

Metabolic syndrome or syndrome X is the name given to the collection of symptoms associated with insulin resistance and poor carbohydrate metabolism.

The collection of symptoms includes high central and trunk obesity (high waist circumference), high blood pressure, high triglycerides, high fasting blood glucose and poor cholesterol profile.

The condition is associated with fatty liver disease and predisposes people to diabetes, stroke and heart disease.

The condition develops as a matter of combined factors, excess energy intake, low levels of activity, excess inflammation, stress, genetic factors, toxins and drug related progressions e.g. alcohol are also factors.

Excess energy intake is easier to accomplish with higher energy density foods, with a lower fibre content and additional added fats. The type of fat, heated or damaged may also additionally burden the system from an oxidation and inflammation promoting point of view. Irrespective of the hormonal consequences of foods there has to be a surplus in the energy balance for the condition to progress.

A key player in the early stages is poor blood glucose regulation through poor selection of foods, combined with other factors listed above. This is because poor blood glucose regulation, through poor selection of higher energy dense foods causes peaks and troughs in glucose which in turn elicit a stress response and can lead to further hunger, low energy and poor food choices.

Higher levels of insulin resistance mean more insulin is secreted to get the glucose into your cells, but high insulin levels also predispose our bodies to gain fat. To make matters worse, insulin resistance tends to occur in stages, first the liver becomes resistant, then the muscle cells and finally when you are really, really fat, even your fat cells can start to become resistant.

For this to become a problem the energy balance would also have to be out of kilter.

Even at a normal weight people can begin to develop some of these traits and risk factors, If your body fat is higher than 15-16% for men and 25-26% for women some people will be at the beginning stages of syndrome X. As such you need to eat carefully to control blood sugar levels. Whilst taking care to balance energy intake and expenditure.

Symptoms of poor blood sugar regulation can include;

- Fatigue
- Irritable or shaky when hungry
- Rapid mood swings
- Sleeping problems
- Poor concentration
- Forgetfulness
- Excessive sweating
- Stubborn body fat which does not seem to shift no matter how restrictive you are with your diet
- Tiredness after meals containing even small amounts of grains or high GI carbs
- Drowsy, tired or hungry during the day

Learning about the effects of food on blood glucose is key to keeping energy levels steady. Also, when the right state of metabolic flexibility is reached people can use fats much more readily as a source of fuel rather than having a sugar dominated energy dependent system.

How we arrive at this point involves altering our fuel mix, moving towards a lower carb and higher fat intake in general, increasing activity and muscle mass and working on other systems which can help us make the right choices in general, e.g. proper and deep restful sleep, lowered inflammation levels in the body, good gut bacteria and avoiding deficiencies in any nutrients. This puts the mind in a better place to start making behaviour changes.

Some other interesting factors which change how fast our blood glucose will raise include;

Food choices, glycemic index, glycemic load and insulin index

The macro ratio or % of protein, carbs and fat

The total calorie load of the meal

Speed of eating

Pre-existing fibre in the gut – second meal effect

The health of the beneficial bacteria in the gut

The fibre content of the foods – nutrient density vs energy density

The temperature of the food

The resistance of the starches

Internally many other factors dictate how quickly the glucose will be absorbed into cells and where it will end up. Some obvious factors include how empty the glycogen stores are, being empty means they can get filled back up faster, being full means the excess glucose might end up being stored as fat.

If stress levels are high, high cortisol and interfere with insulin's effects. In turn potentially triggering higher central adiposity as abdominal fat contains a large amount of cortisol receptors. The cells themselves can exhibit a higher or lower level of sensitivity to insulin (insulin resistance) this can depend on exercise along with many other factors such as inflammation and the poor, imbalanced intake of fats over time.

Prolonged stress can also lower cortisol secretion meaning poor glucose regulation away from meals and possibly when sleeping.

Nutrients status and ingestion of facilitator nutrients, such as chromium which helps with glucose tolerance factor, cinnamon which helps with blood glucose disposal and any AMPK supporting compounds, grapefruit juice and SIRT foods all have a positive effect on insulin sensitivity and stabilising blood glucose levels.

When this balance isn't considered consequences can be rapid and detrimental to health. Fat can accumulate very quickly with people seeming to 'pump up' in the space of a matter of weeks, the excess sugars and insulin resistance combined with inflammatory factors speed up glycation in the cells – sugar damage which disrupts cellular function and collagen structures. Often the diet associated with high sugar intake also contains high levels of AGE's – advanced glycation end products, these can make it into the body putting stress in antioxidant enzyme systems, glutathione and further contributing the glycemic load and glycation.

This is a recipe for rapid aging and degeneration.

Fortunately, there are ways to prevent and reverse this condition in an equally rapid and insidious manner. The first step is learning the secrets to steadying blood glucose.

Self-awareness, what is the problem and do I need to fix it?

Stay self aware

Balance blood sugar and insulin levels; follow quick start fat loss planner.

Eat a nutrient dense, plant based diet with adequate proteins.

Work on inflammation keep posted for future post on inflammation.

Work on keeping alkaline keep posted for future information on the importance of an alkaline environment in insulin regulation and inflammation.

Train Hard, Train Smart – till next time....