

### 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**







#### 

BIOMARKERS

CLINICAL INDICATORS FROM PHYSICAL EXAM

DIET, NUTRITION, AND LIFESTYLE JOURNALS







## Food Is...

MEDICINE CONNECTION FORMATION ENERGY



## Food is information, Food is medicine.

"...we are witnessing food being redefined as "information" that alters cellular function in the postprandial 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

Wald et al., British Medical J 2003; 525: 1-6. Franco et al. Horm Metab Res. 2007 Sep;39(9):627-31. Fruits & vegetables Almonds Chocolate Wine Fish Garlic



## 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."



ATHER

RGANIZE



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

- FN Status
- Points of Connection
- Pattern Recognition

- FN Referral
- FN Prescription
- Lifestyle Change



# 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



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#### **Functional Nutrition Dietary Interventions**



## Foundational and First Step Intervention Considerations

	Core Food Plan	Elimination Diet	Cardiometabolic
Chief Complaint and Medical History	Weight Gain / Weight loss Fatigue	GI sxs-bloating, indigestion Joint pain Muscle aches Immune dysregulation Fatigue	Elevated Blood Sugar Increased Blood Pressure Increased Waist Line Fatigue
Conditions	Non-specific	Gastrointestinal <ul> <li>Irritable Bowel Syndrome</li> <li>Intestinal Permeability</li> </ul> Immune/Inflammation <ul> <li>Auto-immune Diseases</li> <li>Asthma</li> <li>Atopy &amp; Skin Inflammation</li> <li>Myalgias and Arthralgias</li> </ul> Mood Disorders <ul> <li>Depression</li> </ul>	Obesity Metabolic Syndrome Type 2 Diabetes Essential Hypertension Dyslipidemia



## **Functional Nutrition Patterns**

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



## **Functional Medicine Patterns**

	Core Food Plan	Elimination Diet	Cardiometabolic
Medical History	Seeking Healthy Diet, All Ages, Athletic, Pregnancy, Overweight, Overweight, Underweight.	Allergies, Atopy, Asthma, GI Distress, Pain and Fatigue, Al Diseases.	Metabolic Syndrome, Type 2 Diabetes, Hypertension, Dyslipidemia, Obesity
ATMs (Antecedents, Triggers, and Mediators)		Antibiotics, Multiple infections, Trauma, Stress, Familial allergies, Mother with Group B strep, Acid Blocking Medication, Maternal use of PPI during pregnancy	Family History, T2DM, CVD, HTN, Obesity, Sedentary Lifestyle, Sleep Disorder (inadequate sleep and Sleep apnea)
Matrix Patterns	Non-specific	Assimilation Biotransformation Communication/Defense and Repair	Structural Integrity Transport Defend and Repair/Communication





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 plantbased 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

Curr Atheroscler Rep. 2011 Dec;13(6):499-507. Dietary Guidelines for Americans 2010: implications for cardiovascular disease. Flock MR, Kris-Etherton PM.

## The evidence for plantbased eating

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

Curr Atheroscler Rep. 2011 Dec;13(6):499-507. Dietary Guidelines for Americans 2010: implications for cardiovascular disease. Flock MR, Kris-Etherton PM.

## 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

Curr Atheroscler Rep. 2011 Dec;13(6):499-507. Dietary Guidelines for Americans 2010: implications for cardiovascular disease. Flock MR, Kris-Etherton PM.

## 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)



## 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?



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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



→ Mediterranean Diet - Prudent Diet

Mediterranean Diet:

- Fruits / Veggies, Nuts, Olive Oil, Canola Oil, Fish

#### Prudent / AHA Step 1

 Fats, Saturated Fat & Cholesterol; AHA Step 1

Circulation. 1999; 779-785

## 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

Public Health Nutr.2013 Nov 29:1-14. [Epub ahead of print]

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 pressureGlucose

J Am Coll Cardiol. 2011 Mar 15;57(11):1299-313. The effect of Mediterranean diet on metabolic syndrome and its components: a meta-analysis of 50 studies and 534,906 individuals. Kastorini CM, et al.



## 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.

N Engl J Med 2013;368:1279-90. DOI:10.1056/NEJMoa1200303 N=7447 Table 1. Summary of Dietary Recommendations to Participants in the Mediterranean-Diet Groups and the Control-Diet Group.

Food	Goal
Mediterranean diet	
Recommended	
Olive oil*	≥4 tbsp/day
Tree nuts and peanuts+	≥3 servings/wk
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/day
Fish (especially fatty fish), seafood	≥3 servings/wk
Legumes	≥3 servings/wk
Sofrito‡	≥2 servings/wk
White meat	Instead of red meat
Wine with meals (optionally, only for habitual drinkers)	≥7 glasses/wk
Discouraged	
Soda drinks	<1 drink/day
Commercial bakery goods, sweets, and pastries§	<3 servings/wk
Spread fats	<1 serving/day
Red and processed meats	<1 serving/day
Low-fat diet (control)	
Recommended	
Low-fat dairy products	≥3 servings/day
Bread, potatoes, pasta, rice	≥3 servings/day
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/wk
Lean fish and seafood	≥3 servings/wk
Discouraged	
Vegetable oils (including olive oil)	≤2 tbsp/day
Commercial bakery goods, sweets, and pastries§	≤1 serving/wk
Nuts and fried snacks	≤1 serving/wk
Red and processed fatty meats	≤1 serving/wk
Visible fat in meats and soups¶	Always remove
Fatty fish, seafood canned in oil	≤1 serving/wk
Spread fats	≤1 serving/wk
Sofrito‡	≤2 servings/wk
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)."

J Nutr. 2012 Jun;142(6):1019-25. Epub 2012 Apr 25. The Mediterranean diet pattern and its main components are associated with lower plasma concentrations of tumor necrosis factor receptor 60 in patients at high risk for cardiovascular disease. Urpi-Sarda M, et al.

Glycemicbalanced, 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.

Atherosclerosis.2012 Aug;223(2):491-6. Epub 2012 Jun 6. Glycemic load, glycemic index and risk of cardiovascular diseases: Meta-analyses of prospective studies. Ma XY. et al. n= 229,213 participants



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

	GL	GI
Men	1.08	0.99
Women	1.69	1.26
Combined	1.36	1.13

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

Am J Cardiol. 2012 Jun 1;109(11):1608-13. Epub 2012 Mar 20. Meta-analysis of dietary glycemic load and glycemic index in relation to risk of coronary heart disease. Dong JY, et al.



## Systemic Effects of Dietary Fiber



Nat Med. 2014 Feb 6;20(2):120-1. doi: 10.1038/nm.3472. Increase in dietary fiber dampens allergic responses in the lung. Huffnagle GB.

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## 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."





Int J Mol Scii.2012;13(2):1524-40. Epub 2012 Feb 2. Dietary fibers and cardiometabolic diseases. Riccioni G, et al.

## Dietary fiber and cardiovascular health

Table II           Major effects of fibre related to CVD					
Organ or body location	Increase	Decrease			
Food Intake		Diet energy density			
Stomach		Gastric emptying (saciety signal) Lipid emulsification Lipolysis			
Pancreas	Enzyme secretion				
Liver	Lipoprotein uptake Cholesterol synthesis Bile acid synthesis and secretion	Lipogenesis			
Peripheral tissues	Insulin sensitivity				
Plasma		Postprandial lipemia Postprandial lipoproteinemia (?) Fasting total cholesterol Fasting LDL cholesterol			
Small intestine	Bile acid binding Sterol binding	Lipid emulsification Lipolysis Mucosal uptake and re-secretion			
Large intestine	Fermentation Short chain fatty acid production				
Feces (excretion)	Bile acids Sterols (?) Fat				
(?) No clear evidence exists, although most study	data suggest that this effect occurs. Modified from Lairon	1 et al.41.			

#### Nutr Hosp.2012 Jan-Feb;27(1):31-45. Dietary fibre and cardiovascular health.

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## 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."

Am J Med.2013 Dec;126(12):1059-67.e1-4. doi: 10.1016/j.amjmed.2013.07.023. Epub 2013 Oct 15.



### Risk of CVD across increasing levels of total fiber intake



### ATHER

NITIATE

- Food Nutrition History
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### **Functional Nutrition Dietary Interventions**



FUNCTION	NAL NE*	Funct	ional I	Medic	ine Pre	scripti	on	
Patient Name						Date of Birt	h	
Functional Nutri	tion Preso	ription						
Functional Nutrition		First \$	Step Interve	entions	Adv	anced Inte	rventions	
D Phytonutrient Spee	ctrum		imination I	Diet		GI Specific	Food Plans	
Core Food Plan (C	CFP)	D Fe	od Reintro	duction		Detox Food	Plan	
CFP, modified:			ardiometabo	olic Food P	lan 🗖	Mito Food I	Plan	
Macronutrient Distrib Target Calories:	ution: 45	/25/30	40/30/30 -1200 🗖	Mild/S 1200–1400	trict Keto 🔲	Intermitter 300 🗖 18	nt Fasting 00–2200 【	days/
Lifestyle Prescri	ption							
Sleep:								
		T Low Rick	D Med	ium Risk	High Risk			
Exercise: Risk A Clearat	ssessment: nce:	C Yes	D No					
Exercise: Risk A Clearat Exercise Prescription:	ssessment: nce: Cardlo/Ae	Yes	Strength/	Resistance	FiexIbility/	Stretching	Solance	
Exercise: Risk A Clearar Exercise Prescription: F - Frequency Time per week	ssessment: nce: Cardlo/Ae	C Yes	D No	Resistance	Flexibility/	Stretching	Bolance	
Exercise: Risk A Clearat     Clearat     Exercise     Presciption:     F - Frequency     Trans prevente     I - Intensity     (eg. low moderle. vigorout)	ssessment: nce: Cordio/Ae	□ Yes	Strength/	Resistance	i Piaxibility/	Stretching	Solance	
Exercise: Risk A Clearat     Clearat     Exercise     Prescription:     F - Frequency     This per week     I - Intensity     (eq. low moderne.vgorout)     T - Time/duration     minute outer day	Cardlo/Ae	Yes	Strength/	Resistance	Plaxibility/	Ştretching	Bolance	
Exercise: Risk A Clearat     Clearat     Exercise     Presentplion:     F - Frequency     Sme per week     I - Intensity     (eq. for moderne epocod     T - Time/duration     mic/se set day      T - Type     Geg. woteng legging termined	ssessment: Cordio/Ae	Proble	Strength/	Pesistance	Plaxibility/	Şhelching	Balance	
Exercise: Risk A Clearat Presentplion: F - Frequency Sime per week I - Intensity Week of the second T - Time/duration mic/se address day T - Type Ma. waters pages semme Stress manageme Supplements/M	Cordio/As	Proble	Sfrength/	Resistance	Plasibility/	Ştretching	Balance	
Exercise: Risk A Clearant Presentplion: F - Frequency Sime per week I - Intensity (eq. tow moderne, epocod) T - Time/duration mic/duration mic/duration Microsoft day T - Type Bag, weing agong summing Stress management Supplement/ Hepipiement/	Cardio/Ae	Proble	Strength/	Resistance	Plaxibility/	Siner	Balance	Before
Exercise: Risk A Clearat     Clearat     Exercise     Prescription:     F - Frequency     Trans per week     I - Intensity     (eo., two moderne vegoto)     T - Time/duration     microsecon day     T - Type     Mig. science agong semming     Stress managemee     Supplement/     Medication	Cardio/As Cardio/As set: cardio/As cardio/As on rising	Proserij Breaktast	Dirength/	Resistance	Mid- afternoon	Ştretching Dinner	Balance	Before
Exercise: Risk A Clearat     Clearat     Exercise     Prescription:     F - Frequency     The per week     I - Intensity     (eo., two moderne vegotod)     T - Time/duration     minutes each day     T - Type     (eo., we moderne signing summing     Stress managemee     Supplement/Medication	Cardio/As Cardio/As set: cardio/As cardio/As cardio/As cardio/As	Proserij Breaktast	Dirength/	Resistance	Mid-	Ştretohing Dinner	Balance	Before
Exercise: Risk A Clearat     Clearat     Exercise     Prescription:     F - Frequency     Trime per week     I - Intensity     (ea. two moderne vegonou)     T - Trype     (ad. workers agong semming     Stress manageme     Supplement/     Medication	Cardio/Ae Cardio/Ae Cardio/Ae Cardio/Ae Cardio/Ae CardioAe	Proserij	Dirength/	Lunoh	Mid- afternoon	Stretching Dinner	Balance	Before
Exercise: Risk A Clearat     Clearat     Exercise: Risk A Clearat     Prescription:     F - Frequency     Trime per week     I - Intensity     (eq. low moderner week     T - Type     did, waking logging seminary     Stress manageme     Supplement/     Medication	Cardio/Ae Cardio/Ae ent: ledication On rising	Proscrip Breakfast	Dirength/	Lunoh	Mid- afternoon	Shetching	Balance Mid- evening	Before



## **Your Functional Medicine Prescription**

FUNCTIONAL MEDICINE
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**Functional Medicine Prescription** 

Patient Name

Prescribed by\_

Follow-up Appointment

Date of Birth



### **Functional Medicine Prescription**

Patient Name	Date of Birth						
Functional Nutrition Prescription							
Functional Nutrition	First Step Interventions	Advanced Interventions					
Phytonutrient Spectrum	Elimination Diet	GI Specific Food Plans					
Core Food Plan (CFP)	Food Reintroduction	Detox Food Plan					
CFP, modified:	Cardiometabolic Food Plan	Mito Food Plan					
Personal Dietary Recommende	ations						
Macronutrient Distribution: $\Box$	45/25/30 🗖 40/30/30 🗖 Mild/Strict Ket	o □ Intermittent Fasting days/wk					
Target Calories:	600 🛛 1000-1200 🗖 1200-1400 🗖 14	00–1800 🛛 1800–2200 🗖 2200–2500					

Date.

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FUNCTIONAL MEDICINE
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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

() IFM

## 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









	Core	Core 🕜	Core 🔞	Elim Diet	Cardio	ReNew	Detox	Mito
General Features of All IFM Food Plans	ê.		к. -	0	W			
Facus on Whole Foods								
Promotes Clean and Organic								
Balanced Macronutrients								
Adequate Quality Protein								
Balanced Quality Fats					1 <b>1</b>		- <b>1</b>	
High in Fiber								
Low in Simple Sugars								
Phytonutrient Diversity					1.			
Eliminates Processed Foods	optional	optional	optional		optional			optional
Frequency and Calorie Features								
No Calorle Restriction	optional	optional	optional	1.0				
Targeted Calories	optional	optional	optional	optional		optional	optional	
Reduced Carbohydrates								
Ketogenic Options								
Intermittent Fasting with Caloric Restriction								
Food Sensitivity Features								
Identifies Food Triggers								
Reduces Food Triggers								
Dairy-Free	optional	optional			optional			optional
Gluten-Free	optional	optional	optional		optional			
Grain-Free	optional			optional	optional		optional	optional
Sugar-Free								
Umited Legumes								
Low-Grain				optional			optional	
Identifies Histamines, Oxalates, & Nightshades				optional				
Promotes Body Awareness to Food								

Key: 
Primary Feature 
Secondary Feature 
Vegetarian 
Vegan

	Core	Core 🕐	Core 🚾	Elim Diet	Cardio	ReNew	Detox	Mito
Specific Intervention Features								
Foundational Eating Plan	10 C	10 C						
Plant-Based Food Plan								
Reduces Inflammation				- <b>1</b>		- <b>1</b>		10 C
Supports Healthy Microbiome						- <b>1</b>		
Phytonutrients to Heal the Gut				10 C		10 C		
Reduces Toxic Burden				- <b>1</b>		18 A. 19		
Reduces Cravings & Food Addictions				10 C		10 C		
Modified Mediterranean Approach								10 C
Low Glycemic Impact						10 C		
Balances Blood Sugar					10 C	18 A.		10 C
Condition-Specific Phytonutrients					10 C			10 C
Provides Targeted Antioxidants								10 C
Protective Antioxidants						10 C		10 C
Encourages Healthy Elimination of Toxins						18 A.		
Balances Hormone Metabolism						10 C		
Supports Nutrient-Dependent Pathways						18 A. 19		10 C
Supports Sugar Detoxification						10 C		
Supports Liver Function						10 C		10 C
Requires Clean and Organic						18 A.		
Therapeutic Foods for Energy								
High in Quality Dietary Fats								

## **Your Functional Medicine Prescription**

FUNCTIONAL MEDICINE?
-------------------------

**Functional Medicine Prescription** 

Patient Name

Prescribed by

Follow-up Appointment

Date of Birth



### **Functional Medicine Prescription**

Patient Name	Date of Birth		
Functional Nutrition Prescript	ion		
Functional Nutrition         Phytonutrient Spectrum         Core Food Plan (CFP)         CFP, modified:	First Step Interventions <ul> <li>Elimination Diet</li> <li>Food Reintroduction</li> <li>Cardiometabolic Food Plan</li> </ul>	Advanced Interventions <ul> <li>GI Specific Food Plans</li> <li>Detox Food Plan</li> <li>Mito Food Plan</li> </ul>	
Personal Dietary Recommendations Macronutrient Distribution: 45/25/3 Target Calories: 600	30 💢 40/30/30 □ Mild/Strict Ke □ 1000–1200 □ 1200–1400 □ 1	to Intermittent Fasting days/wk 400–1800 I 1800–2200 I 2200–2500	



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Date.

## 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

#### 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)-1/4 c
- □ Feta cheese
- (low-fat)-1 oz
- □ Parmesan cheese-2T
- Ricotta cheese (low-fat)-1/4 c
- □ Egg−1; or 2 egg whites
- Fish/Shellfish: Halibut, herring, mackerel, salmon,
  - 1 oz
- Meat: Beef, buffalo. elk, lamb, venison, other wild game-1 oz

sardines, tuna, etc.-

1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0-4 a carbs

#### LEGUMES

Servings/day\_

#### Organic, non-GMO preferred

- $\Box$  Bean soups— $\frac{3}{4}c$
- Black soybeans
- (cooked)-1/2 c
- Dried beans, lentils, peas (cooked)-1/2 c

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

#### □ Natto-1 oz

- $\Box$  Spirulina-2T
- □ Tempeh-1 oz
- □ Tofu (firm/extra
- firm)-1.5-2 oz □ Tofu (soft/silken)-3 02

#### Protein Powder:

- Check label for
  - # grams scoop-1 protein serving = 7 gEgg, hemp, pea, rice, soy, whey

Proteins/Carbs

Edamame (cooked)

□ Flour, legume-¼ c

(cooked)-1/2 c

-1/2 c

□ Green peas

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

#### Hummus or other bean dips-1/3 c

Refried beans. vegetarian-1/4 c

1 serving = 90-110 calories, 3-7 g protein, 0 fat, 15 g carbs

#### DAIRY & ALTERNATIVES Proteins/Carbs

Servings/day\_

#### Unsweetened, organic preferred

- Dairy:
- □ Milk: Cow, goat-8 oz Kefir (plain)-6-8 o
- Yogurt, Greek
  - (plain)-6 oz
- coconut, flaxseed. hazelnut, hemp, oat, soy-8 oz
  - soy (cultured)-4-6 oz

Proteins/Fats

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
- $\Box$  Chia seeds -1T
- Coconut (dried) flakes-3 T
- Flaxseed (ground)-2T
- Hazelnuts-5
- Hemp seeds-1T
- Macadamias-2-3

1 serving = 45 calories, 4 g fat

#### FATS & OILS

Servings/day\_

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

- $\square$  Avocado-2 T or
- 1/2 whole  $\Box$  Butter-1 t. 2 t whipped
- Chocolate, dark (70% or higher
- Coconut milk, regular (canned)-1%T
- Coconut milk, light
- □ Ghee/clarified butter-1 t
- □ Mayonnaise
- (unsweetened) 1 tOlives: black,

#### green, kalamata-8

#### Oils, cooking: Avocado, butter, coconut (virgin), grapeseed, olive (extra virgin), rice bran, sesame-1 t

Fats

- Oils, salad: Almond, avocado, canola, flaxseed, grapeseed, hempseed, olive
  - (extra virgin),
  - pumpkin seed, rice bran, safflower (high-oleic), sesame, sunflower (higholeic) walnut,-1 t

#### 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.



Version 14

- Milk: Almond,

Nut and seed

 $\Box$  Pine nuts -1T

Pistachios-16

□ Soy nuts –2 T

□ Peanuts-10

butters-%T

Pecan halves-4

Pumpkin seeds-1T

□ Sunflower seeds-1T

 $\Box$  Sesame seeds -1T

Walnut halves-4

- - Yogurt, coconut or

- Dairy Alternatives: cocoa)-1 oz
  - - (canned)-3 T

1 serving = 45 calories, 5 g fat

#### **VEGETABLES** Non-starchy

#### Servings/day

Artichoke	🗆 H
Arugula	🗆 Jia
Asparagus	Ke
Bamboo shoots	🗆 Le
Beets (cubed)	🗆 Le
Bok choy	🗆 M
Broccoflower	$\square M$
Broccoli	
Brussels sprouts	□ 0
Cabbage	🗆 Po
Carrots	$\square Pe$
Cauliflower	🗆 R
Celeriac root	🗆 R
Celery	🗆 Sa
Chard/Swiss chard	S S
Chervil	Sec. 30
Chinese cabbage	🗆 SI
Chives	🗆 Sı
Cilantro	🗆 S
Cucumbers	🗆 Sp
Daikon radishes	$\Box$ So
Eggplant	pu
Endive	ye
Escarole	🗆 To
Fennel	D Te
Fermented	🗆 Ti
vegetables: Kimchi,	$\Box$ V
pickles, sauerkraut,	🗆 W
etc.	🗆 W
Garlic	
Green beans	
Greens: Beet,	
collard, dandelion,	

#### orseradish cama ohlrabi eks ettuce, all licrogreens lushrooms kra nions arsley eppers, all adicchio adishes ılsa callions ea vegetables nallots nap peas/snow peas pinach prouts, all quash: Delicata. umpkin, spaghetti, ellow, zucchini, etc. omato omato juice-1/4 c urnips later chestnuts atercress

#### **VEGETABLES** Starchy

#### Servings/day\_

- Acorn squash (cubed)-1 c
- □ Butternut squash (cubed)-1 c □ Plantain- ½ c or
  - 1/2 whole
- Potato: Purple, red, sweet, yellow-1/2 med
- 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 □ Orange-1 sm  $\square$  Applesauce- $\frac{1}{2}c$  $\square$  Papaya-1 c Apricots-4 Peach-1 □ Banana-1/2 med Pear-1 sm □ Blackberries-¼ c □ Persimmon-½ □ Blueberries-¾ c  $\Box$  Pineapple- $\frac{3}{4}c$ □ Cherries-12 Plums-2 sm □ Grapefruit-1/2 Pomegranate Grapes-15 seeds-1/2 c  $\square$  Raspberries-1 c □ Mango-1/2 sm □ Strawberries-1¼ c  $\square$  Melon, all-1 c □ Tangerines-2 sm □ Nectarine-1 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:

Carbs

Potatoes (mashed)-

parsnip, rutabaga-1/2 c

Root vegetables:

1/2 0

□ am−½ med

- $\Box$  Amaranth- $\frac{1}{2}c$
- Buckwheat/
- kasha-1/2 c
- $\square$  Millet- $\frac{1}{2}c$
- Oats (rolled,
- steel-cut)-1/2 c
- □ Quinoa- 1/2 c
- Rice: Basmati, black, brown, purple, red,
- wild-1/3 c □ Sorghum-1/8 c
- $\Box$  Teff- $\frac{3}{4}c$
- All grain servings are for cooked amounts
- □ Muesli-½ c □ Pasta-½ c

□ Bread-1 sl

- □ Pita-½
- □ Tortilla-1, 6 in

Gluten Containing:

□ Barley-½ c

 $\Box$  Bulgur-½ c

□ Cereal, whole

wheat-1/2 c

 $\Box$  Couscous- $\frac{1}{6}c$ 

□ Semolina- 1/8 c

□ Kamut-½ c

□ Spelt-½ c

□ Crackers, rye-4-7

Individual portions:

Carbs

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, 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



- □ Kiwi−1 med

1 serving = 1/2 c, 1 c raw greens = 25 calories, 5 g carbs

Organic, non-GMO fruits, vegetables, herbs and spices preferred

Carbs

egetable juice-1/4 c

### 

### kale, mustard, turnip,

etc.



### Cardiometabolic Food Plan

pheasant,

1 02

T

□ Tempeh-1 oz

Protein Powder:

soy, whey

Check label for

# grams scoop-

1 protein serving = 7 g

Egg, hemp, pea, rice,

Proteins/Carbs

Edamame (cooked)

□ Flour, legume-¼ c

(cooked)-1/2 c

-1/2 c

□ Green peas

3 02

□ Tofu (firm/extra

firm)-1.5-2 oz

□ Tofu (soft/silken)-

#### PROTEINS

#### 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:

Poultry (skinless): □ Cheese (low-fat)-1 oz Chicken, Cornish Change (hand) 16

### **Proteins**

- Parmesan cheese–27
- Ricotta cheese (low-fat)-1/4 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 a carbs

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

#### LEGUMES

Servings/day\_

#### Organic, non-GMO preferred

- $\Box$  Bean soups— $\frac{3}{4}c$
- Black soybeans
- (cooked)-1/2 c
- Dried beans, lentils, peas (cooked)-1/2 c

- Hummus or other bean dips-1/3 c
  - Refried beans, vegetarian-1/4 c

1 serving = 90-110 calories, 3-7 g protein, 0 fat, 15 g carbs

#### DAIRY & ALTERNATIVES Proteins/Carbs

Servings/day\_

#### Unsweetened, organic preferred

Dairy:

- □ Milk: Cow, goat-8 oz Kefir (plain)-6-8 o
- Yogurt, Greek
  - (plain)-6 oz
- Milk: Almond, coconut, flaxseed. hazelnut, hemp, oat, soy-8 oz

Dairy Alternatives:

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
- $\Box$  Chia seeds -1T
- Coconut (dried) flakes-3 T
- Flaxseed (ground)-2T
- Hazelnuts-5
- Hemp seeds-1T

Servings/day\_

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

- $\square$  Avocado-2 T or
- 1/2 whole  $\Box$  Butter-1 t. 2 t whipped
- Chocolate, dark (70% or higher cocoa)-1 oz
- Coconut milk, regular (canned)-1%T
- Coconut milk, light (canned)-3 T
- □ Ghee/clarified butter-1 t
- □ Mayonnaise
- (unsweetened) 1 tOlives: black,

#### green, kalamata-8

1 serving = 45 calories, 5 g fat

Fats

#### 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 (higholeic) walnut.-1 t

#### 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.



Version 14

- Macadamias-2-3
- 1 serving = 45 calories, 4 g fat

Nut and seed

Proteins/Fats

- butters-%T □ Peanuts-10
- Pecan halves-4
- $\Box$  Pine nuts -1T
- Pistachios-16
- Pumpkin seeds-1T  $\Box$  Sesame seeds -1T
- □ Soy nuts –2 T
- □ Sunflower seeds-1T
- Walnut halves-4

### FATS & OILS

Fats

Yogurt, coconut or soy (cultured)-4-6 oz



#### **VEGETABLES** Non-starchy

#### Servings/day\_

Artichoke	Horseradish
Arugula	Jicama
Asparagus	Kohlrabi
Bamboo shoots	Leeks
Beets (cubed)	Lettuce, all
Bok choy	Microgreen
Broccoflower	Mushrooms
Broccoli	Okra
Brussels sprouts	Onions
Cabbage	Parsley
Carrots	Peppers, all
Cauliflower	Radicchio
Celeriac root	Radishes
Celery	Salsa
Chard/Swiss chard	Scallions
Chervil	Sea vegetabl
Chinese cabbage	Shallots
Chives	Snap peas/sr
Cilantro	Spinach
Cucumbers	Sprouts, all
Daikon radishes	Squash: Deli
Eggplant	pumpkin, sp
Endive	yellow, zuccl
Escarole	Tomato
Fennel	Tomato juic
Fermented	Turnips
vegetables: Kimchi,	Vegetable ju
pickles, sauerkraut,	Water chests
etc.	Watercress
Garlic	
Green beans	
Greens: Beet,	

#### collard, dandelion, kale, mustard, turnip, etc.

#### Irabi cs uce, all ogreens hrooms a ons ley pers, all icchio ishes llions vegetables lots peas/snow peas ach outs, all ash: Delicata. pkin, spaghetti, w, zucchini, etc. ato ato juice-¼ c nips etable juice-1/4 c er chestnuts ercress

Carbs

#### **VEGETABLES** Starchy

#### Servings/day\_

- Acorn squash (cubed)-1 c
- Butternut squash (cubed)-1 c □ Plantain- ½ c or
  - 1/2 whole
- Potato: Purple, red, sweet, yellow-1/2 med

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 □ Orange−1 sm  $\square$  Applesauce- $\frac{1}{2}c$  $\square$  Papaya-1 c Apricots-4 Peach-1 □ Banana-1/2 med Pear-1 sm □ Blackberries-¼ c □ Blueberries-¾ c □ Cherries-12 □ Grapefruit-1/2 □ Grapes-15 □ Kiwi−1 med □ Mango-1/2 sm  $\square$  Melon, all-1 c

#### Low Glycemic Impact Recommendations

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

- Potatoes (mashed)-1/2 0
- Root vegetables: parsnip, rutabaga-1/2 c
- □ am−½ med
  - - - steel-cut)-1/2 c

Servings/day\_

Gluten-Free:

 $\Box$  Amaranth- $\frac{1}{2}c$ 

kasha-1/2 c

Buckwheat/

 $\square$  Millet- $\frac{1}{2}c$ 

- □ Quinoa− ½ c Rice: Basmati, black,
- brown, purple, red, wild-1/3 c
- □ Sorghum-1/8 c
- □ Teff-¼ c All grain servings are for

#### □ Muesli-½ c □ Pasta-½ c

□ Bread-1 sl

- □ Pita-1/2
- □ Tortilla-1, 6 in

Gluten Containing:

□ Barley-½ c

 $\Box$  Bulgur-½ c

Cereal, whole

wheat-1/2 c

 $\Box$  Couscous- $\frac{1}{6}c$ 

□ Semolina- 1/8 c

□ Kamut-½ c

□ Spelt-½ c

□ Crackers, rye-4-7

Individual portions:

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, SPICES & CONDIMENTS**

#### Unsweetened, no sugar added

- Beetroot 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



- $\Box$  Pineapple- $\frac{3}{4}c$ Plums-2 sm Pomegranate seeds-1/2 c

 $\square$  Raspberries-1 c

- □ Tangerines-2 sm

□ Strawberries-1¼ c

□ Nectarine-1 sm

Carbs

1 serving = 60 calories, 15 g carbs

1 serving = 1/2 c, 1 c raw greens = 25 calories, 5 g carbs

#### Organic, non-GMO fruits, vegetables, herbs and spices prefer

Carbs

#### WHOLE GRAINS (100%)

Unsweetened, sprouted and organic preferred

#### Carbs

Oats (rolled, cooked amounts

### Persimmon-½

- Filtered water Sparkling/mineral water
- Green tea
- Low-sodium

#### vegetable juice



#### Cardiometabolic Food Plan—Bibliography

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### PROTEINS

#### **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:**

- $\Box \quad \text{Cheese (low-fat)} 1 \text{ oz}$
- $\Box \quad \text{Cheese (hard)} -\frac{1}{2} oz$
- Cottage cheese  $(low-fat)-\frac{1}{4}c$
- Feta cheese (low-fat)-1 oz
- $\Box$  Parmesan cheese–2T
- $\square Ricotta cheese$  $(low-fat)-\frac{1}{4} c$
- $\Box$  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
- 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

Poultry (skinless):

Chicken, Cornish

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).

## **Proteins**



## Legumes

LEGUMES	Proteins/Carbs
Servings/day Organic, non-GMO prefe	erred
<ul> <li>Bean soups-<sup>3</sup>/<sub>4</sub> c</li> <li>Black soybeans (cooked)-<sup>1</sup>/<sub>2</sub> c</li> </ul>	□ Edamame (cooked) $-\frac{1}{2}c$ □ Flour, legume $-\frac{1}{4}c$
Dried beans, lentils, peas (cooked) $-\frac{1}{2}c$	□ Green peas (cooked)-½ c
$\Box  \text{Hummus or other} \\ \text{bean dips} -\frac{1}{3} c$	$\square Refried beans, vegetarian - \frac{1}{4} c$
1 serving = 90-110 calories, 3-	-7 g protein, 0 fat, 15 g carbs



## **Dairy & Alternatives**

### DAIRY & ALTERNATIVES Proteins/Carbs

Servings/day\_

### Unsweetened, organic preferred

### **Dairy:**

- $\Box$  Milk: Cow, goat-8 oz  $\Box$  Milk: Almond,
- **Kefir** (plain) $-6-8 \circ$
- $\Box \quad \textbf{Yogurt, Greek} \\ (plain) 6 \ oz$

- **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**





### FATS & OILS

Fats

#### Servings/day\_\_\_

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

- Avocado-2T or  $\frac{1}{8}$  whole
- $\square \quad \text{Butter-1 } t, \\ 2 \ t \ whipped$
- □ Chocolate, dark (70% or higher cocoa)−1 oz
- Coconut milk, regular (canned)– $1\frac{1}{2}T$
- $\Box \quad \text{Coconut milk, light} \\ (\text{canned}) 3 T$
- $\Box \quad \text{Ghee/clarified} \\ \text{butter}-1 \ t$
- $\square Mayonnaise$ (unsweetened) - 1 t
- Olives: black, green, kalamata-8

1 serving = 45 calories, 5 g fat

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

## Fats & Oils



#### **VEGETABLES** Non-starchy

Carbs

#### Servings/day\_\_\_\_

- 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.

1 serving = 1/2 c, 1 c raw greens = 25 calories, 5 g carbs

- □ 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-¾ c
- Turnips
- □ Vegetable juice-¾ c
- □ Water chestnuts
- Watercress

## Non-Starchy Vegetables

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## Starchy Vegetables

Servings/day $\Box$ Acorn squash (cubed)-1 c $\Box$ Potatoes (mashed)- $\frac{1}{2}$ c $\Box$ Butternut squash (cubed)-1 c $\Box$ Root vegetables: parsnip rutabaga- $\frac{1}{2}$ c	<b>VEGETABLES</b> Starchy	Carbs
<ul> <li>Plantain- <sup>1</sup>/<sub>3</sub> c or am-<sup>1</sup>/<sub>2</sub> med</li> <li>Plantain- <sup>1</sup>/<sub>3</sub> c or am-<sup>1</sup>/<sub>2</sub> med</li> <li>Potato: Purple, red, sweet, yellow-<sup>1</sup>/<sub>2</sub> med</li> <li>1 serving = 80 calories, 15 g carbs</li> <li>Low Glycemic Impact Recommendations</li> <li>Short term: Consider removal</li> <li>Long term: Limit to 1 serving per day</li> </ul>	<ul> <li>Servings/day</li> <li>Acorn squash (cubed)-1 c</li> <li>Butternut squash (cubed)-1 c</li> <li>Plantain- <sup>1</sup>/<sub>3</sub> c or <sup>1</sup>/<sub>2</sub> whole</li> <li>Potato: Purple, red, sweet, yellow-<sup>1</sup>/<sub>2</sub> med</li> <li>serving = 80 calories, 15 g c</li> <li>Low Glycemic Impact Resider removation of term: Consider removation of term: Limit to 1 serving and term an</li></ul>	<ul> <li>Potatoes (mashed)– <sup>1/2</sup> c</li> <li>Root vegetables: parsnip, rutabaga–<sup>1/2</sup> c</li> <li>am–<sup>1/2</sup> med</li> </ul>



## **Fruits**

### FRUITS

Carbs

Servings/day\_\_\_

### Unsweetened, no sugar added

- Apple-1 sm
  Applesauce-1/2 c
  Apricots-4
  Banana-1/2 med
- $\Box$  Blackberries- $\frac{3}{4}$  c
- **Blueberries** $-\frac{3}{4}c$
- $\Box$  Cherries–12
- $\Box$  Grapefruit- $\frac{1}{2}$
- □ Grapes−15
- $\Box$  Kiwi–1 med
- $\square$  Mango- $\frac{1}{2}$  sm
- $\Box$  Melon, all-1 c
- □ Nectarine-1 sm

1 serving = 60 calories, 15 g carbs

Low Glycemic Impact Recommendations Limit to 2 servings per day Avoid dried fruit and fruit juices

- □ Orange−1 sm
- $\square Papaya-1 c$  $\square Peach-1$
- $\Box$  Pear-1 sm
- $\Box$  Persimmon- $\frac{1}{2}$
- $\Box$  Pineapple- $\frac{3}{4}$  c
- $\Box$  Plums–2 sm
- □ Pomegranate seeds-½ c
- $\square$  Raspberries-1 c
- $\Box$  Strawberries–1<sup>1</sup>/<sub>4</sub> c
  - ☐ Tangerines−2 sm





## Whole Grains


# **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  $(128 \div 2 = 64)$ .



# **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







Am J Physiol Heart Circ Physiol.2011 Oct;301(4):H1205-19. Epub 2011 Aug 12. Caloric restriction: powerful protection for the aging heart and vasculature. Weiss EP, Fontana L.





# Macronutrients

## THE CARDIOMETABOLIC FOOD PLAN:

Features, Food List, Modifications, & Guide



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## PERSONALIZING THE IFM THERAPEUTIC FOOD PLANS

Practitioner Guide





## Macronutrient Distribution for 40/30/30 Approach

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

Note: units are servings unless otherwise noted.



Taken from The Practitioners Guide to Personalizing the IFM Food Plans

## **Your Functional Medicine Prescription**

FUNCTIONAL MEDICINE
------------------------

**Functional Medicine Prescription** 

Patient Name

Date of Birth



© 2015 The Institute for Functional Medic



<b>%</b> Con	diometabolic	: Food Plan (12	00-1400 (	Calories)			TH
PROTEINS Servings/day: 7-9	Pioteina	Hummus or other bean dipa-36 c 1 serving = 90-110 colories, 3-1	Refried beau, vogetarian-M e c probler, 5 tot, 15 g	FATS Service	a OILS gu/day: 3-4	Fats	FC
Lunn, Irae-cinge, grous-bid onimet protein; non-OHO and wild-cooght, low-met Animal Proteins: Choese (ow-fat)-1 at Choese (hanf)-5 at Conage chrese (low-fat)-5 a	<ul> <li>d, organically prove</li> <li>deganic plant protein;</li> <li>cearly flah partened.</li> <li>Poultry (datess):</li> <li>Chicken, Cornish ben, duck, phraant, turkey, etc1 ee</li> </ul>	DAIRY & AUERNATIV Servings/day: 1 Universitiened, organic p Delay: MBC Cave, past-6 az	ES Proteins/Or relared Dairy Alternative	Minky non-Q Av 5 4 4 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	IND professed IND professed IND professed shok D shok D s	I, organic. Bo, cooking: const (virgin), spesed, olivo atra visgin), rice	wi
Feta cheese     fow-fut)-1 at     furmesan cheese-27     Ricotta cheese     fow-fut)-% t     low-fut)-% t	<b>8</b> 3	Cardiometabo	lic Food P	lan (1400	-1800 Calorie	s)	
<ul> <li>Inge-T, et 2 og under Rich/Sheiflich:</li> <li>Holfbut, terring, mockorsi, salmon, sandines, tuno, etc I es</li> <li>Mest: Beef, buffalo, eB, Landy vention,</li> </ul>	PROTEINS Servings/doy: 9–10 Lean, free-range, gro enimal protein; nee- end wild-caught, for	Pioteru ns-led, organicałly prww OMO, organic plant protei wnercury fish pretered.	Hummus or been dips-5 1 senting = 96-11 DAIRY & A	t other D P 6 2 v D colores 3-7 g pro	Refried beam, regenariam-14 s craim 0 bit 16 g conta Protoine/Corbs	ATS & OILS envings/day: 4 Balma3y sethed, cold-press on-OMC preferred Avecade-27 #	Fat id, organic, Dia, cooking:
other wild gene-1 or Learning outboth a 5-75 of Cellig onthe Average protein serving is 3- LEGUMES Genungs/day: 1 Organic, non-6MO prefit Diseases No	Chene [av-6a]-1 Chene [av-6a]-1 Chene [au-6a]-5 Course (hard)-5 fera chene (low-fa)-1 at Parmena chene- Ricota chene (low-fa)-3 at	ar rz 277	Cardior	d, organic prefer metabolic Profolius	c Food Plan (	Bottor-1, 1800-2200 Calc	oconut (virgin).
Block softbeans (cooked)=5: z     Dried beam, lentils, pres (cooked]=5: z	Egg=1/ of 2 ogg with     Hish/Sheimsh:     Holibut, herring,     mackerel, solmos     sordines, huna, ek     1 so     Mast: Deef, butfale	A contract protein A cont	0-12 In grass-fed, organ in non-OMO, organ M, tow-mercury fis IS Devenue Chi IS Devenue Chi IS Devenue Chi	nically grown ic plant protein, h preferred, itry (kinies): den, Comish	DAIRY & ALTERNA Bervings/doy: 2-1 Unsweetened, organ	TIVES Profeins/Carbs	Servings/do Minimally is non-ONO p Avpoado 15 adult
0	elk, tamb, vension, other wild parsen <sup>1</sup> I serving as lared = 363 64 g costs Avensee Cortean serving LEGUMES Servings/day: 1-2 Organic, non-OMD p Dean soupe-N c Black scybeans (cocked)=75 /	Cherse (bar Consign che Consign che C	d)-K az hen, ese uukk f Plant P ese Spir ese-JT Spir ese Spir ese Spir ese Spir ese Spir fem to Spir ese Spir fem to Spir fem	duck, phessant, ey, etc. – 1 or notelie: 30–1 or ulina–2 T <b>poh</b> –1 or (firm/extra )–1.5-2 or (lott/silken)– Powder: ck label for	Delin: Nalic Cow goat-8 - Nalic Cow goat-8 - Keth (plan)-6 ac 1 dein serving a 90-150 - 1 dein se	Boiry Alternatives: MER Almond, corost, fassized, huschat, berrp, cat, by Sac y Sac by S	2 I solups Chocolar (70% or 1 cocoal-1 Cocoast negular (c 1557 Coconst (canned) Ghee/cla butter-1
	Draid Deurs, Iens peus (cooked)-16 /	h, t T st C Meat: Beef, cR, lamb, ve cether wid gg 1 serving os take C-6 g costs Aueroge protein	buffalo, I pr mon, Egg mon, Egg me-1 az soy, 1 = 35-75 corones, 5-7 serving is 3-4 or pies	ratios scoop- strais arroing = 7 g , hemp, pea, rice, whey g protein, 3-6 g tot of point of hand).	NUTS & SEEDS Servings/day: 3-4 Unsweetened, unabl Amonds-6 Bradi nuts-2 Coshewr-6	Pictains/Fots ed, argunic pretented Durters - H T Premits - 10 Premits - 10	Offives: b     green, kr     tanving = 40
		LEGUMES	Pro	items/Oarbs	Coconut (dried)	Pecan halves Pine mus-17 Pislachios-16	Bems in blue
		Organic, nor-4     Teas source     Teas source     Teas source     Teas for the team of the team of team	HO preferred -S / D Ido rots -S / D Hos , lentils, D Gro	mamo (cooked) c r, legume=M c en peus ked0=N c	Fixesed (ground)- 2T     Hoseinuta-3     Hemp seeds-1T     Macadamias-2-3     Isening =45 colories 4	Pumpkin seeds -1 T     Seame seeds -1 T     Soy multi-2T     Soy multi-2T     Welnut holves -4 g tot	Robert W. Alford robby D Distory p Neoth p

Vestion #

## *HE CARDIOMETABOLIC* OOD PLANS ith Caloric Targets



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# **Comprehensive Guide Elements**



### CARDIOMETABOLIC FOOD PLAN

Comprehensive Guide

THE CARDIOMETABOLIC FOOD PLAN

- Why the Cardiometabolic Food Plan?
- Features of the Food Plan
- Touring the Food Plan
- Therapeutic Foods for Cardiometabolic Health
- Frequently 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	Proteins L Hummu bean dip	s or other $\square$ s $-\frac{1}{3}c$	Refried beans, vegetarian-¼ c	FATS & OILS	Fats
ervings/day ean, free-range, grass-fed, organ animal protein: non-GMO, organi	1 serving = 90 nically grown ic plant protein; DAIRY &	-110 calories, 3-7 g p ALTERNATIVES	rotein, 0 fat, 15 g carbs Proteins/Carbs	Servings/day Minimally refined, cold-p non-GMO preferred	ressed, organic,
and wild-caught, low-mercury fish         Animal Proteins:       Poul         Cheese (low-fat)-1 oz       Chick         Cheese (low-fat)-1 oz       Chick         Cheese (hard)-½ oz       hen,         Cottage cheese       turke         (low-fat)-½ c       Plant Prist         Feta cheese       Natti         (low-fat)-1 oz       Spiration         Parmesan cheese-27       Tem         Ricotta cheese       Totu         (low-fat)-½ c       firm         Egg-1; or 2 egg whites       Totu         Fish/Shellfish:       3 oz         Halibut, herring,       Protein         sardines, tun       Solution	ih preferred.Itry (skinless):cken, Cornish, duck, pheasant,, duck,	Iay ned, organic prefe Do Dow, goat-8 oz □ plain)-6-8 o , Greek -6 oz □ ing = 90-150 calories, 7 mative serving = 25-9 s (nutritional values va emic Impact Reco servings per day	Arred miry Alternatives: Milk: Almond, coconut, flaxseed, hazelnut, hemp, oat, soy-8 oz Yogurt, coconut or soy (cultured)-4-6 oz 7-8 g protein, 12 g carbs 00 calories, 1-9 g protein, ary) mmendations	<ul> <li>Avocado-2T or ¼ whole</li> <li>Butter-1 t, 2 t whipped</li> <li>Chocolate, dark (70% or higher cocoa)-1 oz</li> <li>Coconut milk, regular (canned)- 1¼ T</li> <li>Coconut milk, light (canned)-3 T</li> <li>Ghee/clarified butter-1 t</li> <li>Mayonnaise</li> </ul>	<ul> <li>Oils, cooking: Avocado, butter, coconut (virgin), grapeseed, olive (extra virgin), rice bran, sesame-1 t</li> <li>Oils, salad: Almond, avocado, canola, flaxseed, grapeseed, hempseed, olive (extra virgin), pumpkin seed, rice bran, safflower (high-oleic), sesame, sunflower (high-</li> </ul>
1 07					

## Items in blue indicate preferred therapeutic foods

other wild gar 1 serving as listed

Meat: Beef, b

elk, lamb, ven

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-¾ c
- Black soybeans
- (cooked)-1/2 c
- Dried beans, lentils, peas (cooked)-½ c
- □ Edamame (cooked) -½ c

Proteins/Carbs

- □ Flour, legume-¼ c
- Green peas
- (cooked)-1/2 c

Brazil nuts-2
Cashews-6

- □ Chia seeds 1 T □ Coconut (dried) flakes–3 T
- Flaxseed (ground)-
- □ Hazelnuts-5
- Hemp seeds-1T
- □ Macadamias-2-3

1 serving = 45 calories, 4 g fat

- butters-1/2 T
- Peanuts -10
   Pecan halves -4
- $\Box$  Pine nuts-1T
- □ Pistachios-16
- □ Pumpkin seeds-1 T
- $\Box$  Sesame seeds -1T
- □ Soy nuts-2 T
- □ Sunflower seeds-1T
- 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.



Version 14

# Additional Resources for Exploring Therapeutic Foods

Metabolic Syndrome Hypertension Dyslipidemias

() IFM



# 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

Weekly Planner and Recipes



THE **CARDIOMETABOLIC FOOD PLAN** Weekly **Planner and** Recipes



	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Bre akfast	<ul> <li>Fresh Spinach Quiche Cups*</li> <li>Orange</li> </ul>	<ul> <li>Chocolate Mint Spinach Smoothie*</li> </ul>	<ul> <li>Chia</li> <li>Pomegranate</li> <li>Oatmeal*</li> </ul>	<ul> <li>Vegetable Egg Scramble*</li> <li>Blueberries</li> </ul>	<ul> <li>Strowberry Peach Kale Smoothie*</li> </ul>	<ul> <li>Egg White Vegetable</li> <li>Fittata*</li> <li>Cantaloupe</li> </ul>	<ul> <li>Protein Pancakes*</li> <li>Bluebarries pureed</li> </ul>
Snack	<ul> <li>Creek Yogurt</li> <li>Blockberries</li> </ul>	<ul> <li>Fresh Vellow</li> <li>Pear</li> <li>Hummus</li> </ul>	<ul> <li>Marinated Olives*</li> </ul>	= Kafir	<ul> <li>Purple Plum</li> <li>Mixed Nuts</li> </ul>	<ul> <li>Celery</li> <li>Almond Butter</li> </ul>	<ul> <li>Dark Chocolate, 70% or higher Cocoa</li> <li>Pistachio Nuts</li> </ul>
Lunch	<ul> <li>Chicken</li> <li>Pomagranate</li> <li>Quinca Salad*</li> <li>Sugar-Snap</li> <li>Peax, Canoti,</li> <li>and Yellow</li> <li>Repper Staks</li> </ul>	LO Ten     Vegetable     Soup with     Tempeh*     Sourcey Seed     Crackens*	<ul> <li>Thal Barley and Veggle Sti-Fy with Edamame*</li> <li>Mked Greens</li> <li>Olive Oll Cabemet Vinalgrefte*</li> </ul>	LO Thai Barley and Veggle Shi-Fy with Edamame*     Mitted Greens     Other Oil Cabernet Vinalgrette*	<ul> <li>Black Soy Bean Cocco Soup with Ume Zest*</li> <li>Red and Yellow Pepper Celery strips with LO Homemade Guacamole*</li> </ul>	LO Black Soy Bean Cocod Soup with Lime Zest*     Red and Yellow Pepper, Celery strips with LO Homemade Guacamole*	<ul> <li>Greek Lenhi Stew*</li> <li>Morinated Vegetables*</li> </ul>
Snack	<ul> <li>Almonds</li> <li>Dark Chocolate; 70% or higher Cocoa</li> </ul>	Avocado, (sloed/ chopped) with Cumin, Salt and Pepper, Lemon Julice	<ul> <li>Flax Muffin in a Cup*</li> <li>Hot Green Tea</li> </ul>	Orange and Yeliow Pepper and Celery Ships Homemade Guatamole*	<ul> <li>Mainated Olives*</li> </ul>	<ul> <li>Baltamic</li> <li>Roasted Beets*</li> <li>Pumpkin Seeds</li> </ul>	<ul> <li>Silced Zucchini</li> <li>Sweet Potato Hummus<sup>a</sup></li> </ul>
Dinner	= Ten Vegetable Soup with Tempeh* Sovory Seed Crackers*	<ul> <li>Sautéed Chicken and Kwi<sup>4</sup></li> <li>Clantro Ume Caulifower Rice<sup>4</sup></li> <li>Mixed Greens</li> <li>Olive Ol Cabernet Vindigretie<sup>4</sup></li> </ul>	Poached     Fish with     Fire-Roasted     Tomato Sauce*     Steamed Kale     Purple     Cabbage     Salad*	<ul> <li>Griled Rank Steak*</li> <li>Roarted Root Vegetable Salad*</li> <li>Fully Spinach Salad*</li> </ul>	<ul> <li>Salmon Pecan Cakes*</li> <li>Roasted Beets with Greens*</li> <li>Roasted Brussets Sprouts*</li> </ul>	Coconut     Chicken with     Purple Rice*     Steamed     Broccol     Kale Salad*     Raspbeny     Peach Fult     Flutt*	Asian Turkey Cabbage Boats*     Fresh Berries with Coconut Mango Cream*
Therapeutic Food Focus	<ul> <li>Spihach, yogurt, pomegranate, dark chocolate, tempeh, onion, gartic, parsiay, olive oil, scalitone, almonds, tematoes, celary, leets, Swits chard, flax/chia seed</li> </ul>	<ul> <li>Spinach, onion, garile, parsiey, tomato, celety, leeks, Swits chard, tax &amp; chiaseed, avocado, office al scallans, tempeh, mixed greens,</li> </ul>	<ul> <li>Rolled</li> <li>oats,chia/</li> <li>ficx seed;</li> <li>pomegranate,</li> <li>olive; olive;</li> <li>olive; olive;</li> <li>olive; olive;</li> <li>olive;</li> <liolive;< li=""> <li< th=""><th><ul> <li>Otive oll, edamame, onion, tomata, keft; blueberries, garlic, barley, mixed greens celery, avecado, paniey, wahuth, spinach, frax seed oll, scallons, beets</li> </ul></th><th><ul> <li>Kale, almond, mixed nuts olive oil beets, onion, gattic, celeny, black say bean, scallons, avocada, olives, pecans, spinach, pantey, wild salmon</li> </ul></th><th><ul> <li>Ofive oil, onlon, tomatoes, spinach, celeny, almond butter, black say beans, avocado, beets, itale</li> </ul></th><th><ul> <li>Bueberries, pistachios, dark chocolate, oriion, alive al, gartic, tomato, pornegranate juice, black olives, Chinese cabbage, atmonds, blackberries</li> </ul></th></li<></liolive;<></ul>	<ul> <li>Otive oll, edamame, onion, tomata, keft; blueberries, garlic, barley, mixed greens celery, avecado, paniey, wahuth, spinach, frax seed oll, scallons, beets</li> </ul>	<ul> <li>Kale, almond, mixed nuts olive oil beets, onion, gattic, celeny, black say bean, scallons, avocada, olives, pecans, spinach, pantey, wild salmon</li> </ul>	<ul> <li>Ofive oil, onlon, tomatoes, spinach, celeny, almond butter, black say beans, avocado, beets, itale</li> </ul>	<ul> <li>Bueberries, pistachios, dark chocolate, oriion, alive al, gartic, tomato, pornegranate juice, black olives, Chinese cabbage, atmonds, blackberries</li> </ul>

## THE CARDIOMETABOLIC FOOD PLAN

Sample Weekly Menu Plan





#### CARDIOMETABOLIC FOOD PLAN - SHOPPING GUIDE

#### Fresh Produce Vegetables

- Carrots, shredded-8-10 oz pkg Carrots 2-16 oz bas □ Spinach-2 large 10 oz pkgs □ Spring Mix-laye 10 oz płg Kile\_2 hunder Swiss Chard-1 banch Red Pepper-4, Yel 2, Or 1 Ialapeno Pepper-1 set Sellow Onion-5-6 med
- □ Red Onton-3 med □ Green Onion-2 banches
- Gathe-4-5 halls or 32 oz iar mined
- □ Leek\_1 moi
- Celery-2 bunches
- Brussele Sprouts-4 c
- Broccob-2 heads
- Broccoli Slaw-1, 8-10 oz pis
- Chinese Cabbage-1 head
- Beets- 2 bunches-6-8 mol
- Cherry or Grape Tomatoes-1 pkg 1 Bunch Mint, 2 Bunches
- Clantro 1 Bunch each Battl and Flat
- Partley Ginger Root-1-2 indi
- Sweet Potato-4 med
- Sellow Potato-2 med
- Sugar Snap Pear-4 oz
- □ Caulifiower-2 med heads
- □ Cabbage-1 geen, 1 puple
- □ Chinese Epoplant-1 sw
- □ Mushrooms-8 oz
- Parmip-1 med
- Zucchini & Yellow Squah-1 ea

#### Time Sover Tips:

- Roast beets for day 6 dinner and use 2 the next day for attemoon spack
- Olive Oli Cabernet Vinalarettedouble the secipe for day 2 dinner and use it for days 3 and 4 Junch salads
- Purchase all canned goods, nuts/seeds and condiments i low sodium or no salt adde d forms If available.

#### Meat/Fish/Eggs/ Plant Proteins

Chicken Breat boneless. skinless-2.5 lbs □ Ground Turkey Breast-1 b □ Flank Steak-2-3 lbs Cod or Habbut-1.5 ibs Tempeh-16 oz Organic Cage-Free Eggs-1 doz Organic Eog/Whites\_16 oz

#### Dairy/Dairy Alternative

□ Feta Cheese-8 oz □ Cottage Cheese 1%-4 ez □ Greek Yogurt-1, 6-8 az Light Ricotta Cheese-4 oz Almond Milk, unsweetened-36 gal Kefit-6-8 oz

#### Frozen Foods

Organic Edamame-8 oz Strawberries\_8 oz □ Peaches=16 az □ Rapberries-16 oz □ Manpos-10 ez Pomegranate Seeds-8 oz

Oranges\_J-4 □ Apples-3 Lemons-4-5 Limes-4-5 🗌 Kiwis–J ripe Avocados-4-5 □ Strawberries-2 c □ Blueberries=3 c □ Blackberries-1 c □ Yellow Pear-1 □ Cantaloupe-1 c

### Grains/Leaumes

□ Rolled Oats-36 c Pearled Barley-% c Purple Rice-% c 🗌 Lentils- i c □ Hummus-% c

- 2 02
- Oliver, Misc. Black and Green-2 c

#### □ Dried Cranberries-55 c Whey or Vegan Protein Powder-1 Choc and 1 Van

- Green Tea base Stevia
- □ Tahmi\_ow iø Cocoa Powder.

#### Pornegranate Juice. unrweetened-4 oz

Apple juice, concentrate- set

#### Fruit, Fresh

Purple Plum-1

# □ Outnoa-% c

#### Miscellaneous

Dark Chocolate, 70% cocoa-

#### Unfavored Gelatin-1 pkg

### unravetened\_2T

#### Pink Grapefruit Sections—1 c

Sales, chunky-see iar

#### Canned Goods

Petite Diced Tornatoes-15 az. 2 Bre Roasted Tomatoes-15 oz. 1 □ OrganicVegetable Broth=32 eg. 2

- Organic Chicken Broth-15 ez. 1 Artichoke Hearts-14 oz. 1 Hearts of Palm-1402, 1
- Black Beans-15 oz. 1
- Dijon Mustard-see jar
- Black Olives, pitted-6 az, 1
- Wild Salmon-7.5 oz. 1
- Tomato Parte, no salt added-6 az, 1

- Condiments/Oils
- □ Tamari Sauce, wheat free\_16 oz □ RedWine, Cabernet-4-6 oz Hot Pepper Sauce Olive Oil-16-24 oz Coconut Oil-2T □ Grape Seed Oil-4 øz
- □ Seame Of 1T □ Flax Oil-2 T
- Balsamic, Red Wine, and Rice
- Vinegar Coconut Aminos-5T
- Soy Sauce, Low Sodium-8 oz

#### Spices

- Garbe and Onion Powder 🗌 Sea Salt Black Pepper Oregano and Basil Red Pepper Flaker
- Peppermint & Vanilla Extracts
- Bay Leaf-1-2
- □ Cortander Seed-% t
- □ Xanthan Gum-½ t
- Corn Starch Baking Powder
- Cumin, Curry Powder, Cinnamon, Dry Mustard, Papetka, Thyme

#### Nuts/Seeds

- Aimonda-sau; 4 az, shvered, 1 c Almond Butter-anal jar Cashews, chopped-3 T □ Sunflower Seeds, togsted=36 c □ Pecana\_1% c □ Walnutz, chopped-55 c □ Ground Flax Seed\_36 c □ Chia Seed-36 c Roasted Seame Seeds-1T
  - Poppy Seeds-36 T
  - Pumpkin Seeds &
  - Pistachios-34 c early
  - ☐ Mixed Nuts-% c

## THE **CARDIOMETABOLIC FOOD PLAN**

# Shopping Guide



- Organic Chicken Broth-32 ez, f □ Chickpeas-15 ez, 1 Black Soy Beam-15 oz, 1

  - Coconat Milk-Life, f an



#### CARDIOMETABOLIC FOOD PLAN - RECIPE INDEX

#### Proteins:

- 5 Asian Turkey Cabbage Boats\*
- 9 Chicken Pomegranate Quinca Salad\*
- 10 Chocolate Mint Spinach Smoothie\*
- 12 Coconut Chicken with Purple Rice\*
- 13 Egg White Vegetable Frittata
- 16 Fresh Spinach Quiche 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 Kale 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 Quiche 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 Kale Smoothie\*
- 37 Ten Vegetable Soup with Tempeh\*
- 38 Thai Barley and Veggie Stir-Fry with Edamame\*
- 39 Vegetable Egg Scramble\*

#### Starchy Veggies:

- 6 Balsamic Roasted Beets
- 29 Roasted Beets with Greens\*

- 31 Roasted Root Vegetable Salad\*
- 36 Sweet Potato Hummus\*
- 37 Ten Vegetable Soup with Tempeh\*

#### 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 Kale Smoothie\*

#### Grains:

- 8 Chia Pomegranate Oatmeal
- 9 Chicken Pornegranate Quinca Salad\*
- 12 Coconut Chicken with Purple Rice\*
- 38 Thai Barley and Veggie Stir-Fry with Edamame\*

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

All recipes are included on the following pages in alphabetical order.

## THE CARDIOMETABOLIC FOOD PLAN

Recipe Index





## 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'*

*Nunn A. et al.* Lifestyle-induced metabolic inflexibility and accelerated ageing syndrome: insulin resistance, friend or foe? *Nutrition & Metabolism 2009, 6:16 doi:10.1186/1743-7075-6-16* 

## Features of Metabolic Syndrome

## At least 3 of the following:

## Women

- TG <u>≥</u>150 mg/dL
- HDL-C <50 mg/dL
- Waist > 35' (88 cm)
- BP <u>>130/85</u> or HTN on meds
- Fasting glucose ≥100 mg/dL

## Men

- TG <u>></u>150 mg/dL
- HDL-C <40 mg/dL</li>
- Waist >40"(102 cm)
- BP ≥130/85 or HTN on meds
- Fasting glucose ≥100 mg/dL







Arterioscler Thromb Vasc Biol. 2012 September; 32(9): 2052–2059.



Annu Rev Pathol. 2011; 6: 275–297.



# 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**



J Diet Suppl. 2012 Jun;9(2):96-109. Mechanisms of action of phenolic compounds in olive. Rafehi H, et al.

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# 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 inversely associated with metabolic syndrome & obesity



PLoS One.2014 Jan 8;9(1):e85133. doi: 10.1371/journal.pone.0085133. eCollection 2014.



# **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

\*Curr Atheroscler Rep.2011 Dec: 13(6):499-507. Dietary Guidelines for Americans 2010: implications for cardiovascular disease. Flock MR, Kris-Etherton PM.



### 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

Atherosclerosis. 2013 Oct;230(2):347-53. doi: 10.1016/j.atherosclerosis.2013.08.014. Epub 2013 Aug 21.



# **Green Tea**

### **Protective Cardiometabolic Mechanisms of Catechins**



2008;15(18):1840-50. Green tea catechins and cardiovascular health: an update.

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### 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

Nutr Res. 2013 Mar;33(3):180-7. doi: 10.1016/j.nutres.2012.12.010. Epub 2013 Jan 30. J Nutr Health Aging.2012;16(9):738-42. doi: 10.1007/s12603-012-0081-5. J Am Coll Nutr.2010 Feb;29(1):31-40.

Therapeutic Food Interventions for **Hypertension** 



# **The Hypertensive Web**

J Am Soc Hypertens. 2013 January; 7(1): 68–74. doi: 10.1016/j.jash.2012.11.007

Genetic variations influence prooxidant and antioxidant enzyme function and expression Environmental pollutants, dietary Vascular remodeling factors, emotional and vasoconstriction stress enhance caused by ROS production of ROS in increases systemic the CNS and vascular resistance vasculature 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.

Anatomical and adaptive reactions to oxidant stress. Vascular smooth muscle hypertrophy, vascular stiffening, rarefaction.

# The Link Between Insulin Resistance & Hypertension



Curr Atheroscler Rep. 2012 April; 142): 160–166.

### **Hypertension:** *Dietary Factors to Consider*

### Studied dietary approaches:

- DASH diet
- Mediterranean diet
- Vegetarian diet
- Raw foods
- Examine food allergy



Therapeutic Food Interventions for **Hypertension** 





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

Fiber: psyllium 7gm

### **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



Foods Bio-Actives

Individual

Dietary Patterns





### Beneficial effects of polyphenolrich olive oil in patients with early atherosclerosis

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

Eur J Nutr.2012 Aug 8. [Epub ahead of print] **Beneficial effects of polyphenol-rich olive oil in patients with early atherosclerosis.** Widmer RJ, et al.





# Therapeutic Food Interventions for **Dyslipidemias**



# Where to Focus with Food

- Inflammation
- Oxidative Stress
- Immune regulation





Nutrients.2013 Apr 12;5(4):1218-40. doi: 10.3390/nu5041218.

Dietary Patterns

> Individual Foods

> > Bio-Actives

### 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





Bio-

Actives

Dietary

# 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

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J Nutr Metab. 2012;2012:569486. Epub 2012 Apr 10. Functional foods and nutraceuticals in the primary prevention of cardiovascular diseases. Alissa EM, Ferns GA.

### Foods that lower blood triglycerides



J Nutr Metab.2012;2012:569486. Epub 2012 Apr 10. Functional foods and nutraceuticals in the primary prevention of cardiovascular diseases. Alissa EM, Ferns GA



### **Foods & homocysteine reduction**

Fruits & vegetables Whole grains Citrus fruits & vegetables Nuts, seeds, & oils Folate & phytochemicals Fiber & phytochemicals Vitamin C Vitamin E

J Nutr Metab.2012;2012:569486. Epub 2012 Apr 10. Functional foods and nutraceuticals in the primary prevention of cardiovascular diseases. Alissa EM Ferns GA

# Foods & antioxidant action improvement

Tomatoes Green leafy vegs, 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

J Nutr Metab.2012;2012:569486. Epub 2012 Apr 10. Functional foods and nutraceuticals in the primary prevention of prevention of prevention of primary prev

## Foods & endothelial function improvement

Fish Nuts Citrus fruits & vegs Grapes & red wines Dark chocolate Omega-3 fatty acids Polyphenols Vitamin C Anthocyanins, catechins, cyanidins... Flavonoid

J Nutr Metab.2012;2012:569486. Epub 2012 Apr 10. Functional foods and nutraceuticals in the primary prevention of cardiovascular diseases. Alissa EM Ferns GA

### 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."

Am J Clin Nutr. 2005 Feb;81(2):388-96. Deleterious effects of omitting breakfast on insulin sensitivity and fasting lipid profiles in healthy lean women. Farshchi HR, et al. Am J Clin Nutr. 2005 Jan;81(1):16-24. Beneficial metabolic effects of regular meal frequency on dietary thermogenesis, insulin sensitivity, and fasting lipid profiles in healthy obese women, Farshchi HR, et al.



### 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

J Agric Food Chem. 2006 Mar 8;54(5):1887-92. Red grapefruit positively influences serum triglyceride level in patients suffering from coronary atherosclerosis: studies in vitro and in humans. Gorinstein S, et al. Curr Pharm Des. 2011;17(9):922-32. Plant sterols and stanols in the treatment of dyslipidemia: new insights into targets and mechanisms related to cardiovascular risk. Baumgartner S, et al.

- 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



Howitz KT, Sinclair DA. Xenohormesis: sensing the chemical cues of other species. Cell. 2008 May 2;133(3):387-91.

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