Food As Medicine

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Food As Medicine

Disclaimer

Pseudoscience – is **bad science.** It is not the same thing as **new science**.

In science there is always a mainstream view and a number of dissenting bodies. Many of the dissenting bodies are as qualified and use methods as rigorous as mainstream scientists.

Without different theories we would never make progress! The Earth is not flat!

Quacks and snake oil salesmen have made it more difficult for scientists who present new findings to the scientific community to be taken seriously

Scientific dogma is very common, especially in the light of change. It is human nature to get attached to a particular theory. Many scientists have invested entire careers (and therefore their sense of identify) in their work. When new research comes to light that challenges existing views, it can cause friction

We are in an era of rapid change and many well established theories are being questioned. It is a very exciting time which offers much hope in light of the epidemic of diseases we see today.

What I'm going to talk about today is not "the truth". I don't claim to know the truth. I intend to share with you some of the cutting edge research in nutritional science, much of which has come from very highly qualified doctors and scientists from many different countries.

Food As Medicine

About Me

I trained as a nutritionist 9 years ago

What motivated me to do this was the state of health of my close family, especially my father

I had also suffered from a neurological disorder since childhood with bouts of uncontrollable nervous tics, extreme anxiety and nervous exhaustion

I thought there had to be more we could do than just manage symptoms

It has changed my life

Food As Medicine

“Let thy food be thy medicine and thy medicine be thy food”

-Hippocrates (Father of medicine)

Who was Hippocrates?

Hippocrates was a Greek physician of the Age of Pericles (Classical Greece), and is considered one of the most outstanding figures in the history of medicine. He is referred to as the "Father of Early Medicine“ in recognition of his lasting contributions to the field

Food As Medicine

For thousands of years, food was used to heal the sick.

Many cultures around the world have also long held this belief, e.g. Ayurveda, TCM, Traditional Tibetan medicine and many others.

In the last century and especially in the last few decades, the exact opposite trend can be observed, especially in the west.

Today, the majority of people have come to view food as merely a source of energy/fuel or simply…

Food As Pleasure

- Do I have to eat bowls of twigs to be healthy?
- Nutritional value and pleasure are **not mutually exclusive**!
- More on that later…

What Is A Medicine/Drug?

What Is A Medicine/Drug?

- Any chemical compound used in the treatment, or prevention of disease or other abnormal condition.
- A substance used recreationally for its effects on the central nervous system, such as a narcotic.
- A chemical substance that **affects the processes of the mind or body**.

What Is A Medicine/Drug?

Antipyretics

Antidepressants

Antipsychotics

Analgesics

Antibiotics

Antiseptic

Mood Stabilisers

- Hormones
- Contraceptives
- Stimulants
- Tranquilisers
- Statins

What Is A Medicine/Drug?

- Typically, drugs are one directional. For example:
  - Antipyretics **reduce** fever
  - Blood pressure medication **lowers** blood pressure
  - Statins **lower** cholesterol
- This is fine for getting somebody out of trouble but it is far from ideal as it is very hard to get the precise dosage to maintain homeostasis.
- The body produces different compounds in differing quantities and at different times depending on the needs of the body. Some compounds will raise your blood pressure. Others will lower it.

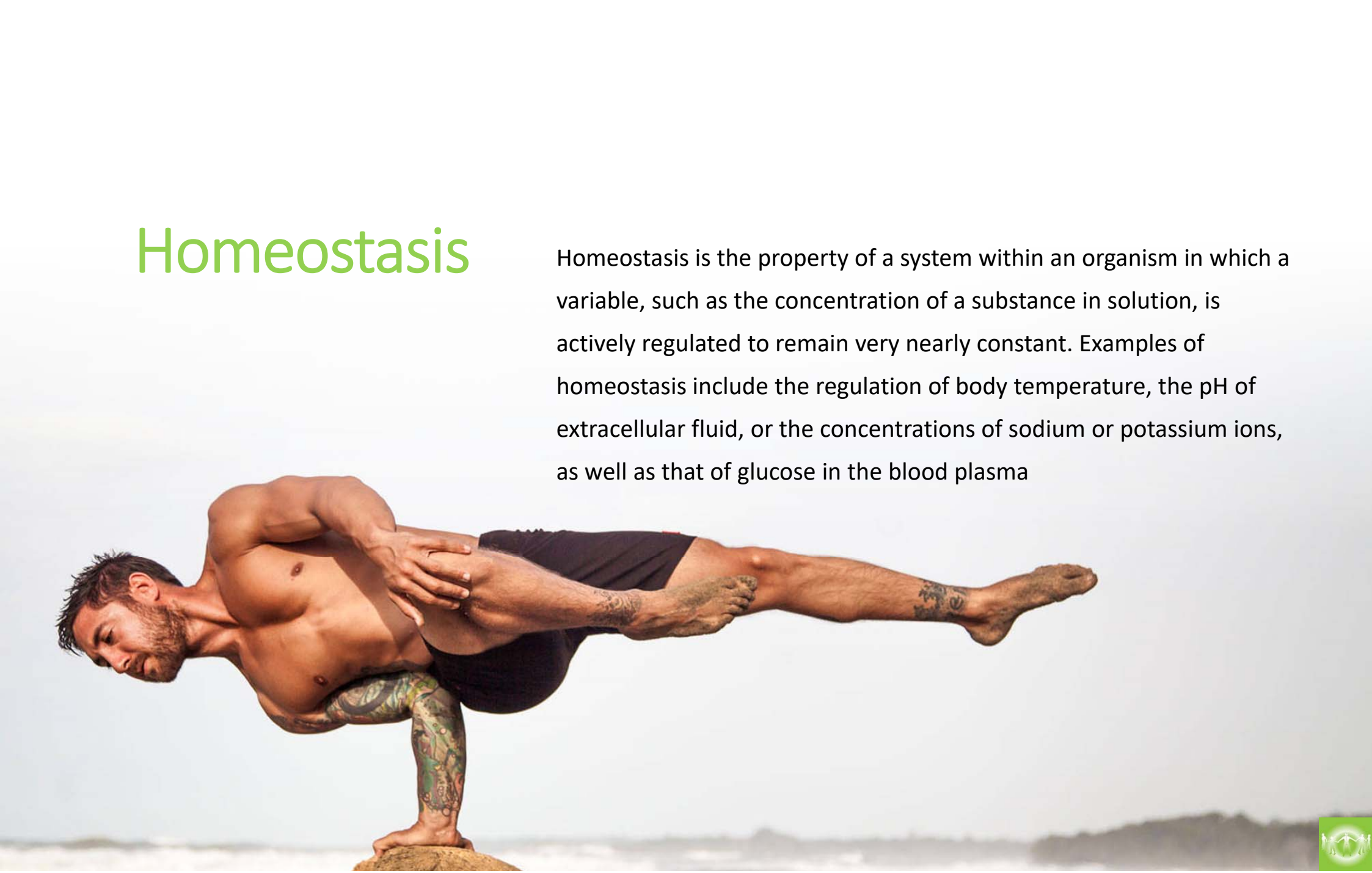
What Is A Medicine /Drug?

- By far the biggest pharmacy that exists is **our own body**
- The body makes thousands of different drugs on a daily basis
- These chemical compounds are responsible for keeping us alive by allowing our body to constantly adapt and recalibrate

Homeostasis

Homeostasis

Homeostasis is the property of a system within an organism in which a variable, such as the concentration of a substance in solution, is actively regulated to remain very nearly constant. Examples of homeostasis include the regulation of body temperature, the pH of extracellular fluid, or the concentrations of sodium or potassium ions, as well as that of glucose in the blood plasma



Homeostasis

- Sometimes things go wrong, and the body is not able to effectively maintain homeostasis.
- The body's own "pharmacy" is unable to produce enough drugs to keep us in balance.
- This is where certain drugs can be lifesaving

Examples Of Drugs

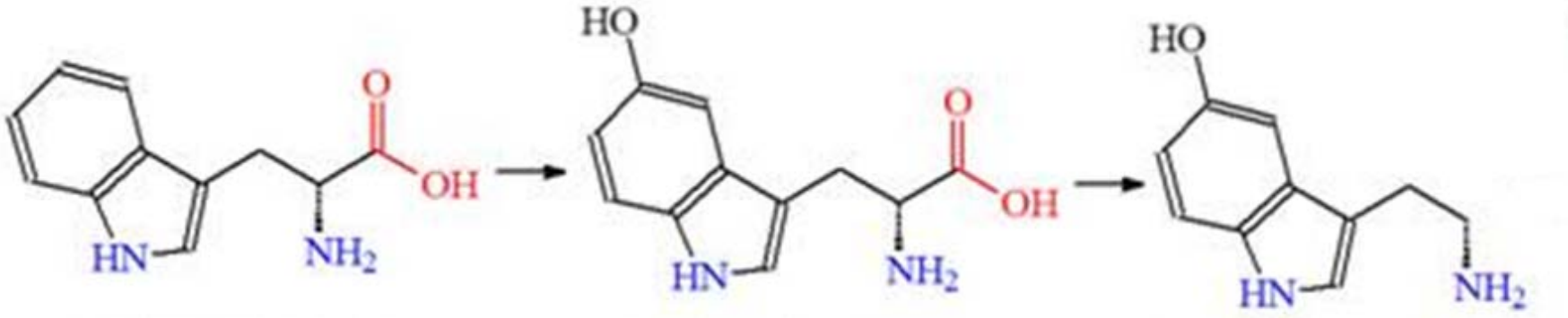
- SSRI – Selective serotonin reuptake inhibitor
  - Increases concentrations of serotonin in certain areas of the brain
  - Serotonin is a neurotransmitter associated with feelings of calm and wellbeing.
  - It is implicated in many very important bodily functions such as sleep, hunger, mood, anxiety, depression, wound healing, bone health, blood clotting, sexual function.

Natural Serotonin Boosters

- Are there any natural substances that can raise serotonin levels in a meaningful way?

- Tryptophan
  - An amino acid found in foods such as poultry, eggs, dairy, fish, nuts and seeds.
  - Tryptophan gets converted into serotonin in the following manner:

Tryptophan => Serotonin



L-Tryptophan, W

$C_{11}H_{12}N_2O_2$
204.22
204.089877

5-Hydroxytryptophan

$C_{11}H_{12}N_2O_3$
220.22
220.084792

5-Hydroxytryptamine
or
Serotonin

$C_{10}H_{12}N_2O$
176.21
176.094963

Tryptophan => Serotonin

- This conversion takes place thanks to enzymes

Enzymes – What Are They?

- The creation of chemical compounds in the body is dependent on **enzymes**
- Enzymes are biological catalysts
- Enzymes initiate and accelerate chemical reactions inside over 90 trillion cells
- Enzymes are involved in **digestion, energy production, creation of hormones and other important secretions, help destroy damaged cells, important part of the immune system, etc.**
- **Without enzymes we would die!**

Enzymes

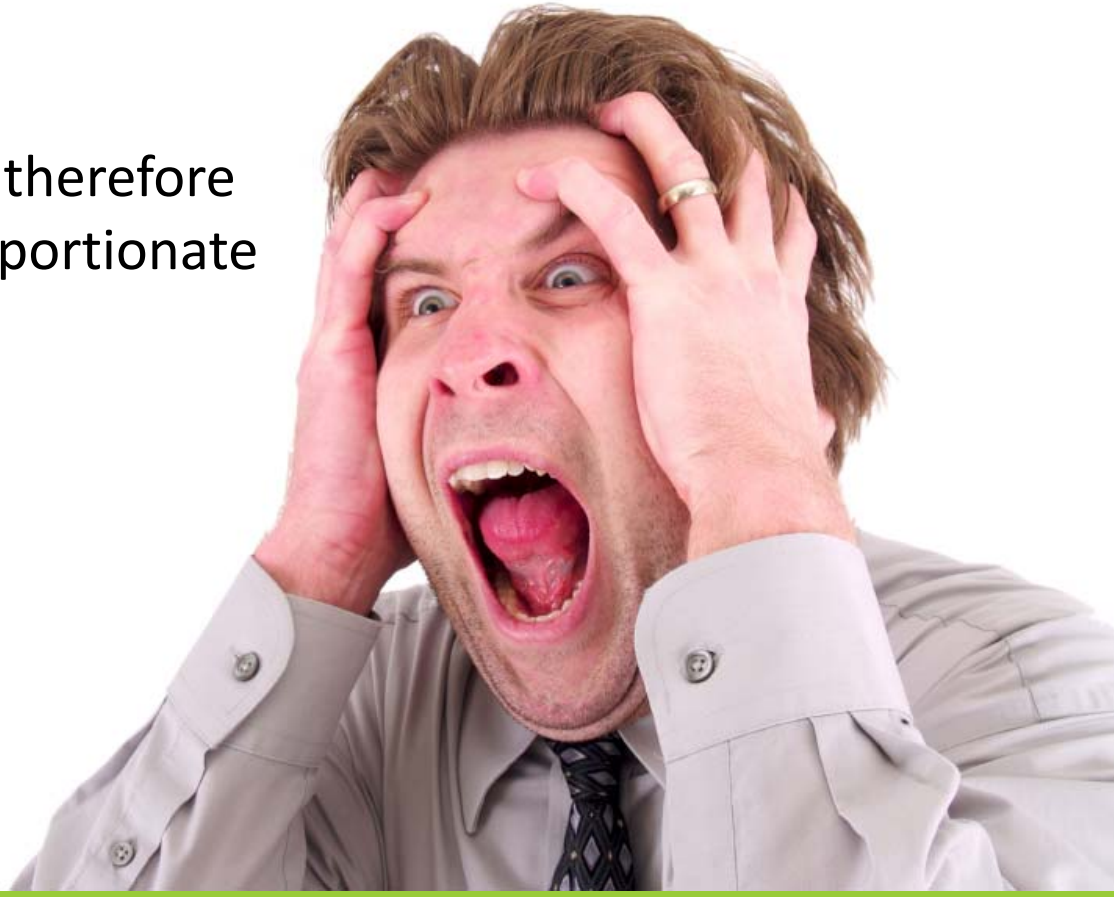
- Our enzymes are dependent on specific nutrients
- If our diet does not provide all of the key nutrients, we cannot make enough enzymes

Tryptophan => Serotonin

- Many nutrients are necessary in order for this enzymatic conversion to take place:
  - B Vitamins, especially:
    - B6 (P5P)
    - B1 (thiamine)
    - B2 (riboflavin)
    - B9 (folate)
  - Vitamin D
  - Selenium
  - Zinc
  - Magnesium

Enzymes

- The amount of enzymes required (and therefore nutrients to make them) is directly proportionate to the amount of **stress** we are under.



Tryptophan => Serotonin

- 1 in 11 adults in Britain are currently prescribed SSRI medication
- Prescription of antidepressant medication is more common when a person has been under significant stress
- Doctors neither have enough time or are trained to enquire about the patient's nutritional status

Other Examples Of Drugs

- Diazepam – Benzodiazepine / tranquiliser
  - Used to treat major anxiety disorder, insomnia, alcohol withdrawal, muscle spasms, etc.
  - Increases concentrations of and sensitivity to GABA
  - What is GABA?

GABA

- GABA is one of the most abundant neurotransmitter in the body, along with glutamate.
- It is the chief inhibitory neurotransmitter, responsible for reducing neuronal excitability - It calms you down!
- It is especially present in the cerebral cortex and has a profound effect on how thoughts and sensations are processed
- GABA is made in the cells of the brain, where it is converted from glutamate thanks to the…
- **GAD Enzyme**
  - Balances GABA and glutamate levels

GABA / Glutamate

- Glutamate is the primary excitatory neurotransmitter.
- GABA and glutamate have an inverse relationship. They work like the break and accelerator.
- Too much GABA is heavily sedating (drunk) If too much glutamate is present, the result can be extreme:
- Too much glutamate causes:
  - Anxiety
  - Restlessness
  - Nervous tensions
  - Irritability
  - Insomnia
  - Racing thoughts
  - Poor stress tolerance
  - etc.

GABA & Nutrition

- How does nutrition affect the production of GABA?
- In order to produce enough of the GAD enzyme, several nutrients are required (this list is not exhaustive)
  - B6 (Pyridoxal 5’ Phosphate)
  - Magnesium
  - Zinc
  - Taurine
  - L-theanine (tea is a good source of this amino acid)
  - Organic lithium
- Research into gut bacteria now shows that the presence of the correct strains of bacteria also strongly effects the GAD enzyme

Nutrition & Cardiovascular Health

- Heart disease and stroke
  - Risk is associated with degree of arterial plaque and inflammation
  - Nutrients which are protective:
    - Vitamin C
    - Magnesium
    - Vitamin K2
    - Vitamin D3
    - Antioxidant status, CoQ10
    - **Correct balance of fatty acids and good fats**

Drugs Versus Nutrients

- Drugs are often intended to affect a single biological pathway
- For example there are drugs to:
  - Lower blood pressure
  - Lower blood sugar
  - Block adrenaline
  - Increase serotonin
  - Decrease dopamine
  - Kill certain types of bacteria

Drugs Versus Nutrients

- Nutrients exert an effect on **multiple biological pathways simultaneously**
- For example, zinc:
  - Zinc plays a crucial role in proper immune system function
  - Acts as an antioxidant to reduce risks of free radical induced damage to cells
  - Plays a vital role in hormone balance, especially stress hormones
  - Helps balance blood sugar
  - Promotes health of cardiovascular system
  - Increases fertility in men and women
  - Promotes good eye health
  - Supports liver health
  - Support muscle growth and repair

Zinc

- Good food sources of zinc include:
  - Red meat (especially lamb, game and grass fed beef)
  - Sea food (oysters are very high in zinc)
  - Pumpkin seeds
  - Chickpeas
  - Cacao
  - Cashews
  - Kale
  - Spinach

Magnesium

- Magnesium:
  - Another crucial mineral for our health. It is involved in hundreds of biochemical reactions in the body. Magnesium deficiency is dramatically **under-diagnosed** as it doesn't show up on blood tests!
  - Plays a vital role in the production of cellular energy ATP
  - Crucial to the formation of certain proteins from amino acids
  - Helps protect the integrity of our DNA
  - Is involved in muscle cell movement
  - Is very important for healthy nervous system function
  - Fights depression
  - Helps type II diabetes
  - Lowers blood pressure
  - Is anti-inflammatory
  - Can help reduce migraines

Magnesium

- Good food sources of magnesium include:
  - Spinach, chard, kale
  - Cacao
  - Pumpkin seeds
  - Almonds
  - Black beans
  - Avocado
  - Figs
  - Bananas

Phytochemicals

- Mushrooms contain polysaccharides (a type of sugar) which highly beneficial to the immune system of mammals
  - Polysaccharides in mushrooms have been shown to increase the number of natural killer (NK) cells and T-cells, which help protect the body from infectious disease and malignancy.

- Berries
  - Rich source of antioxidants which protect and even help to repair damaged DNA as well as protecting cholesterol from oxidation and reducing risk of heart disease
  - Various nutrients in berries have shown to improve cognitive function and memory

Phytochemicals - Adaptogens

- In addition, there are literally thousands of medicinal herbs used throughout the world
- Many of these herbs contain powerful phytochemicals which can improve health
- There is one class of medicinal plants which are especially beneficial. In TCM these are called the "**superior tonic herbs**".
- **Ginseng, Maca, Cordyceps, Reishi mushroom, Astragalus, Shisandra, Chaga mushroom** are a few examples.
- Adaptogens are **bi-directional** and affect **multiple systems simultaneously**. They work with the body, enhancing the body's innate homeostatic mechanisms.
- Their administration results in stabilization of physiological processes and the promotion of homeostasis.
- Adaptogens strengthen the immune response to infectious agents yet reduce symptoms of auto-immunity and inflammation.
- They improve the body's resistance to stress.
- They improve the functioning of major organs
- Tonic herbs are non toxic and can be consumed daily to help prevent disease and increase wellbeing.
- In China, these herbs are actually eaten in soups and stews and are considered **food**

Fat – Is It Really That Bad For Us?

- Demonisation of fat and the low fat diet
  - Ancel Keys
    - Researcher who claimed that heart disease is associated with fat intake
    - Seven Countries Study
      - First multicountry epidemiological study into relationship between lifestyle, diet, coronary heart disease and stroke in different populations
      - He started out with 22 countries, but not all of the data didn't support his theory and so he discarded the data from those countries who didn't fit the model

Fat

- Diets of the people with the lowest incidence of heart disease in the world

Massai of Kenya and Tanzania
Diet primarily consists of:

- Meat
- Milk
- Blood
- Butter

66% of their calories come from saturated fat

Fat

- Diets of the people with the lowest incidence of heart disease in the world

Inuit (Eskimos)

Diet primarily consists of:

- Arctic Whale meat and blubber

75% of their calories come from saturated fat

Fat

- Diets of the people with the lowest incidence of heart disease in the world

Rendille of Kalsut dessert of Kenya
Diet primarily consists of:

- Camel milk and meat
- Banjo (Camel milk and blood)

63% of their calories come from saturated fat

Fat

- Diets of the people with the lowest incidence of heart disease in the world

French

Diet is rich in:

- Butter
- Cheese
- Animal fats

40% of their calories come from saturated fat in some regions

Nutrition & Cardiovascular Health

- In the United States, about 610, 000 people diet every year from heart disease (1 in 4 deaths)

America

A considerable proportion of dietary calories are derived from:

- Grains
- Sugar
- Trans fats

14% of their calories come from saturated fat

Nutrition & Disease

- The same trends seen in heart disease also apply to cancer, diabetes and other chronic diseases

- The exact causes of these illnesses continue to be debated amongst experts, but there is a clear correlation with diet.

Genes, Nutrition & Disease

- Until recently it was believed our genes were highly predictive of disease. If you were genetically predisposed to certain diseases, for example the BRCA1, BRCA2, TP53, PALB2 breast cancer genes, then it was believed that there was not very much you could do about.
- New research is now demonstrating that this is largely false.
- Only a very small number of cancers, for example, are actually genetic.
- A far greater factor is **environment**.
- A significant portion of our DNA is highly configurable depending on the environment.

Epigenetics

- **Sun tan**. Upon exposure to sunlight, genes are switched on insourcing melanocytes to produce more melanin in the epidermis of the skin.
- Thousands of genetic “switches” are flicked on and off on a daily basis.
- Some switches are much more conducive to health. Others have a much stronger correlation with disease.
- **Exercise** and **nutrition** are two of the biggest factors that determine whether you activate healthy genes or disease promoting genes.

Epigenetics

- Many factors influence the cellular environment and therefore our DNA:
  - Air
  - Water
  - Presence of exogenous toxin and metabolic waste products
  - Nutritional status / mineral content of a person
  - Stress

Epigenetics

- **Summary**
- You have far greater control of your health than previously believed.
- You can reduce the risk of major chronic diseases, including heart disease, stroke, diabetes and even cancer through adequate nutrition.
- The natural world offers us enormous potential!

Organic Versus Conventional Produce

- **Is organic just another money-making scam?**
- The short answer is **NO**
- According to some recent studies organic product sold in supermarkets is unlikely to contain a lot more nutrition than conventional produce.
- However, organic produce from small farms has shown to have **significantly higher levels of major minerals and vitamins**.
- How is this possible?

Soil

- The quality of the crops is dependent on the quality of the soil.
- Most of the soil used in big agriculture today is greatly depleted of minerals, due to intensive farming, lack of crop rotation and insufficient fertilizer.
- Only 3 of over 50 required minerals are restored: N P K
  - Nitrogen
  - Phosphorus
  - Potassium

Soil

- Without sufficient minerals, not only are crops less nutritious; they are also weaker and are more prone to being infested with fungi and insects.
- The use of pesticides and fungicides is only really necessary when the soil and therefore the plants are of poor quality.
- Using traditional farming methods, which rotate crops often, allow the ground to rest and also restores minerals to the earth, it is possible reduce and even eliminate the use of chemicals.
- Although we are told that it is safe to use pesticides, more and more evidence is accumulating to show that there are adverse, even serious side effects associated with the use of such chemicals, including birth defects and even an increased risk of certain cancers.
- Not long ago we were told that tobacco was not only safe, but it was even beneficial for things like asthma and bronchitis
- **Taste –** vegetables and fruit grown in soil which is rich in minerals is **tastier**. The taste buds can detect the presence of minerals in the food.

Minerals & Taste

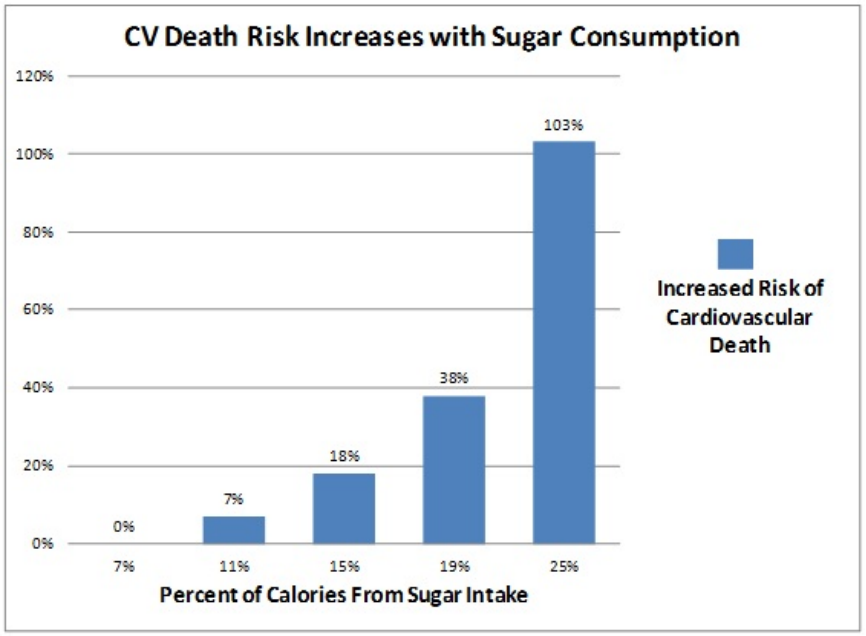
- **Taste –** vegetables and fruit grown in soil which is rich in minerals is **tastier**. The taste buds can detect the presence of minerals in the food.
- Remember how the strawberries and tomatoes your grandparents used to grow in their garden tasted?
- Having a preference for tastier fruits and vegetables, in other words, those which are richer in nutrients, is advantageous in the wild, as it guarantees the consumption of the best foods, thus promoting better physical health and maximizing chances of survival.

Minerals & Taste

- A lot of conventional produce today is lacking in taste
- People of a certain age, who remember how fruit and vegetables used to taste, often complain about this fact
- In order to compensate for the lack of taste, it is common practice to use extra salt, flavourings and even flavour enhancers. This is especially common in restaurants and in packaged food.
- Unfortunately, excess table salt is not healthy and a lot of flavor enhancers can disrupt the balance of glutamate and GABA and in susceptible individuals, this can lead to increased restlessness, anxiety and even hyperactivity, ADHD and depression.

Sugar – The Silent Killer

- Fat is demonized, but the dangers of sugar are underplayed.
- The connection between sugar consumption and diabetes is well established, however the latest research shows a **strong correlation between sugar consumption** and **chronic inflammatory diseases**, including heart disease and cancer.



Sugar – The Silent Killer

- Why is sugar so toxic?
  - **Insulin** – the consumption of refined sugars causes a massive fluctuation in insulin and in blood sugar. This has a profoundly **destabilizing effect** on their **entire endocrine system** leading to a yoyoing of energy levels and mood
  - Refined sugars causes massive amounts of free radical damage to our cells, damaging DNA and aging us prematurely
  - The consumption of refined sugars put stress on our adrenal glands and precipitate burnout and exhaustion in susceptible individuals
  - Sugar causes minerals to leach from the body, increasing the risk of tooth decay and osteoporosis
  - Sugar consumption has also been linked to inflammation, including inflammation of the brain, which in certain individuals can exacerbate existing psychiatric illnesses
  - Sugar consumptions feeds yeasts and fungi in the body, leading to increased risk of thrush, candida and a weakened immune system

Do I Have To Give Up Everything I Love?

- It’s all about balance
- It’s much more about what you **do eat** than **what you don’t eat**
- It’s better to avoid eating refined sugars on an empty stomach and on their own.
- Eat some fiber and some fat to slow down the absorption of sugar, therefore curbing insulin release and stabilising blood sugar

Do I Have To Give Up Everything I Love?

- Opt for natural sources of sugar over refined sugar
- Consume more protein at breakfast and lunch time to reduce the chances of unstable blood sugar and cravings later in the day
- Consumption of sugars and carbohydrates in the morning sets you up for a roller coaster ride of highs and lows all day
- Eating carbohydrates in the evening is better for hormone balance and promotes better sleep
- Train your pallet to become accustomed to less sugar. Over time, things will taste just as sweet.
- Bake your own cakes and biscuits and use excellent quality ingredients. Not only will it taste better, but it's better for you
- Eat as much chocolate as you like. It's full of antioxidants (polyphenols) and its consumption is associated with a reduced risk of heart disease and even some cancers.
- 80/20 rule. Focus eating as well as you can for 80% of the time and don't worry too much about the other 20%

Nutritional Supplements

- Are they necessary? Most people will do fine without them, however they could do even better with them
- Those who have symptoms of fatigue, burnout, inflammation or any other chronic condition can almost certainly benefit from supplementation
- If we lived in a pristine world without pollution, without stress and where the food was grown in mineral rich soil, we would be able to get all the nutrients we need from the soil
- Today, our reality is far from that. Sensible supplementation using high quality supplements can make a tremendous difference to our health and wellbeing
- There are many poor quality supplements out there that do more harm than good

Summary

- Micronutrients in food are essential for proper biochemistry
- More and more evidence suggests a strong correlation between diet and the risk of major diseases
- Fat – we may have it all wrong
- Sugar – likely to be far more toxic than we used to think
- Conventional versus organic produce
- You don’t have to give up everything you enjoy
- You may want to consider supplementation