with fresh herbs or fruit
- Water mixed with fruit slices or 1 ounce of juice
- Unsweetened herbal teas
- Kombucha*

*note: choose brands containing no added sugar
Considerations for Personalizing the Food Plans

• Choose Food List Based on Features

• **Provide Tailored Food List**
  – Consider Macronutrient Percentages
  – Targeted Calories when Appropriate
  – Provide Serving Allowances
  – Remove Triggering Foods

• Discuss Therapeutic Foods

• Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
The Role of Calories and Calorie Restriction in CVD

THE CARDIOMETABOLIC FOOD PLAN: Features, Food List, Modifications, & Guide

**Protein**
- Animal & vegetable (quality soy) protein acceptable
- 20-30%
- Minimal processed red meat
- Wild, fatty fish high in omega-3
- Moderate net dietary acid load

**Fat**
- 25-35%
- Sat fat 7-10%
- Trans <1%
- Variety of fats
- No replacement of fat for poor-quality CHO

**Carbs**
- Low GI
- Low GL
- High-fiber (25-40g/d)
- Reduced or no added sugars

**PFC-MVP**
40 CHO/30 PRO/30 FAT
PERSONALIZING THE IFM THERAPEUTIC FOOD PLANS
Practitioner Guide
## Macronutrient Distribution for 40/30/30 Approach

<table>
<thead>
<tr>
<th>Calories</th>
<th>1000–1200</th>
<th>1200–1400</th>
<th>1400–1800</th>
<th>1800–2200</th>
<th>2200–2500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calorie Guidelines for Females</strong></td>
<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
<td></td>
</tr>
<tr>
<td><strong>Calorie Guidelines for Males</strong></td>
<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
<td></td>
</tr>
<tr>
<td><strong>Proteins</strong></td>
<td>7 oz</td>
<td>7–9 oz</td>
<td>9–10 oz</td>
<td>10–12 oz</td>
<td>12–13 oz</td>
</tr>
<tr>
<td><strong>Legumes</strong></td>
<td>1</td>
<td>1</td>
<td>1–2</td>
<td>2–3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Dairy/Alternatives</strong></td>
<td>0–1</td>
<td>1</td>
<td>1–2</td>
<td>2–3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Nuts &amp; Seeds</strong></td>
<td>2</td>
<td>2</td>
<td>2–3</td>
<td>3–4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Fats &amp; Oils</strong></td>
<td>2–3</td>
<td>3–4</td>
<td>4</td>
<td>4</td>
<td>4–6</td>
</tr>
<tr>
<td><strong>Vegetables, non-starchy</strong></td>
<td>5</td>
<td>5–7</td>
<td>7–8</td>
<td>8–10</td>
<td>10–13</td>
</tr>
<tr>
<td><strong>Vegetables, starchy</strong></td>
<td>0–1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1–2</td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td>1–2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Grains</strong></td>
<td>1</td>
<td>1</td>
<td>1–2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*Note: units are servings unless otherwise noted.*
Your Functional Medicine Prescription

Functional Medicine Prescription

Patient Name: ___________________________  Date of Birth: ___________________________

**Functional Nutrition Prescription**

- Phytonutrient Spectrum
- Core Food Plan (CFP)
- CFP, modified: _______________

**First Step Interventions**
- Elimination Diet
- Food Reintroduction
- Cardiometabolic Food Plan

**Advanced Interventions**
- GI Specific Food Plans
- Detox Food Plan
- Mito Food Plan

**Personal Dietary Recommendations**

- Macronutrient Distribution:  
  - 45/25/30
  - 40/30/30
  - Mild/Strict Keto
  - Intermittent Fasting: _____ days/wk

- Target Calories:  
  - 600
  - 1000–1200
  - 1200–1400
  - 1400–1800
  - 1800–2200
  - 2200–2500

Prescribed by: ___________________________  Date: ___________________________

Follow-up Appointment: ___________________________

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THE CARDIOMETABOLIC FOOD PLANS
with Caloric Targets

### Cardiometabolic Food Plan (1200–1400 Calories)

**PROTEINS**
- Hummus or other bean dips (11/4)
- Refined beans, vegetarian (1/2)
- Cottage cheese (1/2)
- Chicken breast (3)
- Beef, buffalo (4)
- Pork (3)
- Wild game (2)
- Legumes
- Soybeans
- Beans

**DAIYER ALTERNATIVES**
- Unsweetened, organic preferred
- Dairy
- Dairy Alternatives

**FATS & OILS**
- Avocado 2 T
- Safflower 1 T
- Olive

### Cardiometabolic Food Plan (1400–1800 Calories)

**PROTEINS**
- Hummus or other bean dips (11/4)
- Refined beans, vegetarian (1/2)
- Cottage cheese (1/2)
- Chicken breast (3)
- Beef, buffalo (4)
- Pork (3)
- Wild game (2)
- Legumes
- Soybeans
- Beans

**DAIYER ALTERNATIVES**
- Unsweetened, organic preferred
- Dairy
- Dairy Alternatives

**FATS & OILS**
- Avocado 2 T
- Safflower 1 T
- Olive

### Cardiometabolic Food Plan (1800–2200 Calories)

**PROTEINS**
- Hummus or other bean dips (11/4)
- Refined beans, vegetarian (1/2)
- Cottage cheese (1/2)
- Chicken breast (3)
- Beef, buffalo (4)
- Pork (3)
- Wild game (2)
- Legumes
- Soybeans
- Beans

**DAIYER ALTERNATIVES**
- Unsweetened, organic preferred
- Dairy
- Dairy Alternatives

**FATS & OILS**
- Avocado 2 T
- Safflower 1 T
- Olive

### NUTS & SEEDS

- Almonds
- Pecans
- Walnuts
- Sunflower seeds
- Pumpkin seeds

**IFM**

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Comprehensive Guide Elements

THE CARDIOMETABOLIC FOOD PLAN

• Why the Cardiometabolic Food Plan?
• Features of the Food Plan
• Touring the Food Plan
• Therapeutic Foods for Cardiometabolic Health
• Frequenty Asked Questions

25-page Comprehensive Patient Guide
Considerations for Personalizing the Food Plans

• Choose Food List Based on Features
• Provide Tailored Food List
  – Consider Macronutrient Percentages
  – Targeted Calories when Appropriate
  – Provide Serving Allowances
  – Remove Triggering Foods

• **Discuss Therapeutic Foods**
• Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
Cardiometabolic Food Plan

PROTEINS
Servings/day
Lean, free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

Animal Proteins:
- Cheese (low-fat) 1 oz
- Cheese (hard) ½ oz
- Cottage cheese (low-fat) ¼ c
- Feta cheese (low-fat) 1 oz
- Parmesan cheese 2 T
- Ricotta cheese (low-fat) ¼ c
- Egg 1, or 2 egg whites
- Fish/Shellfish: Halibut, herring, mackerel, salmon, sardines, tuna 1 oz
- Meat: Beef, bison, elk, lamb, venison, other wild game

1 serving as listed 0-4 g carbs
Average protein serving is 3-4 oz (size of palm of hand).

LEGUMES
Servings/day
Organic, non-GMO preferred

- Bean soups ¼ c
- Black soybeans (cooked) ½ c
- Dried beans, lentils, peas (cooked) ½ c
- Edamame (cooked) ½ c
- Flour, legume ¼ c
- Green peas (cooked) ½ c

DAIRY & ALTERNATIVES
Servings/day
Unsweetened, organic preferred

- Natto 1 oz
- Spirulina 2 T
- Tempeh 1 oz
- Tofu (firm/extra firm) 1.5-2 oz
- Tofu (soft/silk-en) 3 oz

Plant Protein:
- Kefir (plain) 6-8 oz
- Yogurt, Greek (plain) 6 oz

Protein Powder:
- E3 Chocolate 2 T

Low Glycemic Impact Recommendations
Limit to 1-2 servings per day

- Hummus or other bean dips ½ c
1 serving = 90-110 calories, 3-7 g protein, 0 fat, 15 g carbs

- Refried beans, vegetarian ⅔ c

FATS & OILS
Servings/day
Minimally refined, cold-pressed, organic, non-GMO preferred

- Avocado 2 T or ¼ whole
- Butter 1 t, 2 t whipped
- Chocolate, dark (70% or higher cocoa) 1 oz
- Coconut milk, regular (canned) 1½ T
- Coconut milk, light (canned) 3 T
- Ghee/clarified butter 1 t
- Mayonnaise

- Oils, cooking: Avocado, butter, coconut (virgin), grapeseed, olive (extra virgin), rice bran, sesame 1 T
- Oils, salad: Almond, avocado, canola, flaxseed, grapeseed, hempseed, olive (extra virgin), pumpkin seed, rice bran, safflower (high-oleic), sesame, sunflower (high-

Items in blue indicate preferred therapeutic foods

- Brazil nuts 2
- Cashews 6
- Chia seeds 1 T
- Coconut (dried) flakes 3 T
- Flaxseed (ground) 2 T
- Hazelnuts 5
- Hemp seeds 1 T
- Macadamias 2-3
1 serving = 45 calories, 4 g fat

- Butters ½ T
- Peanuts 10
- Pecan halves 4
- Pine nuts 1 T
- Pistachios 16
- Pumpkin seeds 1 T
- Sesame seeds 1 T
- Soy nuts 2 T
- Sunflower seeds 1 T
- Walnut halves 4

Items in blue indicate preferred therapeutic foods

Notes: Nutritional amounts are based on average values for the variety of foods within each food category. Dietary prescription is subject to the discretion of the health practitioner.
Additional Resources for Exploring Therapeutic Foods

Metabolic Syndrome
Hypertension
Dyslipidemias
Considerations for Personalizing the Food Plans

• Choose Food List Based on Features
• Provide Tailored Food List
  – Consider Macronutrient Percentages
  – Targeted Calories when Appropriate
  – Provide Serving Allowances
  – Remove Triggering Foods
• Discuss Therapeutic Foods
• Provide Practical Tools such as Weekly Menu Plan, Recipes, and Shopping List
THE CARDIOMETABOLIC FOOD PLAN

Weekly Planner and Recipes
# THE CARDIOMETABOLIC FOOD PLAN

**Sample Weekly Menu Plan**

<table>
<thead>
<tr>
<th>Day</th>
<th>Breakfast</th>
<th>Snack</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Therapeutic Food Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fresh spinach, quiche cup*, orange</td>
<td>Greek yogurt, blackberries</td>
<td>Chicken pomegranate quinoa salad*, salsa, chipotle</td>
<td>Sautéed chicken and rice*</td>
<td>Spinach, yogurt, pomegranate, dark chocolate, tempeh, onion, garlic, parsley, olive oil, scallions, almonds, tomatoes, celery, leek, Swiss chard, fennel, chickpeas, avocado, olive oil, scallions, tarragon, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, tomato, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>2</td>
<td>Chocolate mint spinach smoothie*</td>
<td>Fresh yellow pear, hummus</td>
<td>LO tan vegetable soup with tempeh*</td>
<td>Roasted root vegetable soup*</td>
<td>Olive oil, tomatoes, spinach, tomato, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>3</td>
<td>Chile pomegranate oatmeal*</td>
<td>Marinated olives*</td>
<td>Lamb and veggie stir-fry with edamame*</td>
<td>Purple cabbage salad*</td>
<td>Olive oil, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>4</td>
<td>Vegetable egg scramble*</td>
<td>Kale</td>
<td>LO tan vegetable soup with tempeh*</td>
<td>Grilled ramp stack*</td>
<td>Olive oil, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>5</td>
<td>Strawberry peach kale smoothie*</td>
<td>Purple plum, mixed nuts</td>
<td>LO tan vegetable soup with tempeh*</td>
<td>Roasted beets with greens*</td>
<td>Olive oil, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>6</td>
<td>Egg white vegetable frittata*</td>
<td>Almond butter</td>
<td>Black bean bacon cocoa soup with lime zest*</td>
<td>Kale</td>
<td>Olive oil, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
<tr>
<td>7</td>
<td>Protein pancakes*</td>
<td>Blueberries</td>
<td>Red and yellow pepper, celery strips with LO homemade guacamole*</td>
<td>Black bean bacon cocoa soup with lime zest*</td>
<td>Olive oil, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sour cream, mixed greens, olive oil, adzuki bean, onion, garlic, celery, tomatoes, spinach, sautéed chicken and rice*</td>
</tr>
</tbody>
</table>

* denotes food not recommended for this diet plan.
# THE CARDIOMETABOLIC FOOD PLAN

## Shopping Guide

### Fresh Produce
- Vegetables
  - Carrots, shredded: 6-10 oz pkg
  - Spinach: 2-4 oz pkg
  - Kales: 2 bundles
  - Red Peppers: 1-2 lbs
  - Green Onions: 2 bundles
  - Cucumbers: 6-8 oz pkg
  - Leeks: 1 piece
  - Celeris: 2 bunches
  - Brussels Sprouts: 4 oz pkg
  - Broccoli: 2 heads
  - Cherry or Grape Tomatoes: 1 lb
  - 1 bunch Mint, 2 bunches Chives
  - 1 bunch each Basil and Flat Parsley
  - Ginger Root: 1-2 oz
  - Yellow or White Potatoes: 1 lb
  - Sugar Snap Peas: 4 oz
  - Cauliflower or Broccoli: 2 med heads
  - Cabbage: 1 green, 1 purple
  - Cilantro: 1 bunch
  - Zucchini or Yellow Squash: 1 each

### Meat/Fish/Eggs/Plant Proteins
- Chicken Breast, boneless, skinless: 2.5 lb
- Ground Turkey Breast: 1 lb
- Flank Steak: 2-3 lb
- Cod or Halibut: 1.5 lb
- Organic Cage-Free Eggs: 1 dz
- Organic Eggs Whites: 16 oz
- Quinoa: 1/4 c
- Rolled Oats: 1/4 c
- Pea Flakes: 1/4 c
- Purple Rice: 1/4 c
- Lentils: 1/4 c
- Hummus: 1/4 c

### Grains/Legumes
- Dark Chocolate, 70% cocoa: 3 oz
- Olives, Mnc. Black and Green: 2 c
- Unflavored Gelatin: 1 pkg
- Dried Cranberries: 1/2 c
- Whey or Vegan Protein Powder: 2 Ctn and 11 oz
- Green Tea bags
- Stevia
- Tahini: 1 oz
- Cocoa Powder, unsweetened: 2 T
- Pink Grapefruit Sections: 1 c
- Pomegranate Juice, unsweetened: 8 oz
- Salsa, chunky: 8 oz

### Dairy/Dairy Alternative
- Feta Cheese: 8 oz
- Cottage Cheese: 1/2 c
- Greek Yogurt: 1, 6 oz pkg
- Light Ricotta Cheese: 1 c
- Almond Milk, unsweetened: 1/2 gal
- Kefir: 6-8 oz

### Frozen Foods
- Organic Edamame: 8 oz
- Strawberries: 1/2 c
- Raspberries: 1/2 c
- Mangos: 10 oz
- Pomegranate Seeds: 8 oz
- Apple juice, concentrate: 1 c

### Canned Goods
- Petite Diced Tomatoes: 15 oz, 2
- Fire Roasted Tomatoes: 15 oz, 1
- Organic/Beef broth: 32 oz, 2
- Organic Chicken Broth: 15 oz, 2
- Artichoke Hearts: 14 oz, 1
- Heart of Palm: 14 oz, 1
- Chipolte Peppers in Adobo Sauce: 1 lb
- Black Beans: 15 oz, 1
- Black Beans: 15 oz, 1
- Coconut Milk: 1 oz
- Dijon Mustard: 1 oz
- Black Olives, pitted: 6 oz, 1
- Wild Salmon, 15 oz, 1
- Tomato Paste, no salt added: 6 oz, 1

### Conducments/Oils
- Tamari Sauce, wheat free: 16 oz
- Red Wine, Cabernet: 4-6 oz
- Hot Pepper Sauce
- Olive Oil: 16-24 oz
- Coconut Oil: 2 T
- Grape Seed Oil: 4 oz
- Sesame Oil: 1 T
- Flax Seed: 2 T
- Balsamic, Red Wine, and Rice Vinegar
- Coconut Aminos: 5 T
- Soy Sauce, Low Sodium: 8 oz

### Spices
- Garlic and Onion Powder
- Sea Salt
- Black Pepper
- Oregano and Basil
- Red Pepper Flakes
- Peppermint and Vanilla Extracts
- Bay Leaves: 1-2
- Coriander Seed: 1/2 t
- Xanthan Gum: 1/4 t
- Corn Starch
- Baking Powder
- Cumin, Curry Powder, Cinnamon, Dry Mustard, Paprika, Thyme

### Time Saver Tips:
- Roast beach for day 6 dinner and use 2 the next day for lunch only.
- Olive Oil Cabernet/Voignett: double the recipe for day 2 dinner and use for days 3 and 4 lunch only.
- Purchase all canned goods, nuts, seeds, and condiments in a low sodium or no salt added form if available.
### Cardiometabolic Food Plan - Recipe Index

**Proteins:**
- 5. Asian Turkey Cabbage Boats*
- 9. Chicken Pomegranate Quinoa Salad*
- 10. Chocolate Mint Spinach Smoothie*
- 12. Coconut Chicken with Purple Rice*
- 13. Egg White Vegetable Frittata
- 16. Fresh Spinach Guiche Cups*
- 19. Grilled flank Steak
- 25. Poached Fish with Fire-Roasted Tomato Sauce*
- 26. Protein Pancakes
- 32. Salmon Pecan Cakes*
- 33. Sautéed Chicken and Kiwi*
- 36. Strawberry Peach Kate Smoothie*
- 37. Ten Vegetable Soup with Tempeh*
- 39. Vegetable Egg Scramble*

**Non-starchy Vegetables:**
- 5. Asian Turkey Cabbage Boats*
- 10. Chocolate Mint Spinach Smoothie*
- 11. Cilantro Lime Cauliflower Rice
- 16. Fresh Spinach Guiche Cups*
- 17. Fruity Spinach Salad*
- 18. Greek Lentil Stew*
- 21. Kale Salad
- 23. Marinated Vegetables
- 25. Poached Fish with Fire-Roasted Tomato Sauce*
- 27. Purple Cabbage Salad
- 29. Roasted Beets with Greens*
- 30. Roasted Brussels Sprouts
- 31. Roasted Root Vegetable Salad*
- 35. Strawberry Peach Kate Smoothie*
- 37. Ten Vegetable Soup with Tempeh*
- 38. Thai Barley and Veggie Stir-Fry with Edamame*
- 39. Vegetable Egg Scramble*

**Fats & Oils:**
- 15. Fresh Berries with Coconut Mango Cream*
- 17. Fruity Spinach Salad*
- 20. Homemade Guacamole
- 22. Marinated Olives
- 24. Olive Oil Cabernet Vinaigrette

**Nuts & Seeds:**
- 14. Flax Muffin in a Cup
- 32. Salmon Pecan Cakes*
- 34. Savory Seed Crackers
- 36. Sweet Potato Hummus*

**Legumes:**
- 7. Black Soy Bean Cocoa Soup with Lime Zest
- 18. Greek Lentil Stew*
- 36. Sweet Potato Hummus*
- 38. Thai Barley and Veggie Stir-Fry with Edamame*

**Fruit:**
- 15. Fresh Berries with Coconut Mango Cream*
- 17. Fruity Spinach Salad*
- 28. Raspberry Peach Fruit Fluff
- 33. Sautéed Chicken and Kiwi*
- 35. Strawberry Peach Kate Smoothie*

**Grains:**
- 8. Chia Pomegranate Oatmeal
- 9. Chicken Pomegranate Quinoa Salad*
- 12. Coconut Chicken with Purple Rice*
- 30. Thai Barley and Veggie Stir-Fry with Edamame*

**Starchy Veggies:**
- 6. Balsamic Roasted Beets
- 29. Roasted Beets with Greens*

* Asterisks refer to recipes that are in more than one food category.

All recipes are included on the following pages in alphabetical order.
CHANGING THE WAY WE DO MEDICINE, AND THE MEDICINE WE DO
Additional Resources for Exploring Therapeutic Foods

Metabolic Syndrome
Hypertension
Dyslipidemias
Identifying Metabolic Syndrome
‘Lifestyle-induced metabolic inflexibility and accelerated ageing syndrome’

Features of Metabolic Syndrome

At least 3 of the following:

**Women**
- TG $\geq 150$ mg/dL
- HDL-C $< 50$ mg/dL
- Waist $> 35”$ (88 cm)
- BP $\geq 130/85$ or HTN on meds
- Fasting glucose $\geq 100$ mg/dL

**Men**
- TG $\geq 150$ mg/dL
- HDL-C $< 40$ mg/dL
- Waist $> 40”$ (102 cm)
- BP $\geq 130/85$ or HTN on meds
- Fasting glucose $\geq 100$ mg/dL
Fatty Liver
Obesity
Type 3 Diabetes
Cardiovascular Disease
Immune Dysfunction
Endothelial Dysfunction

- Beta-cell Dysfunction
- Lipotoxicity
- Osteoporosis

- Fatty Liver
- Obesity
- Type 3 Diabetes
- Cardiovascular Disease
- Immune Dysfunction
- Endothelial Dysfunction

Insulin Sensitive; Insulin Resistant
Therapeutic Food Interventions for Metabolic Syndrome
Targeting the characteristics of metabolic syndrome through the “polymeal” rather than the “polypill” approach
Features within the Cardiometabolic Food Plan Tailored to Metabolic Syndrome

• Meal frequency
• Low glycemic index and glycemic load
• Low in added sugars
• Balanced quality fat
• High in fiber
Foods to Avoid in Metabolic Syndrome

- Sucrose and fructose
- Processed foods
- Refined carbohydrates like white flour breads and pasta
- Fast foods
- Saturated, animal fat
- Overly-cooked foods (e.g., meats)
- Food or drink in plastic containers
- Large meals (aim for smaller meals)
- Eggs (less than one per day if blood sugar is elevated)
- Fruit juices
Foods to Include in Metabolic Syndrome

- Extra-virgin olive oil
- Green tea
- Mixed nuts (unsalted)
- Cinnamon
- Omega-3 fat sources from food and supplement sources (2 to 4 grams per day, especially if hypertriglyceridemia is present)
- Fiber sources such as whole grains and legumes
Olive Bioactives

[Image of an olive tree with molecular structures of various bioactive compounds]

Extra Virgin Olive Oil: Relationship to CVD

• 10 to 30mL (about 2-6 tbsp) of polyphenol-rich olive oil per day has been shown to exert positive effects on systolic and diastolic blood pressure, endothelial function, inflammation and oxidative stress.

• Neither safflower oil nor sunflower oil, both rich in monounsaturated fatty acids, have been found to have the same benefits.

• The level of polyphenols appears to be important for enhancing the beneficial effects.

• They are found at higher levels in unrefined, extra virgin olive oils and give certain olive oils their characteristic bitter, astringent taste.
Tree Nuts
Tree nuts inversely associated with metabolic syndrome & obesity

Tree Nuts:
Relationship to Metabolic Syndrome

• Strong evidence from large population studies and clinical trials supports nut consumption for cardiovascular health which may reduce risk by up to 35%.

• Clinical studies demonstrate that 1 to 2 oz/d of nuts lowers LDL-C by 2% to 19%.* Obese subjects experience a smaller decrease in LDL-C from nuts compared with lean subjects.

• Nuts can lower triglycerides, apo B, inflammation and LDL oxidation, as well as improve endothelial function and vascular reactivity.

Nuts: Relationship to CVD

- Cardiovascular benefit of nut consumption increase in a dose-dependent manner, improvements with consumption of 1 oz once a week.
- Greatest benefits with 1 oz nuts 5 or more times per week.
  - Most potent cholesterol-lowering nuts: walnuts, peanuts, pistachios, almonds, pecans, and macadamia nuts.
- Almonds and pecans shown to reduce oxidized LDL
Subset of PREDIMED Trial found favorable effects of MED Diet + nuts on lipoproteins

Lipoprotein subfractions are shifted to a less atherogenic pattern by consumption of Mediterranean diets enriched with nuts:

- Decreased concentration of med-small and very small LDL
- Decreased LDL particle number
- Increased LDL concentrations
- With olive oil added, see increased HDL concentrations

Protective Cardiometabolic Mechanisms of Catechins

General Benefits of Green Tea in Metabolic Syndrome

- Increases plasma antioxidant capacity and whole blood glutathione
- Induces weight loss, reduces BMI & WC
- Lowers lipid peroxidation

Therapeutic Food Interventions for Hypertension
The Hypertensive Web


Genetic variations influence pro-oxidant and antioxidant enzyme function and expression

Environmental pollutants, dietary factors, emotional stress enhance production of ROS in the CNS and vasculature

Vascular remodeling and vasoconstriction caused by ROS increases systemic vascular resistance

Humoral and endocrine factors (angiotensin II, aldosterone, catecholamines) activate the NADPH oxidase and other ROS generating enzymes

Superoxide and other ROS promote neuronal firing in the subfornical organ, increasing sympathetic outflow. Oxidative stress impairs baroreflex function.

The Link Between Insulin Resistance & Hypertension

Hypertension: Dietetic Factors to Consider

Studied dietary approaches:
- DASH diet
- Mediterranean diet
- Vegetarian diet
- Raw foods
- Examine food allergy
Therapeutic Food Interventions for Hypertension
## Condition-Specific Therapeutic Considerations

<table>
<thead>
<tr>
<th>If there is...</th>
<th>Reduce these foods</th>
<th>Increase these foods</th>
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</thead>
<tbody>
<tr>
<td>High Blood Pressure</td>
<td>Sodium (limit to 2,000 milligrams—about 1 teaspoon per day)</td>
<td><strong>Proteins:</strong></td>
</tr>
<tr>
<td></td>
<td>Processed foods (packaged, canned) and frozen meals</td>
<td>Soy (fermented) 30 grams daily: natto, tofu, tempeh, miso</td>
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<tr>
<td></td>
<td>Fast foods</td>
<td>Hydrolyzed whey (30 grams daily)</td>
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<td></td>
<td>Soft drinks</td>
<td>Legumes (vegetable protein)</td>
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<td></td>
<td>Added sweeteners</td>
<td>Cold water fish: sardines, herring, haddock, salmon, or trout</td>
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<tr>
<td></td>
<td>Caffeinated beverages</td>
<td>Foods high in L-arginine: lentils, hazelnuts, walnuts, peanuts</td>
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<tr>
<td></td>
<td>Alcohol</td>
<td>Mixed nuts (unsalted)</td>
</tr>
<tr>
<td></td>
<td>Use of oils in high-heat cooking</td>
<td>Cocoa (30 grams dark chocolate per day, or about 1 square of baker’s chocolate)</td>
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<td></td>
<td></td>
<td><strong>Vegetables and Fruit:</strong></td>
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<tr>
<td></td>
<td></td>
<td>Blueberries</td>
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<tr>
<td></td>
<td></td>
<td>Seaweed (hijiki and wakame), 3 to 4 grams per day</td>
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<td></td>
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<td>Garlic, 1-4 fresh cloves/day</td>
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<td></td>
<td></td>
<td>Mushrooms, ½ cup shitake, maitake</td>
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<tr>
<td></td>
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<td>Celery, 4 stalks/day</td>
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<td></td>
<td></td>
<td>Foods high in lycopene: tomatoes, guava, watermelon, apricots, pink grapefruit, papaya</td>
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<tr>
<td></td>
<td></td>
<td>Pomegranate juice</td>
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<tr>
<td></td>
<td></td>
<td><strong>Fats and Oils:</strong></td>
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<tr>
<td></td>
<td></td>
<td>Olive, flaxseed, and sesame oils</td>
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<tr>
<td></td>
<td></td>
<td><strong>Carbohydrates:</strong></td>
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<tr>
<td></td>
<td></td>
<td>Increase complex carbohydrates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase high-fiber whole grains: oatmeal, oat bran, barley, wheat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fiber: psyllium 7 gm</td>
</tr>
</tbody>
</table>
Foods to Avoid in Hypertension

- Sodium (limit to 2,000 mgs-about 1 teaspoon-per day)
- Processed foods (packaged, canned) and frozen meals
- Fast foods
- Soft drinks
- Added sweeteners
- Caffeinated beverages
- Alcohol
- Use of oils in high-heat cooking
Foods to Include in Hypertension

Proteins:
- Soy, (fermented) 30 grams daily: natto, tofu, tempeh, miso
- Hydrolyzed whey (30 grams daily)
- Legumes (vegetable protein)
- Cold water fish: sardines, herring, haddock, salmon or trout
- Foods high in L-arginine: lentils, hazelnuts, walnuts, peanuts
- Mixed nuts (unsalted)
- Cocoa (30 grams dark chocolate per day, or about 1 square of baker’s chocolate)

Vegetables and Fruit:
- Blueberries
- Leafy greens high in nitrates
- Seaweed (hijiki and wakame), 3 to 4 grams per day
- Garlic, 1-4 fresh cloves/day
- Mushrooms – ½ cup shitake, maitake
- Celery, 4 stalks/day
- Foods high in lycopene: tomatoes, guava, watermelon, apricots, pink grapefruit, papaya
- Pomegranate juice

Fats and Oils:
- Olive, flaxseed, and sesame oils

Carbohydrates:
- Increase complex carbohydrates
- Increase high fiber whole grains: oatmeal, oatbran, barley, wheat
- Fiber: psyllium 7gm
LET ME GET THIS STRAIGHT-
BOTTLED WATER IS BAD,
AND CHOCOLATE IS GOOD.

THE EVER-CHANGING RULES OF HEALTH.
Beneficial effects of polyphenol-rich olive oil in patients with early atherosclerosis

- OO significantly improved endothelial function
- Significant reduction in inflammatory parameters:
  - sICAM
  - White blood cells
  - Monocytes
  - Lymphocytes
  - Platelets

Therapeutic Food Interventions for Dyslipidemias
Where to Focus with Food

- Inflammation
- Oxidative Stress
- Immune regulation

Foods to Avoid in Dyslipidemia

- Sucrose
- Processed foods
- Fast foods
- Refined carbohydrates
- Trans fats (found in processed foods)
- High saturated fats (e.g., creams, full-fat cheeses, fatty meat)
- Margarine
Foods to Include in Dyslipidemia

- Fish
- Green leafy vegetables
- Low-glycemic index fruits
- Tomatoes
- Extra-virgin olive oil (about 5 TBSP per day)
- Green tea
- Soybeans (e.g., soymilk, tofu, tempeh)
- Dark chocolate
- Pomegranate
- Seeds and nuts (e.g., especially sesame)
- Red wine (check with your healthcare practitioner)
- Garlic (1 to 2 cloves per day)
- Rice bran oil
Foods & reduction of LDL-C oxidation

- Fish
- Green, leafy veg, fruits
- Citrus fruits, vegetables
- Tomato
- Extra virgin olive oil
- Green tea
- Soy proteins
- Dark chocolate
- Pomegranate
- Omega-3 fatty acids
- Carotenoids
- Vitamin C
- Lycopene
- Polyphenolics & oleic acid
- Tea polyphenols
- Genistein, daidzein, glyceitin
- Flavonoid
- Polyphenols
Foods that lower blood triglycerides

Foods & homocysteine reduction

- Fruits & vegetables
- Whole grains
- Citrus fruits & vegetables
- Nuts, seeds, & oils

- Folate & phytochemicals
- Fiber & phytochemicals
- Vitamin C
- Vitamin E

Foods & antioxidant action improvement

Tomatoes
Green leafy vegeats, fruits
Vegetable oils
Citrus fruits & vegs
Soy proteins
Green & black teas
Grapes & red wines

Lycopene
Carotenoids
Tocopherol, tocotrienols
Vitamin C
Genistein, daidzein
Tea polyphenols
Anthocyanins, catechins, cyanidins, flavonols, myricetin, quercetin

Foods & endothelial function improvement

- Fish
- Nuts
- Citrus fruits & veggies
- Grapes & red wines
- Dark chocolate

- Omega-3 fatty acids
- Polyphenols
- Vitamin C
- Anthocyanins, catechins, cyanidins...
- Flavonoid

Hypercholesterolemia: Dietary Factors to Consider

1. Meal frequency

- Eating small, frequent meals compared with large, less, frequent meals may help lower total- and LDL-C levels
- Having a regular eating pattern

“Skipping breakfast, eating infrequently (1 meal per day), and having irregular meal frequency may increase total and LDL-C levels.”

Hypercholesterolemia: Dietary Factors to Consider

2. Reducing dietary (oxidized) cholesterol intake
   - Oxidized cholesterol created during processing high-temp heating is highly atherogenic.

“Although relatively small effect: reducing cholesterol intake of 100 mg/day most likely results in a 4 mg/dl decrease in serum cholesterol”

Avoid cholesterol oxidation products: dried egg products (found in pancake mixes, baby foods, cake mixes, noodles, military rations), powdered milk, grated cheeses, french fries, processed meats, butter, heated butter and lard.
Hypercholesterolemia: 
*Dietary Factors to Consider*

3. Note dietary fat intake
   - Consider quality
   - Consider quantity

- 10-20 en% help to lower serum total and LDL-C levels
- Consider the effect of metabolic endotoxemia with high-fat meals
- Minimize animal-based long-chain saturated fat and avoid trans fat
- MUFAs and PUFAs preferable but do not heat on high temps
- Balance the omega-6/omega-3 ratio
Hypercholesterolemia:
Dietary Factors to Consider

4. Foods to include

- Rice bran oil
- Nuts
- Sesame seeds
- Fiber
- Oat bran
- Barley & rye
- Whole soybeans
- Legumes
- Grapefruit
- Yogurt
- Avocado
- Fermented dairy/probiotics

- Rice bran oil contains heart healthy phytochemicals (gamma-oryzanol, tocotrienols)
- Nuts: Walnuts, almonds, pistachios, pecans, hazelnuts, and macadamia nuts
- Sesamin in sesame seeds to help with lowering LDL-C through reduced cholesterol absorption & reduced HMG-CoA activity.
- High fiber assists with increasing fecal excretion of bile acids, resulting in increased conversion of cholesterol to bile in the liver.
- Consumption of 1 red grapefruit per day for 30 days reduced mean serum total and LDL-C more than yellow grapefruit

Add More Spices When Cooking
Phytochemicals modulate intracellular communication processes related to cardiovascular risk

CHANGING THE WAY WE DO MEDICINE, AND THE MEDICINE WE DO