



## INSULIN RESISTANCE

The hormone insulin, acts at the surface of normal cells to let glucose in. Glucose is then used for energy production inside the cell. Energy is needed to run all the cell's reactions. Insulin resistance occurs when the cells of the body become resistant to the action of insulin and so the cells are deprived of glucose.

Insulin resistance is associated with the following problems:

- Metabolic syndrome.
- Polycystic ovary syndrome.
- Weight on the trunk which is difficult to lose.
- Inflammation in the body.

Inflammation is the process that the immune system creates in the body when it is under any sort of mental or physical threat. It is associated with the following conditions:

- Alzheimer's disease.
- Insulin resistance.
- Metabolic syndrome.
- Cardiovascular diseases, e.g. high blood pressure, high cholesterol, stroke, heart attack, abnormal heart rhythms.
- Some cancers.
- Fat gain around the trunk.
- Depression.
- Autoimmune conditions like rheumatoid arthritis and SLE.

### **Losing fat/weight in the presence of insulin resistance and inflammation:**

Stress, ageing, poor diet and inflammation promotes insulin resistance and this in turn promotes activation of the body's stress responses. This further can cause depression as well as fat storage, usually on the trunk and around the organs. The insulin resistance with further activation of the stress responses activates a vicious cycle so that it is difficult to lose the fat from the trunk.

This means that both conditions need to be controlled. Usually the treatment that will help get fat off also helps all the other problems mentioned above, so there will be multiple benefits to this programme, which is noted below:

- 1. Restore normal sleep** – this means being in bed and asleep by 10:30pm. If not, the person misses out on the melatonin surge that occurs afterwards. Melatonin is a very important antioxidant and anti cancer hormone that is released by the pineal gland which is in the very centre of the brain.
- 2. Treat stress/depression** – this is because they cause inflammation in the body.
- 3. Normalise/treat any imbalance** of the following:
  - Thyroid function
  - Adrenal gland function
  - Sex hormones, e.g. oestrogen to testosterone ratio (in men), and oestrogen to progesterone ratio (in women) – when these are abnormal it causes increased abdominal fat.
  - Gut flora – detoxifying the gut with correct diet and a probiotic or other measures.
  - B12, Iron, Folic acid, Zinc, vitamin D.
- 4. Diet** – this will initially be the ketogenic diet for rapid fat loss.
  - Later it can be Mediterranean, zone diet or ABO blood group diet for maintenance.

5. **Exercise** – aerobic exercise in a low grade fashion burns calories as well as fat.
  - Resistance exercise like weight training increasing the insulin sensitivity of the cells as well as building muscle, which then further burns fat.
6. The addition of the following shortlist of supplements are the first choice:
  - **Omega 3 fish oil** – this reduces inflammatory messengers and molecules in the body. It also reduces all the conditions related to inflammation but also increases learning and memory. Omega 3 fish oil also helps probiotics to stick in the gut lining and help them work better.
  - **Chromium** reduces excessive appetite, cravings and depression.
  - **Probiotics** (friendly bacteria) – they balance the immune system which reduces inflammation. This in turn allows easier fat loss.
  - **Magnesium** is important in cellular energy production, as well as reducing insulin resistance.
7. **Metformin** – this is a drug that is very effective at reducing insulin resistance and is also used in diabetes.
8. Other natural substances that can be used:
  - **Alpha lipoic acid** – this is a powerful antioxidant which recycles the antioxidant vitamins in the body, and importantly can cross the blood brain barrier, which means that it can work in the brain. This means that the brain is not starved of glucose. Alpha lipoic acid helps diabetes and insulin resistance.
  - **Resist-X** by metagenics. This contains Korean ginseng which reduces blood pressure and weight. The cinnamon reduces blood glucose, triglycerides, total cholesterol and LDL cholesterol. The caiapo reduces blood glucose and total cholesterol.
  - **Insulex** by metagenics contains the herbs acacia nilotica and hops. They improve the ability of insulin to work by interacting with the insulin messenger molecules. It also reduces fasting and post meal glucose, as well as triglycerides. It increases the good HDL cholesterol.
  - **Taurine** – this is an amino acid and acts as an antioxidant and reduces inflammation as well as blood pressure.
9. Useful hormones:
  - **Testosterone** helps with energy, fat loss, libido, resilience to stress and mood. In men it reduces heart disease and is anti inflammatory as well as helping mental function. It is often low in ageing men and women.
  - **Melatonin** is a strong antioxidant substance.
10. Other herbs:
  - **Withania Somnifera** (ashwaganda) reduces inflammation and stress.
  - **Magnolia bark** reduces stress hormones and therefore inflammation.