

## IMPORTANCE OF MICRONUTRIENTS FOR TYPE 2 DIABETES

Referenced from:

Choate, C. (1998). Modern medicine and traditional Chinese medicine: Diabetes mellitus part one. *Journal of Chinese Medicine* 58.

Nutrient	Daily Dose	Action
<b>B1</b> Thiamin	10 mg	Decreases sensory neuropathy
<b>B12</b> Cobalamin	25 mcg	Maintains normal nerve impulses
<b>B15</b> Pangamic acid	50-100 mg	Antioxidant, helps atherosclerosis
<b>B2</b> Riboflavin	10 mg	For skin ulcers and eye and digestive problems
<b>B3</b> Niacin	Up to 100 mg	Positive effect on glucose tolerance. Caution with liver disease
<b>B5</b> Pantothenic acid	250-500 mg	Adrenal support (anti-stress)
<b>B6</b> Pyridoxine	500-1000 mg	Normalizes blood sugar, protects nerves
<b>Biotin</b>	200-400 mcg	Enhances insulin sensitivity
<b>Calcium</b>	1000 mg	Important in nerve transmission and pH balance. Citrate form may be more bioavailable if taking a PPI
<b>Chromium picolinate</b>	150-200 mg	Improves glucose tolerance and insulin sensitivity. 500 mcg bid x 4 months lowered FBGL
<b>EFA-Omega 3</b>	1 Tbs	Protection against hardening of arteries
<b>EFA-Omega 6</b>	400-600 mg	General anti-inflammatory properties
<b>Flavonoids</b> mixed	1-2 gm	Promote insulin secretion & uptake
<b>Inositol</b>	500 mg	Improves nerve function
<b>Lecithin</b>	3 Tbs	Benefits cell membranes, brain and nerves
<b>Magnesium</b>	500 mg	Helps protect eyes
<b>Manganese</b>	30-50 mg	Cofactor involved in glycemic control
<b>Potassium</b>	300 mg	Maintains insulin sensitivity, responsiveness, secretion
<b>Spirulina</b>	3-6 gr	Stabilizes blood sugar levels. Cold thermal nature!
<b>Vanadyl Sulfate</b>	100-150 mg	Mimics insulin and improves the cells' sensitivity to insulin. Benefits often extended for weeks after Supplementation was discontinued
<b>Vitamin C</b>	1000-4000 mg	Benefits eyes and nerves [lipoic C is more bioavailable]
<b>Vitamin D3</b>	400-800 IU	Essential for functioning of islets cells. Always take with vitamin K. Get a blood level for optimal dosing.
<b>Vitamin E</b> /mixed tocopherols	400-1200 IU	Improves glucose tolerance and insulin sensitivity
<b>Vitamin K</b>		Strongly benefits/prevents atherosclerosis. Decreases risk for DM.
<b>Zinc</b>	100-150 mg	Improves synthesis, secretion, utilization of insulin

**Herbal multivitamin/mineral Diet includes:** Rosehips, Kelp/ sea vegetable, Watercress, Dandelion root/ leaf, Mushrooms, Raw chocolate/ cacao, Sprouted seeds/ grains, Cultured/fermented foods [e.g. sauerkraut, tofu, kefir], cold-water fish, raw milk, fresh eggs.

**Note:** Quantities shown are not prescriptive; some are very high and represent therapeutic test dosages. Individual needs and tolerances will vary according to body size, metabolism, age, diet and ailment (Choate, 1998).

**Cautions** (Choate, 1998):

1. Fish oil capsules or supplements containing large amounts of para-aminobenzoic acid (PABA) can elevate blood sugar.
2. Supplements containing cysteine interfere with absorption of insulin by cells.
3. Extremely large dosages of vitamins B1 or C may inactivate insulin. Dosages listed above are within normal ranges

## WESTERN HERBS & SUPPLEMENTS FOR TYPE 2 DIABETES

Referenced from:

Choate, C. (1998). Modern medicine and traditional Chinese medicine: Diabetes mellitus part one. *Journal of Chinese Medicine* 58.

<b>Apple Cider Vinegar</b>	1 Tbs	softens the blood vessels, prevents atherosclerosis [sour flavor guides to the liver- place of lipid metabolism & recruitment]
<b>Berberine</b>	300, 400, 500 mg	Adjusting dose according to BGL. All aspects of metabolic syndrome
<b>Bitter melon</b> <i>Momordica Charantia</i> <i>Fructus Balsampear</i>	50-60 ml (2 oz) of fresh juice per day	Regulate blood sugar. Cool thermal natured, clears heat in summer. "Bitter Melon Sugar Balance Plus." Charantin, is the key ingredient extracted by alcohol, is a hypoglycaemic agent composed of mixed steroids more potent than the drug Tolbutamide.
<b>Cinnamon bark</b>	500mg 2x daily	improves HbgA1c
<b>European Blueberry leaf</b> <i>Vaccinium myrtillus</i>	<b>Leaves:</b> steep 2-3 handfuls in 4 cups hot water for ½ hr. Drink 3 x day. <b>Extract:</b> 80-160 mg 3x day.	Results have shown the leaves have an active ingredient with a remarkable ability to reduce excess sugar in the blood. Modern research has demonstrated the berries or extract of the berries offer even greater benefit.
<b>Fenugreek</b>	1.5-2g/kg of de-fatted seed	Reduces fasting and after-meal glucose, glucagon, somatostatin, insulin, total cholesterol and triglycerides, while increasing HDL cholesterol.
<b>Ginkgo biloba</b>	40-80 mg 3x daily of 24% ginkgo flavoglycosides standardized extract	Improves blood flow in the peripheral tissues of the arms, legs, fingers and toes and is therefore an important medicine in the treatment of peripheral vascular disease. It has also been shown to prevent diabetic retinopathy.
<b>Gymnema sylvestre</b> <i>Gymnema Sylvestre GS4 Leaf Supplement</i>	200-400 mg/25% gymnemic acid. Natrol 5:1 300 mg ext.	↓glucose absorption, repair damage to pancreatic cells. ↓gluconeogenesis. C/B INC BGL. Weight management with hydroxycitric acid + niacin-bound chromium x 8 weeks.
<b>Onion &amp; Garlic</b>		Lipid and sugar-lowering action, inhibits platelet aggregation, reduces blood pressure.
<b>Probiotics</b>		VSL#3, raw/ sauerkraut, cultured cabbage, home-made yogurt for weight management
<b>Protandim capsules</b>		Special formulation based upon Chinese, Western & Ayurvedic herbs that significantly combats oxidative stress. <a href="http://www.lifevantage.com/products/protandim/">www.lifevantage.com/products/protandim/</a>

## CHINESE FOODS & HERBS FOR TYPE 2 DIABETES

Referenced from Diabetes Seminar – Fall 2007 Zheng Zeng. Modified from [www.CatsTCMNotes.com](http://www.CatsTCMNotes.com)

* <b>Dong chong xia cao</b> <i>Cordyceps</i>	Expensive. Lowers blood sugar
* <b>Ling zhi</b> <i>Reishi mushroom</i>	Lower blood sugar and possibly blood pressure
* <b>Bai mu er</b> <i>Tremellae mushroom</i>	Lowers blood sugars. Cook overnight on low in a lot of water. Liquid will be thick. Add da zao (Chinese dates) & gou gi zi (wolf berry).
* <b>Teas</b>	Oolong [neutral], Black [warming], or Green [cooling] after meals, to facilitate the digestion of fats.
<b>Asian Pumpkin</b>	Winter squash. Available in Asian markets. Helps with sweet cravings. Lowers blood sugar.
<b>Buckwheat</b> <i>Semen fagopyri cymosi</i>	Lowers sugar. Buckwheat noodles
<b>For elevated BGL due to:</b> 1. gluconeogenesis 2. glycogen storage defects 3. stress response	<b>Di gu pi</b> ↑BGL then slowly ↓BGL w/ peak affect in 3 to 4 hrs x 7 to 8 hrs. Protects against inflammation and NAFLD. 50g cooked with Gou ji zi in 500mg of water, a common tea in parts of China to regulate BGL.
	<b>Zhi Mu</b> dose-dependently ↓ gluconeogenesis and ↑ glycogen stores
	<b>Sheng Di Huang</b> ↓LV glycogen breakdown
	<b>Xuan Shen</b> ↓BGL [16% x 5 hrs] & BP. MODERATES COXI, II & LOX inflammatory pathways and neurogenic CV STRESS⇒ hepatic glycogen breakdown + hepatic glucose synthesis ⇒ hyperglycemia
<b>Garlic &amp; onions</b>	Lowers blood sugar. Theoretically could be too warm for yin deficiency.
<b>Huang qi</b>	30 to 60 g daily. Prevent and treat renal and vascular complications
<b>Jiao gu lan</b> <i>Gynostemmae</i>	For Low energy. Also called Panta Tea or sold as Jiao Gu Lan pill/patent.
<b>li zhi he</b> <i>Semen Litchii</i>	Only the seed of the sweet fruit. Very bitter tasting. Guides to the Liver
<b>Mulberry</b>	All forms of mulberry (leaf/ sang ye, twig/ sang zhi & berry/ sang shen regulate blood sugar
<b>Panax ginseng</b>	100-200 mg daily. Besides reducing <i>fasting</i> blood sugar levels and body weight, can elevate mood and improve psycho-physiological performance.
<b>Shan Yao</b> <i>Rhizoma Dioscoreae</i>	100 to 250g daily. Expensive therefore use pills/patent, granular. Titrate to BGL level. Purported to lower BGL in 10 days at high doses. General nutritive tonic for fatigue and recovery from chronic disease.
<b>Shan Zha</b>	Tinctures in wine beverage for digestion of fats & carbohydrates
<b>Shan Zhu Yu</b>	Prevent and treat renal and vascular complications
<b>shi liu pi</b> <i>Pericarpium Granati</i>	Pomegranate <i>peel</i> only
<b>Stima Maydis</b> <i>Corn silk</i>	Reduces protienuria, helps recover kidney function.
<b>Yam</b> <i>ganoderma lucidum seu japonicum</i>	In China made into a yam cake or yam noodles. <b>Shirataki</b> makes a yam noodle available at Asian markets. Helps detoxify the body. Contraindicated if you have skin rashes. Lowers blood sugar.
<b>Yi yi ren</b> Chinese barley	Congee recipe from <a href="http://herbal.recipes.webs-sg.com">http://herbal.recipes.webs-sg.com</a> . Lowers blood sugar. Not specifically mentioned for diabetes.

## METABOLIC SCREENS FOR TYPE 2 DIABETES

LDLc	
Optimal	<100 [ <b>&lt;70 if diabetic</b> ]
Near optimal	100-129
Borderline	130-159
High	160-189
Very high	>190
TOTAL CHOLESTEROL	
Desirable	<200
Borderline	200-239
High	>240
HDL [inc exercise, niacin]	
Low [bad]	<40
High [good]	>60
TRIGLYCERIDES [niacin, omega 3 fatty acids]	
Normal	<b>&lt;150 [especially if diabetic]</b>
Borderline	150- 199
High	200 – 499
Very high	>500 [1000= risk for pancreatitis]
OTHER METABOLIC PROFILES FOR DM 1 & 2	
APO B	<b>&lt;80 IF DIABETIC</b>
NON-HDLc/ LDLp	<100/ < 1000
HOMA	0.5 – 1.4
BLOOD PRESSURE	
Normal	< 120/80 optimal <b>&lt; 140/90 if diabetic [optimal is &lt;135/80]</b> < 150/90 if 60 yrs old or older
Pre hypertension	120 to 139 / 89 to 90
Stage 1	140 to 159/ 90 to 99
Stage 2	>160 / >100
BLOOD SUGARS	
HbgA1c	<6.5 5.7% - 6.4% = prediabetes >6.5= diabetic <b>&lt;7.0 if diabetic</b>
Fasting blood sugar	<126
Random blood sugar	<200
Pre-meal blood sugar	70 to 130 [80 to 120]
2 hr post-meal blood sugar	<b>&lt;180 [target goal if HbgA1c is not at goal]</b>

## Chinese Herbs are safe & effective when prescribed by a qualified practitioner!

**Consult before buying herbs/formulas online!**-> wrong herbs, contaminants, unknown ingredients, poor quality & customer service.

### Herbal Apothecaries/Pharmacies [compound custom herbal formulas]

- Two Red Brothers Apothecary [Chinese & Indigenous herbs/herbalists]
- H&H Healing/Clayton NM, Herbs Etc and Tico's/ Santa Fe, Taos Herb Co. [Western herbs]
- Tronex, Crane [Chinese commercial pharmacies in USA]

### Integrative & Functional Medicine

- Integrated Family Wellness Center, ALB [Functional medicine metabolic screening & therapies, accepts insurances]
- SpiritSpring Acupuncture & Herbs, Clayton NM [integrative primary care & prevention, accepts TriWest VA benefits]

### ChineseMedicalDiabetes.com

**AmericanDragon.com** Look-up condition and Chinese herbs/formulas

**WorldsHealthiestFoods.com** Look-up food sources of micronutrients

**FitDay.com** look-up caloric and nutritional content of foods & commercial food products + what you ate today

### Some Chinese Herbal Formulas for the 3 stages of Xiao Ke

- **Upper xiao ke:** Xiao Ke Fang, Asparagus & Ophiopogon Decoction
- **Middle xiao ke:** Jade Woman Decoction [xs], Jade Fluid Decoction [xu], Zhen Ye Tang [stress], Bu Zhong Yi Qi Tang, Ba Zhen Tang
- **Lower xiao ke:** Six-Ingredient Rehmannia Pill, Pulse-Activating Powder, Kidney Qi Pill, You/Zou Gui Wan

### Proprietary Patents/Formulas:

- **Equilibrium** for DMII- Evergreen Herbs / Dr Chen PharmD, LAc
- **Kidney DTX** for DMII with renal insufficiency- Evergreen Herbs
- **Cholisma ES for dyslipidemia-** Evergreen Herbs
- **Flex NP** for peripheral neuropathy- Evergreen Herbs
- **Jade Spring Pills-** For juvenile DM- United Pharmaceutical Manufactory
- **Xiao Ke Wan-** mild to mod DM with partially functioning pancreas- Guanzhou Pharmaceutical Company. \*Contains Glipizide & Glyburide
- **Yu Xiao San-** beta cell proliferation- Red Cross Hospital Beijing, produced in USA
- **Sugar-Reducing & Pulse-invigorating Capsule-** CVD, retinopathy, neuropathy
- **Jei Wei Ling Capsules-** CVD, neuropathy- Xi Yuan Hospital, Department of Diabetes Medical Research
- **Tianqi Capsules-** prevention of DM- *Heilongjiang Baoquan Pharmaceuticals, CHINA*
- **Dan Shen capsules** atherosclerotic plaque Tasley Co., India. <https://sites.google.com/a/tasly.co.in/tasly/tasly-india>

Choate, J. (2015)

## Other Products

- Medihoney [www.dermasciences.com/medihoney](http://www.dermasciences.com/medihoney)
- Mercy Soap and Treatment Gel [www.naturesgift.com](http://www.naturesgift.com).
- Oregano Tooth Powder [www.drclarkstore.com](http://www.drclarkstore.com)
- VSL#3 [www.vsl3.com/hcp/scientific-info/](http://www.vsl3.com/hcp/scientific-info/).
- Yin Care Supreme Oral [www.yincare.com](http://www.yincare.com)
- Young Living Essential Oil dental care products [www.youngliving.com](http://www.youngliving.com)

## EXAMPLE TX PLAN & COST

1. **Bu Zhong Yi Qi Tang** for chronic disease & constitutional pattern-> fatigue, depression  
+  
**Huang Qi 30g & Shan Yao 100g** daily x first 10 days for xiao ke SP/K deficiency pattern  
then
2. **Equilibrium + Cholisma** x next 3 to 6 months for type 2 diabetes, metabolic syndrome, neurogenic stress  
+
3. Diet & Lifestyle modifications, Food-as-medicine, exercise, address periodontal disease/ occult infections

## EST. HERB COST [for severe clinical scenario]

\$100 x first mos. \$65/mos x next 3 months. Adjust cost of maintenance herbal Tx plan x next 6 months

## **DO NOT Stop Diabetic Meds Abruptly!**

Herbal & drug treatments should overlap for 1 to 2 weeks before tapering down/off drugs, in order to ensure adequate control of blood glucose levels. Patients generally respond to herbs with significant BGL reduction and less fluctuation within 2 to 4 weeks [some 6 to 8 weeks]. Non-insulin dependant individuals have weaned off medication and insulin-dependant persons have reduced the dose and frequency of injections. Both maintaining sustained BGL control afterwards. (Chen, 2015).

Dependence on a maintenance dose of herbs depends on the individual, TCM diagnosis, and compliance with lifestyle and dietary modifications.

↑ Insulin release	↓ Insulin release	↑ Glycogen stores [liver]	↓ gluconeogenesis [liver]	↓ Insulin resistance	↑ Peripheral uptake/ sensitivity	Pancreatic cell proliferation/ regeneration	Protects/ prevents Pancreatic cell death
aloe vera, fenugreek, bitter melon berberine huang qi reishi gymnema pumpkin	cassia ge gen ginger rou gui shan zhu yu tea	fenugreek gymnema huang qi huang qin xuan shen rou gui shen di huang yu zhu zhi mu	bitter melon hu zhang rou gui xuan shen zhi mu gynmemma	schizandra bitter melon mulberry magnesium [sesame seeds]	bai Mu Er/ Tremella berberine bitter melon da huang fenugreek ge gen huang qi mulberry omega 3 FA rou gui schizandra	shan zhu yu Gynostemma Gymnema	berberine ginseng, huang qi schizandra shan zhu yu
↓ GI carbohydrate absorption	↑ Fat metabolism/ digestion	Inflammation & Stress response	Nephropathy	Neuropathy	Retinopathy	Gastroparesis	Metabolic Syndrome
bitter melon shan zha jie geng	huang qin shan zha tea	xuan shen di gu pi omega 6 FA	shan zhu yu huang qi	huang qi, Dan Shen, Sanqi, Niu Xi Huang qi gui zhi wu wu tang	Ming mu di huang wan	Ban xia xie xin tang	hu zhang [single herb] huang lian huang qin berberine

Physiological actions of Various Herbs and Nutrients