

Improving blood lipid profiles with natural medicine



A few interesting facts...

- Ⓢ Around 50% of people who have heart attacks have normal cholesterol values
- Ⓢ Most cholesterol in the blood is made by the liver
- Ⓢ Cholesterol is an important component of cell walls and is also the building block for many hormones in the body

Risk factors for heart disease

- Ⓢ High LDL, low HDL
- Ⓢ Chronic inflammation
- Ⓢ Obesity
- Ⓢ Sedentary lifestyle
- Ⓢ Family history
- Ⓢ Chronic stress
- Ⓢ Hypertension
- Ⓢ Diabetes



Normal values for blood lipids

	desirable	borderline	abnormal
Total cholesterol	<5.2	5.2-6.2	>6.2
Triglycerides	<1.7	1.7-2.3	>2.3
HDL	>1.6	1.0-1.6	<1.0
LDL	2.6-3.4	it depends	>4.1
Risk ratio TC/HDL	<3.5	3.5-5	>5

Non-pharmaceutical methods to improve lipid values

- Ⓢ Weight loss
- Ⓢ Exercise
- Ⓢ Fruits and vegetables
- Ⓢ Fish oil
- Ⓢ Eat less saturated fat
- Ⓢ Avoid trans fat
- Ⓢ Low GI/GL carbohydrates
- Ⓢ Portfolio diet
- Ⓢ Low fat vegan diet
- Ⓢ Supplements
- Ⓢ Stop smoking
- Ⓢ Reduce chronic stress



Tips for weight loss

- Ⓢ Always eat breakfast
- Ⓢ Have regular meals that include a low GI carbohydrate, some lean protein, some healthy fats and at least two servings of fruits and vegetables
- Ⓢ Regular physical activity
- Ⓢ Support your mood: make sure you are getting enough vitamin D, B vitamins and essential fatty acids



Exercise

- Ⓢ Think about strength, aerobic conditioning and flexibility
- Ⓢ Aerobic activities such as cycling, walking, swimming, rowing etc can be done daily
- Ⓢ Strength training is best done 2-3 times per week
- Ⓢ Aim for 30-45 minutes of physical activity most days of the week
- Ⓢ Exercise is especially good for raising HDL

Fruits and vegetables

- Ⓢ Increased consumption is associated with:
 - Lower risk of cardiovascular disease
 - Lower risk of stroke
 - Lower total and LDL cholesterol
 - Plus many other benefits: lower cancer risk, stronger bones, lower risk of diabetes, etc





Fruits and vegetables

- ⦿ Choose a wide variety of deeply colored fruits and vegetables
- ⦿ Aim for 8- 10 servings per day
- ⦿ Include some deep orange (squash, sweet potato, carrots), dark leafy green (romaine lettuce, Swiss chard, spinach), cabbage family (broccoli, cabbage, kale), some onions/garlic, some red foods such as tomatoes, some red/blue food such as blueberries, raspberries, etc



Types of fats

- ⦿ Saturated fats from meat and dairy products tend to raise TC and LDL
- ⦿ Trans fats are even worse and raise TC, LDL while also lowering HDL
- ⦿ Choose mono and polyunsaturated fats from avocados, nuts, fatty ocean fish and extra virgin olive oil
- ⦿ It is fine to eat up to around 30% of your calories from fat as long it is 'healthy fat'



Benefits of fish oil (omega 3)

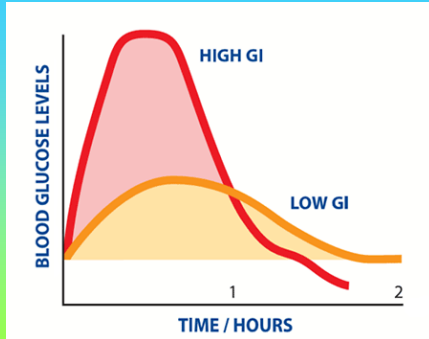
- ⦿ ↓ triglycerides
- ⦿ ↑ HDL cholesterol
- ⦿ ↓ risk ratio cholesterol/HDL
- ⦿ Anti-inflammatory effects
- ⦿ Anti-depressant effects

Warning!!!!

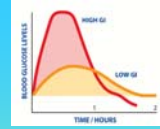
Low fat products are often high in sugars which can tend to raise triglycerides and LDL



The glycemic index (GI)



low ≤ 55 medium 56-69 high ≥ 70



The glycemic index

- Ⓢ Eating lower on the glycemic index can:
 - Support weight loss
 - Lower the risk of heart disease
 - Lower LDL cholesterol
 - Lower triglycerides
 - Help to prevent diabetes
 - Improve diabetes control

The glycemic load (GL)

- Ⓢ Glycemic load = $\text{GI} \times \text{carbohydrate (gm per serving)} \div 100$
- Ⓢ Low 0-10 low medium 11-19 high >20



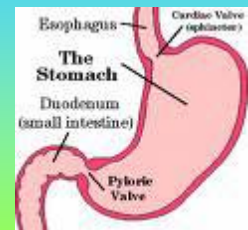
GI 80 GL 7.8
1 cup watermelon



GI 72 GL 25.6
 $\frac{1}{2}$ bagel

1. Factors that influence the GI: rate of stomach emptying

- Ⓢ Slowing the rate of stomach emptying:
 - soluble fiber
 - acids
 - protein
 - fat



2. Factors that influence the GI: amylose vs amylopectin

☉ Foods high in amylose starch: Basmati rice, kidney beans, lentils



☉ Foods high in amylopectin starch: potatoes, wheat flour, sticky rice



Amylose starch molecules take longer to be acted upon by digestive enzymes than amylopectin starches

3. Factors that influence the GI: starch gelatinization

☉ Gelatinization of starch increases the rate of digestion

- Sticky rice, Jasmine rice
- Pasta cooked 20 minutes



4. Factors that influence the GI: physical barriers

☉ Physical barriers to digestion: whole grains are more resistant to action by digestive enzymes than finely pulverized flours



Bulgur 46



Whole wheat bread 69



Baguette 95



Low GI carbohydrates

- ☉ Breads: 100% whole grain breads, pita bread, sourdough breads
- ☉ Rice: Basmati rice, Uncle Ben's™ converted rice
- ☉ Pasta: al dente
- ☉ Cooked grains: quinoa, bulgur, steel cut oats, large flake oats
- ☉ Cereals: All Bran
- ☉ Beans

Higher GI carbohydrates

- ☉ Most breads, bagels and other flour products
- ☉ Puffed grains
- ☉ Most cold breakfast cereals
- ☉ Potatoes
- ☉ Goopy starches



Nutrient density/quality



Apple
GI 37



High fat ice cream
GI 37



GI/GL and weight loss 2007 Cochrane review

- ☉ Overweight and obese people lost the most weight on low GI/GL diets compared to other diets (1 kg greater weight loss)
- ☉ When only obese subjects were studied, benefits of a low GI diet were even more apparent (mean weight loss -4.2 kg)
- ☉ Total cholesterol and LDL also decreased the most on low GI diet

GI/GL and weight loss

- ☉ Ludwig (obese teenage boys):
High GI meals led to:
 - ↓ availability of metabolic fuels
 - excessive hunger
 - overeating





High insulin secretors vs low

- Ⓞ Low GL diet/high fat: 40% carb/ 35% fat/ 25% protein
- Ⓞ High GL/low fat diet: 55% carb/ 20% fat/ 25% protein
- Ⓞ Weight loss: high insulin secretors lost more weight on low glycemic load diets (5.8 kg vs 1.2 kg P=.004)
- Ⓞ Lipids: Low glycemic load diet had beneficial effects on lipids (↑HDL and ↓TG's)



Advice to patients re: glycemic index

- Ⓞ Use it to choose the types of starchy foods you eat www.glycemicindex.com
- Ⓞ Ignore the GI of proteins, fats, nuts and (most) fruits and vegetables
- Ⓞ Combine high GI foods with low GI foods
- Ⓞ Eat smaller portions of high GI foods
- Ⓞ Add lemon juice or vinegar to the meal
- Ⓞ Include healthy fats and lean proteins with every meal



The Bottom Line

- Ⓞ Large excursions in postprandial glucose levels are harmful to health
- Ⓞ Low GI/GL, nutrient dense carbohydrates from whole foods are recommended
- Ⓞ Overweight or obese people should be especially careful to choose low glycemic index/load carbohydrates

Portfolio diet

- Ⓞ Soluble fiber
- Ⓞ Nuts
- Ⓞ Soy
- Ⓞ Plant sterols



Soluble fiber

- ☉ Psyllium 1 TBS before each meal
- ☉ PGX
- ☉ Flax, barley, oatmeal
- ☉ Beans
- ☉ Okra
- ☉ Apples



Nuts

- ☉ Almonds ~ 23/day
- ☉ Nuts can help to prevent diabetes.
- ☉ They are also a great, very satisfying, low glycemic index food for snacks



Soy

- ☉ 50 gm soy protein/day
- ☉ Soy milk
- ☉ Soy nuts
- ☉ Tofu
- ☉ Edamame



Some easy ideas for including soy in your diet



- ☉ Make smoothies with soy milk, a banana and some frozen berries
- ☉ Substitute soy milk instead of cows milk in recipes or on breakfast cereal
- ☉ Snack on soy nuts. They are high in protein, very filling and low glycemic index



Vitamin C

- ⦿ Vitamin C can lower triglycerides and LDL cholesterol
- ⦿ Vitamin C can also help to prevent diabetes and to improve diabetes control
- ⦿ In one study, 1000mg/day of vitamin C lowered HBA1c by 1.16%



Niacin (nicotinic acid)

- ⦿ Vitamin B3 vitamin
- ⦿ Lowers LDL and raises HDL
- ⦿ Use immediate release form
- ⦿ Can cause an unpleasant flushing reaction
- ⦿ Flushing can be reduced by gradually increasing the dose, taking with meals and taking a low dose ASA 30 minutes beforehand
- ⦿ May increase glucose and uric acid levels
- ⦿ Monitor liver function
- ⦿ Use with medical supervision as per recommended protocol

Stress physiology: activation of the sympathetic nervous system

- ⦿ ↑ Heart rate
- ⦿ ↑ Respiratory rate
- ⦿ ↑ Blood pressure
- ⦿ ↑ Blood glucose
- ⦿ ↑ LDL cholesterol



Chronic stress initiates a destructive physiological cascade

- ⦿ Raised FBG, insulin and lipids
- ⦿ Hypertension
- ⦿ Proinflammatory & procoagulation changes
- ⦿ Increased oxidative stress
- ⦿ Impaired endothelial function
- ⦿ Atherosclerosis
- ⦿ Acute coronary events
- ⦿ Depression, anxiety and anger



Mind body medicine

- ⦿ Meditation
- ⦿ Guided Imagery
- ⦿ Self Hypnosis
- ⦿ Breath work
- ⦿ Yoga
- ⦿ Biofeedback



Summary

- ⦿ Weight loss and exercise
- ⦿ Choose low glycemic index carbohydrates
- ⦿ Eat more good fats/eat less bad fat
- ⦿ Eat lots of fruits and vegetables
- ⦿ Eat more soluble fiber and nuts
- ⦿ Increase soy intake to 1-2 servings of whole soy foods per day
- ⦿ Consider taking plant sterols and/or niacin
- ⦿ Coenzyme Q 10 is recommended for all patients on statin medications
- ⦿ Reduce stress with mind body medicine