Herbal Support for Insulin Resistance – Betzy Bancroft, RH

Changes in our lifestyle over the past several generations, especially diet and stress levels, have contributed to a new class of metabolic disorders in which our basic biochemical processing of food into energy becomes deranged. Endocrine glands like the pancreas, thyroid and adrenals secrete hormones that regulate our adaptation, maintain homeostasis (or dynamic balance), and facilitate basic metabolic functions day to day. We put stress on these glands by asking them to essentially follow the corporate model of working harder for less pay, in this case less nourishment. Insulin is one such hormone. Normally, insulin is secreted by the pancreas in response to rise in blood sugar subsequent to our consuming carbohydrates. Its primary job is to assist our cells' ability to take up glucose from the blood for purposes of cellular respiration or the liberation of energy. In another role that is becoming better understood, insulin also stimulates our liver's conversion of glucose to glycogen, and stimulates its storage in abdominal adipose tissue – the 'apple shape' effect.

But sometimes our cells stop being sensitive to the effects of insulin, so the pancreas secretes increasing amounts of insulin in an effort to lower our blood sugar. Since the cells (muscle, fat and liver) are still not taking up the glucose (sugar), both blood sugar and insulin levels remain high, and in an effort to lower these levels our glycogen storage increases. This has been termed "insulin resistance" and is one of several related and overlapping issues of 'dysglycemia' that are on the rise in our population. We can have an inherited predisposition to dysglycemia, or blood sugar dysregulation. A study done in India showed that higher folate levels of mothers predicted higher adiposity and insulin resistance in their children, and low pregnancy levels of vitamin B12 exaggerated this risk.* The big problem with insulin resistance is that when the body can not keep up with maintaining normal blood sugar levels, we become pre-diabetic, which very commonly leads to type 2 diabetes if it's not addressed. Generally, people with family histories of diabetes, high blood pressure or heart disease can be prone to developing insulin resistance.

High blood levels of glucose and insulin promote inflammation in the blood vessels, which predisposes us to cardiovascular diseases like atherosclerosis. Even low levels of chronic inflammation is being found to become very damaging to our tissues, predisposing us to many chronic degenerative conditions. Health conditions correlated with insulin resistance include gout, urinary stones, polycystic ovarian syndrome, breast, endometrial and prostate cancers, non-alcoholic liver issues, Alzheimer's, persistent hot flashes, obesity, dysbiosis, high LDL and triglyceride levels, erectile dysfunctions and cardiovascular diseases. In short, our blood sugar metabolism is a key part of the whole endocrine (hormonal) and biochemical interrelationships that we depend on.

There aren't obvious signs of developing insulin resistance. People with severe cases may develop acanthosis nigricans, a darkening of skin pigment typically seen around the neck, or less often the knees, elbows and knuckles. Increasing tendency to fatigue and abdominal weight gain may be the earliest signs, but there are other possible reasons for these symptoms, which can confuse assessment. For a medical diagnosis, a test that should be done in addition to blood fats and glucose levels is blood insulin levels. (For more info on tests, please see the NIH reference below). Other signs can include afternoon or after-meal energy crashes or carbohydrate cravings.

Especially before full manifestation of type 2 diabetes, it is possible to restore normal insulin function and prevent or improve these associated health conditions. A holistic approach, including exercise, diet and herbs is most effective, as their benefits are inter-related.

Exercise:
Our muscles need more glucose when they are working, and in particular vigorous aerobic exercise decreases resistance or insensitivity to insulin and muscles take up the glucose they need. More burned glucose means less blood glucose, in the short term and long term as we reset our metabolism. About 30-45 minutes of exercise each day, such as brisk walking, dancing, biking, swimming or other vigorous activity is beneficial. If you haven't been exercising that much, begin slowly and work up to this level.

Diet:
Most important is a low carbohydrate diet. Especially limit refined carbohydrates that have become major convenience foods—bread, pasta, cereal, other baked goods and sweets, including sodapop. Read ingredient labels carefully if you eat food from packages, or better yet switch to less processed foods like bulk whole grains and vegetables. Focus on low-glycemic vegetables, fruits, whole grains and legumes for carbohydrate sources. (Information on foods' glycemic load can be found easily on the internet.) These are foods that have low impact on our blood sugar, that is don't cause its dramatic rise. Another useful strategy is to consume smaller meals more often, or have nutritious snacks like veggies, raw nuts or bean dips.

Specifically, choose a variety of colorful vegetables and fruits that are not too starchy or sweet. The phytonutrients like flavonoids and carotenoids that provide red/blue/purple/orange pigments in these foods are anti-inflammatory and generally promote good tissue integrity. Examples include leafy greens (kale, collards, chard, cabbage, etc.), winter squash, berries of all kinds, cherries, apples, pears, peppers, asparagus, grapefruit, broccoli, green beans, sweet potatoes.

Whole grains provide some protein, B vitamins and the complex carbohydrates that not only nourish us, but also provide sustenance for our intestinal flora. Oats in particular help support slow blood sugar rise by forming a sponge-like stool that releases nutrients slowly, helps maintain healthy intestinal mucosa, and support our flora. Buckwheat and red quinoa are rich in flavonoids which support tissue integrity.

Legumes are super nutrient-dense and also provide fiber, protein and slow-release carbohydrates. It is important, especially for vegetarians, to soak one's grains and legumes prior to cooking to minimize nutrient binding by phytates. These 'antinutrients' bind to minerals so we can't absorb them, particularly iron and zinc which are again necessary for good tissue integrity and blood. Legumes also contain isoflavones, which tend to reduce our cardiovascular disease risk by improving blood vessel function and integrity. Beans, lentils, peas and traditionally prepared soy foods like miso and tempeh are all helpful.

The low-fat dietary advice we have been given for the last few decades is not helpful. To reduce and prevent inflammation in the body, we need good quality fats, especially omega-3 fatty acids. Sources of healthy fats include olive oil, avocado, fresh nuts and seeds, coconut, fish and foods from pastured animals like butter. Foods containing polyunsaturated fats, like nuts and fish, are

best consumed raw or gently cooked in order to preserve the integrity of these fats. Omega-3 fatty acids may even help improve cells' sensitivity to insulin.

Herbs:
Bitters are one of the key herbal actions in not only balancing blood sugar, but optimizing digestive and assimilative function and supporting endocrine function. They are best used in tea or 'digestif' tonics taken before meals. Examples of bitter herbs that particularly support blood sugar balance include dandelion root and chicory root (not roasted), artichoke leaf, barberry root.

Cinnamon has been studied extensively in relation to its blood sugar modulating effects. Some negative or inconclusive results are more a factor of administration than unreliability on cinnamon's part. Cinnamon possesses volatile oils that are carminative, that is slowing or relaxing gastrointestinal motility, and mucilage, which binds sugars and slows their release into the blood. There are other biochemical factors involved too, that help cinnamon control blood sugar rise after meals. Adding 2 teaspoons of cinnamon powder to oatmeal, curry or other carbohydrate-rich dish is the effective amount.

Other spices and common 'dietary herbs' like ginger, turmeric, rosemary, garlic, green tea, and chocolate reduce inflammation long term and should be included in the diet regularly.

Other herbs that support proper blood sugar metabolism include milk thistle seed, gymnema herb, fenugreek seed, burdock root and ginseng root.

Adaptogenic herbs contribute significantly to overall endocrine balance as well as reducing fatigue. Useful adaptogens here include Eleuthero, ginseng, licorice, Astragalus, Rhodiola, Codonopsis, ashwugandha and Schisandra.

Other tonics and antioxidants fill supporting roles, such as hawthorn when cardiovascular disease is a concern, and giant knotweed as a source of the antioxident resveratrol. Turmeric, rosemary, green tea, milk thistle and Schisandra support good liver function and detoxification, particularly important if we suspect endocrine disruption from environmental toxicity.

Useful nutritional supplements:
Chromium – helps increase cell sensitivity to insulin. Use GTF chromium at a dosage of 1,000 mcg per day.
Magnesium – people with high insulin and blood sugar levels are often found to have low Mg, and animal studies have shown it can help increase insulin sensitivity. Use magnesium citrate, chelate, or glycinate at a dosage of 100-400 mg per day.
Alpha-lipoic acid - an antioxidant that improves the cells' response to insulin and can help stabilize blood sugar levels. Use 100 to 400 mg per day.

By incorporating as many of these strategies and lifestyle changes as possible, we can not only reverse insulin resistance, but improve our energy levels, loose weight, and significantly impact our longevity.

Root Chai:
Combine of any or all of the following roots:
dandelion, burdock, chicory, codonopsis, eleuthero, ginseng

with of any or all of the following spices:
cinnamon bark, fenugreek seed, ginger, cardamom

and decoct the mixture covered for about 15 minutes. The herbs can be brewed again until there is no flavor left, usually twice or maybe three times. Better to add a bit of licorice or stevia than sweetener, and great to add some fresh cream or coconut milk too. Drink all winter long!

Digestive bitter tincture:
2 parts artichoke leaf
2 part schisandra or other adaptogen
1 part dandelion root
1 part rosemary
.5 part barberry root

Take about ½ teaspoon in water before meals, especially larger meals or those containing carbohydrates. Using schisandra will make it very aromatic/sour, if you want to tone down the flavor use eleuthero, astragalus or ashwugandha as the adaptogen. Other combinations of bitters and aromatics can be equally effective!

Resources:
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, NIH Publication No. 13–4893 November 2012
http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/

*Nestle Nutr Inst Workshop Ser. 2013;74:145-54; discussion 154-6. doi: 10.1159/000348463. Epub 2013 Jul 19.
Influence of maternal vitamin B12 and folate on growth and insulin resistance in the offspring.
Deshmukh U, Katre P, Yajnik CS.

http://www.drweil.com/drw/u/ART03085/Insulin-Resistance.html

http://www.womentowomen.com/insulin-resistance/what-is-insulin-resistance/

Gut. 2014 May 15. pii: gutjnl-2014-306928. doi: 10.1136/gutjnl-2014-306928. [Epub ahead of print]
Microbiota and diabetes: an evolving relationship.
Tilg H, Moschen AR.

Principles & Practice of Phytotherapy, Mills & Bone 2nd edition

http://aradicle.blogspot.com/search/label/cinnamon