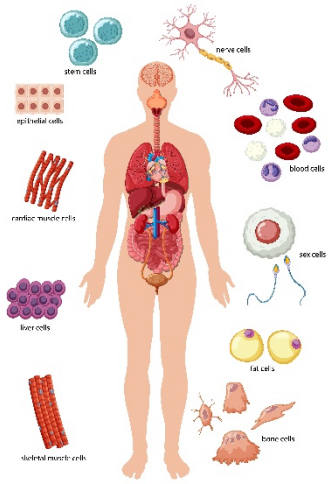
Nutrition

From the shelves to the cells



What could possibly go wrong?

Free information booklet

by

Anke Koelman

MSc (Biochem), MHSc (Nutrition Medicine), Spec. Naturop. Pract.,
Level 6 Kines. Spec. Pract. (KSP), Dip. West. Herb. Med., Dip. Hom.,
Prof. Trainer & Fully Reg. Teacher in SA

Optimum Learning & Health Centre
Director: Anke Koelman
12 Bayview Crescent
Beaumont, SA 5066
Tel. +61 423763273
Email. akoelman@ozemail.com.au
www.optimumlearningandhealth.com
www.autismrecovery.com.au

Nutrition – From the shelves to the cells.
What could possibly go wrong?

1. Introduction

Nutrition (according to the Oxford dictionary) is the process of providing or receiving nourishing substances. A nutrient is a substance that provides essential nourishment.

The object of Nutrition is to supply the cells in our body with all the nutrients they need to function perfectly. When all cells function perfectly, the body is in perfect health.

In the western developed countries, food is plentiful, it can be obtained from stores 24/7 and ordered online from restaurants that deliver it our doorstep, so are we healthier than our ancestors? Most people get plenty of calories on a daily basis and hunger and starvation is a thing of the past for most people, but what about our cells, do they receive all of the nutrients they need to perform the tasks they need to do 24/7?

Unfortunately, the answer is: no, many cells are starving in-the-midst-of-plenty (calories) and cannot perform tasks that require specific nutrients, e.g. repairing cell damage, converting vitamins to their active state, building large compounds from their building blocks such as proteins from amino acids. Without these nutrients, our systems and organs stop working optimally and chronic health problems are created when the cells cannot repair themselves anymore.

Over the last 50 years there has been a dramatic rise in chronic diseases such as Neuro-degenerative diseases, Cancer, Arthritis, Diabetes, Cardiovascular diseases and many auto-immune diseases. Fortunately, in adults, most chronic diseases take decades to develop to the point that they become debilitating and this gives us a huge window of opportunity to intervene with the course of the disease process.

In children, Autism & Autism Spectrum Disorders (ASD), as well as many other childhood conditions such as Asthma, Allergies, AD(H)D and chronic upper respiratory diseases have also risen dramatically during this time, despite the advances in Western medicine to combat infectious diseases. So, what has gone wrong?

2. The Nutrition Process

The old saying: “You are what you eat” has been challenged lately by the discovery of the importance of gut health and been changed to: “You are what you can digest”, but is that the whole story? The Nutrition process is a journey that can be divided into different stages:

1. **Consumption**
2. **Digestion**
3. **Absorption**
4. **Transportation**
5. **Assimilation**
6. **Utilisation**

2.1 Consumption

To achieve and maintain perfect health, our body needs many nutrients, which we should be able to obtain from our diet i.e. proteins, fats, carbohydrates, fibre, vitamins, minerals and many other substances that are essential for our body's health.

Diets differ from country to country, but until around 50 years ago, the diet was very similar for all people within a certain country and food choices were very much dependent on geographical location and seasonal availability. Nowadays foods from many parts of the world are available in our supermarkets.

This has affected food choices globally. Asian countries have started to adopt Western eating habits (including eating "junk" food) and in most Western countries, a rich variety of Asian and Indian foods has now been incorporated in the diet.

Research has shown that consuming different herbs, spices and vegetables, as well as other nutrients can help to improve our health. For example, the use of ginger, galanga and turmeric in Indian and Asian foods has shown to be very beneficial in improving gut and circulatory health.

Whether the food you eat contains any vitamins or not, also depends on the way the food is prepared. The closer to nature the food is, the more nutrients it contains, as the cooking process can destroy valuable nutrients, e.g. deep frying destroys many nutrients and eating meat that has been blackened on the BBQ is not healthy either.

Over the last 50 years the use of pesticides and herbicides in the agricultural industry has also risen dramatically. This means that almost all of the fruit and vegetables that are grown commercially, now contain added toxicants (man-made toxins), unless they carry a label that says that they are grown under certified organic conditions.

These toxicants not only cause a burden to our detoxification systems, most of them also damage our gut flora, e.g. the herbicide Glyphosate (Round-up) kills bacteria and fungi and therefore has a disastrous effect on our friendly gut flora. Another problem is that Glyphosate can cross the Brain Blood Barrier (BBB) and when it enters the brain it causes neuro-inflammation. When the brain is inflamed, neuro-development and brain function suffer and this can ultimately lead to a regression into Autism (for more information see the free *How to Improve Learning* e-Booklet and the *Autism Recovery Therapy (ART)* page of www.autismrecovery.com.au).

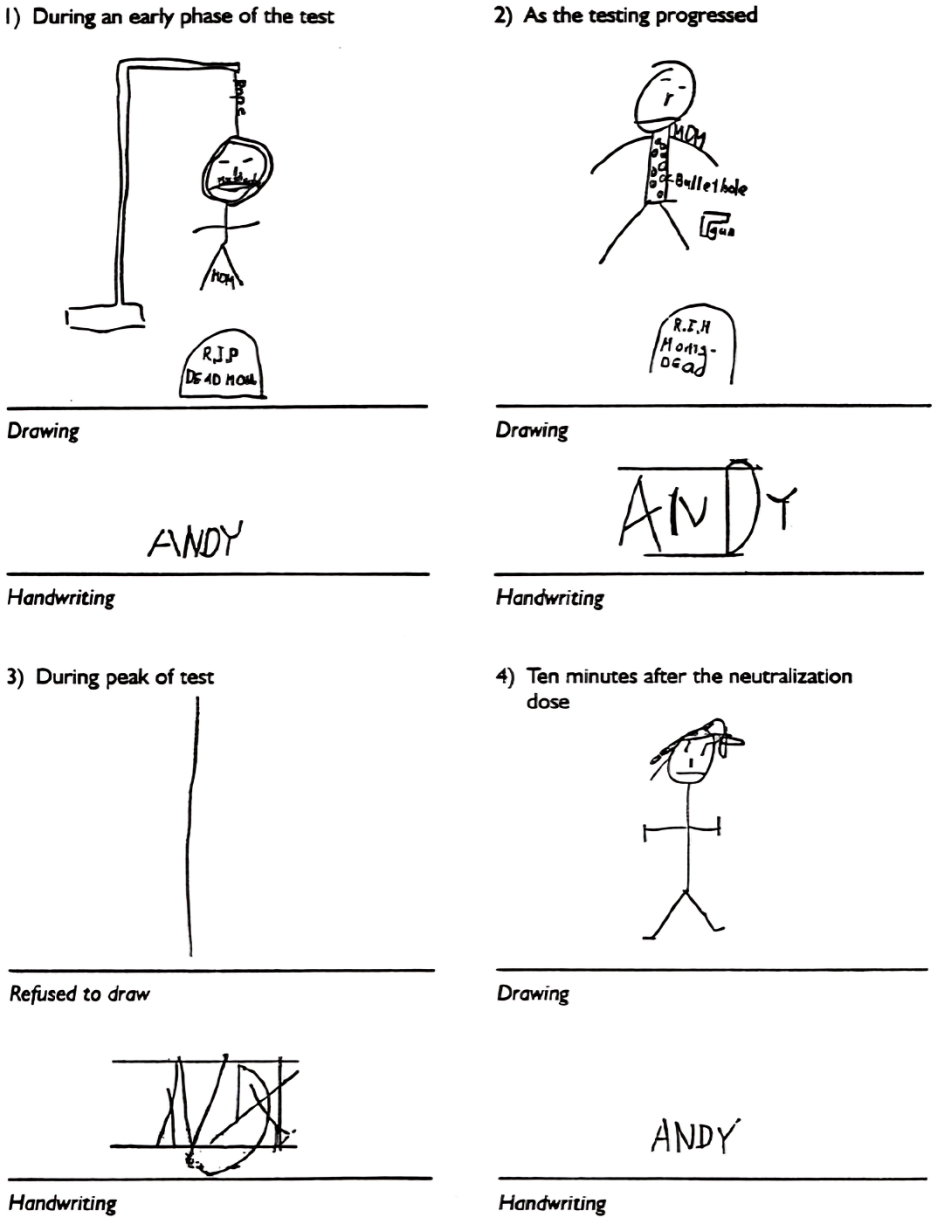
Research has already shown that there is a causal relationship between the exposure to pesticides and herbicides and the development of Parkinson's disease. Many studies are now investigating a possible causal relationship between the increase in the use of pesticides and herbicides and the rise in the prevalence of Autism, ASD and other neuro-degenerative conditions that affect both adults and children.

A 2024 research study from Spain showed that:

- there is a causal relationship between the use of herbicides and pesticides in agriculture and the rates of ASD in those areas
- boys were affected more than girls.

The authors concluded: *The prevalence of ASD was significantly higher in regions with extensive pesticide use, particularly among males, suggesting a potential link between pesticide exposure and autism* (https://pmc.ncbi.nlm.nih.gov/articles/PMC10972278/0).

However, the use of pesticides and herbicides is not the only problem with our modern diet. Many people in the developed countries now choose to eat "fast foods" or "junk food", which are processed foods. These foods taste good due to the high sugar content, which also makes them addictive (sugar is more addictive than heroin). Processed foods usually contain very few or no vitamins or phytonutrients (derived from plants), but they do contain additives such as colouring, flavouring and preservatives. Many children react to these food additives to a greater or lesser extent. Children with AD(H)D seem to be especially sensitive to these additives. Some become hyperactive, others irritable or unreasonable. The reason is that most of these food additives can cross the BBB, where they interfere with brain function. The reaction is usually noticeable within minutes after consuming the offending food. These four pictures show the changes in a child's drawing and handwriting during the four phases of an acute reaction to an offending food.



Note the hostility expressed in the drawing. From Doris Rapp, MD. Published in the article: *Attention Deficit/Hyperactivity Disorder (ADHD) in Children: Rationale for Its Integrative Management*, Parris M. Kidd PhD: https://altmedrev.com/wp-content/uploads/2019/02/v5-5-402.pdf.

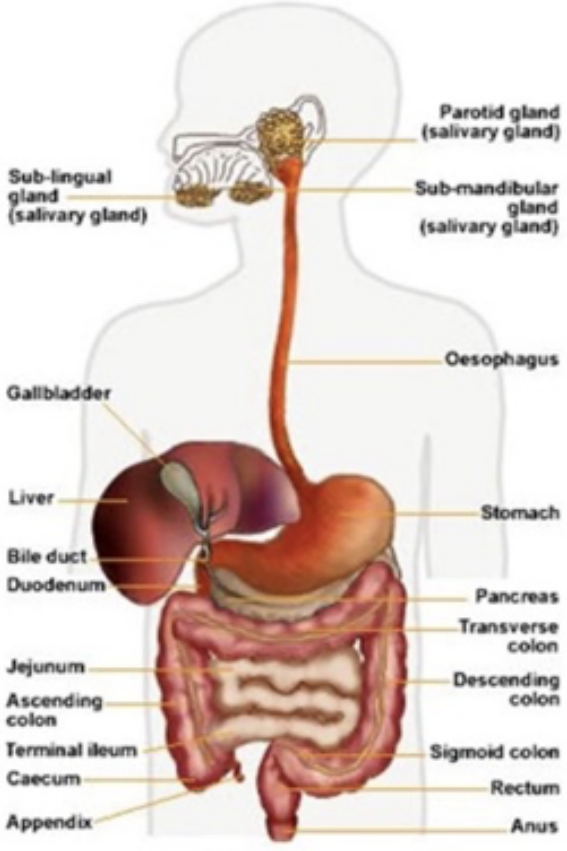
Sadly, the increase in the consumption of processed foods in our diet has only had negative effects on our health. This is why the modern standard American diet is often referred to as the “sad” diet and unfortunately the same applies to the diet of many Australian adults and children.

Apart from the fact that there is no such thing as certified organic junk food, the most important *disadvantages* of processed foods are:

1. Absence of vitamins, anti-oxidants, phytonutrients (derived from plants) and fibre that are present in fresh foods
2. Presence of added sugars, salt, fats and food additives such as artificial preservatives, flavourings and colourings.
3. High amount of calories per weight (calorie dense, nutrient poor)
4. Negative effect on health, e.g. obesity, weakened immune system, weakened resilience, poor gut health, poor brain function, inflammation, nutrient deficiencies

Most processed foods have a pro-inflammatory effect on the body, whereas many spices, fruits and vegetables have an anti-inflammatory effect on the body. Most people with chronic diseases as well as children on the Autism spectrum, suffer from chronic inflammation, so shifting the diet to a more anti-inflammatory diet is strongly recommended.

2.2 Digestion



The organ that is responsible for digesting our food is the Gastro-intestinal tract (GIT, see picture), which starts in the mouth and ends in the anus.

The digestive process starts with chewing. Chewing is very important to our digestion, the more we chew, the smaller the food particles become, the easier it is for our GIT to break it down further. We need enough stomach acid, digestive enzymes (proteins that our body makes to help digest our food), a healthy gut flora as well as other nutrients to digest our food into its smallest particles. These particles can then be used as building blocks for our own proteins, hormones, fats, neurotransmitters etc.

Some foods are easier to digest than others, but if the body cannot digest a certain food, digestive problems result, often followed by absorption problems. As we all have different genes, we deal with certain foods in different ways.

When we eat animal or plant protein, we need to digest that protein into its smallest building blocks, called amino acids. Proteins are very important for our body's structure and function. They are used in every cell of our body. Examples are muscle, hair, blood, nails, bone, immune proteins called immuno-globulins, hemoglobin (blood) and many enzymes that help with cellular processes, such as detoxification, digestion and many more. The body can make some of these amino acids, but not all. The ones we cannot make ourselves are called "essential amino acids" and they need to come from our diet.

This means that we need to consume plenty of protein in our diet, to give us an abundance of amino acids from which we can then make our own proteins. If our intake and/or digestion of proteins is poor, our body cannot make enough of its own proteins. An example is the production of digestive enzymes. If we cannot make enough digestive enzymes to digest the protein in a meal, we will not produce a large enough pool of amino acids from that meal. This means that we may not be able to make enough digestive enzymes to digest the protein in our next meal. Sadly, this is often the start of a negative spiral and a decline in our gut health, which may result in a chronic disease/condition over time.

Does our body have the right enzymes to break down all foods?

Our body can make many digestive enzymes that can help us digest most foods, however there are a few foods that are very difficult to digest for our GIT, because it does not have the right digestive enzymes to break them down into their smallest building blocks.

An example of a common digestive problem in babies, is lactose intolerance. Lactose is a ***sugar*** that is present in cow's milk which needs the enzyme "lactase" for its digestion. If the body cannot make (enough) lactase, the body will have problems digesting all dairy products such as milk, ice cream, cheese etc (dairy means, made from cow's milk). This could be due to a genetic problem, as is the case for many Asian, Aboriginal and Polynesian people or it could be age related.

Even if we were not lactose intolerant at birth, we all become lactose intolerant to a greater or lesser extent as we grow older. In nature, an adult pig does not go to an adult cow to drink milk and it is the same for humans. In humans the production of lactase drops off dramatically after the age of 7.

Many people have trouble digesting certain ***proteins*** from the diet. The two most common proteins to cause food sensitivities are *casein* and *gluten*. Casein is found in most dairy products and gluten is found in all wheat products, such as breads and pastas and in many other grains such as rye, corn, barley, oats and some other grains.

However, the gluten found in wheat seems to be the hardest one to digest for humans and most people can tolerate gluten from other grains. It is therefore dependent on the individual's digestive system, whether they need to adopt a completely gluten-free diet to get relief from their symptoms or whether they just need to go wheat-free.

Dairy products and gluten-containing foods are also mucous forming foods. This is often part of the reason young children develop ear infections and upper respiratory tract infections for which anti-biotics are often prescribed. Anti-biotics then kill off the beneficial gut flora that helps to digest our food further and this often results in a vicious cycle of recurrent infections and digestive problems.

In the 21st century many children seem to have problems digesting these two proteins, which can also be caused by the spraying of crops, feeding wheat pellets to cows, the way the wheat is grown, harvested, milled/crushed, fermented and turned into bread, compared to a century ago. In Australia and the USA, it is very common to spray wheat crops with Glyphosate, sometimes more than once, whereas ancient grains such as spelt are often grown organically, which makes them the healthier choice.

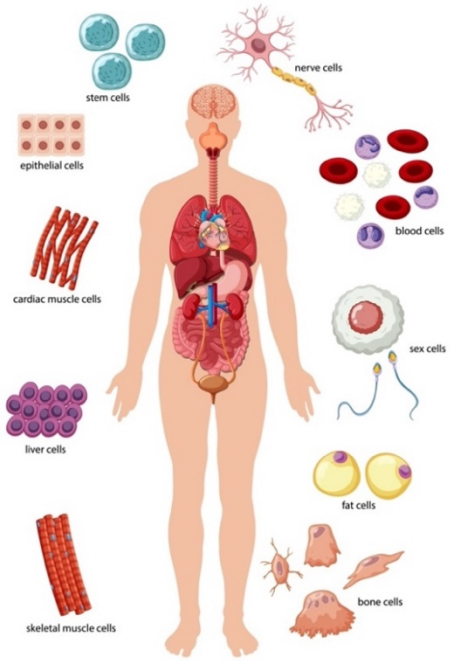
When we eat a protein that we cannot digest, the undigested part can trigger off a cascade of events. Undigested proteins can irritate the gut wall, which can cause inflammation and this can cause a leaky gut, which can lead to a leaky BBB, which can then lead to brain inflammation. If we eat these proteins every day or frequently, it can lead to many problems, such as colic, diarrhoea, constipation, food allergies, food sensitivities, Coeliac's disease, hay fever, asthma, eczema, AD(H)D, learning and behaviour problems. It can even be instrumental in creating the conditions for a regression into autism.

2.3 Absorption

When the gut lining is inflamed, it cannot absorb the nutrients properly and this ultimately leads to a deficiency in those nutrients. For example, if your body has a problem digesting gluten, as in Coeliac's disease or non-Coeliac gluten intolerance, the resulting inflammation in the GIT can lead to poor absorption of nutrients from the diet. If iron is not consumed or absorbed, it causes Anemia.

Another important mineral is zinc. White spots on the nails, could be a sign of a possible zinc deficiency. Zinc is necessary for immune function and wound healing, as well as the production of many useful compounds such as neurotransmitters. Consequently, if your body has difficulty digesting the protein in cow's milk (casein), you also may have difficulties absorbing the calcium from the milk, due to the inflammation and mal-absorption that is caused by drinking cow's milk.

2.4 Transportation



Once the nutrients have been absorbed into the bloodstream, they need to be transported from the GIT to their target cells. This usually happens by attaching the nutrient to a transport protein in the blood.

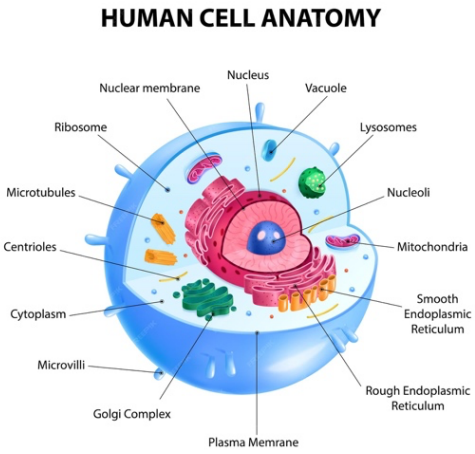
The major transport protein in the blood is Albumin, so if we do not consume enough protein or if we cannot digest protein well, the body cannot absorb enough amino acids to make enough of its own proteins, including Albumin.

If there is not enough Albumin, nutrients will not be transported to the target cells to the same extent and the cells will become starved of nutrients over time.

You can determine your Albumin level in a serum blood test, but for levels of minerals such as zinc and magnesium, a Red Blood Cell test is usually more reliable.

2.5. Assimilation

When the nutrient arrives at the surface of the target cell, it needs to be brought into the cell, a process called assimilation. This requires energy, proteins, fats and other substances. A protein deficiency, lack of appropriate fats in the cell membrane or any of the required substances, can create a problem in the assimilation of the nutrient.



After a nutrient has entered the cell, the journey is not over yet, because inside a human cell there are many organelles. Each organelle has a specific function within the cell for which it needs a specific set of nutrients. Therefore, after the nutrient has entered the cell, it then needs to be brought into the target organelle(s) (see picture), where it can be used for the organelle's specific purpose(s).

2.6. Utilisation

Even when the nutrient has arrived inside the target cell's organelle, it is possible that it cannot be used. Toxins can sit like a square peg in a round hole and block the space the nutrient should occupy thereby starving the cell of that nutrient.

Most reactions in the body require some help, because they need to take place at body temperature. This help can be offered in the form of an enzyme, co-enzyme, vitamin, mineral or co-factor and without this help, that nutrient cannot be used inside of the cell. For example, glucose cannot be broken down, without the presence of Vitamin B3.

In the Autism population, over 80% of the children have a genetic mutation (the MTHFR mutation) that prevents them from being able to use folate from green leafy vegetables, because they cannot convert it to the active form of folate, Methylene-Tetra-Hydro-Folate (MTHF) that the cell needs. This mutation is usually one of the reasons, if not *the* reason, that ASD children are poor detoxifiers and have low anti-oxidant capacity, which makes them more vulnerable to toxins than other children.

There are many other genetic mutations that often run in families, which make the utilisation of nutrients from the diet difficult or sometimes impossible. Giving the cell what it needs by supplementation with targeted nutrients can be very beneficial in many cases.

In the case of the MTHFR mutation, some children started to speak within a week of giving them MTHF. Metabolic DNA testing can be very useful to find out which genes have mutations and therefore which nutrients may be lacking inside of the cells. It is also recommended to do some Functional Pathology tests such as a DIY Glyphosate or Tox-detect test to find out what toxins and toxicants may be present within the cell.

2. 7. Summary

Nutrition is only optimal when we consume all the required nutrients and when all the above processes function optimally. Achieving and maintaining good health, therefore, depends on knowing which foods are

good for us and which ones are not. We can then choose the foods that are beneficial for us and minimise or avoid the foods that are not beneficial for us.

3. How can we determine which foods are not good for us?

There are Functional Pathology tests (see www.autismrecovery.com.au or www.optimumlearningandhealth.com) that can help us determine what foods we are sensitive to and therefore we may be better off avoiding those foods.

If, for some reason, doing Functional Pathology testing is not an option, then Muscle Checking or bio-energy testing is a technique that can be used to determine which foods are beneficial (health promoting foods) for someone and which foods are not. The advantages are, that it is free and it can be done during online consultations as well.

Once you know the foods that are not good for you, you need to avoid those foods for awhile to give your body a chance to heal. During that time, it is advisable to replenish your nutrient stores by supplementation, because healing usually costs extra energy and extra nutrients.

For example, gluten intolerance often leads to a deficiency in minerals such as zinc, iron or magnesium, so it is a good idea to take a targeted supplement that will replenish your body's stores of these nutrients. Muscle checking is a great tool for finding out which supplements would be most beneficial to replenish these nutrients.

Gluten intolerance also causes inflammation, which damages the gut lining, so it is advisable to repair the damage and create a healthy balanced and diverse gut flora. For more information, please visit the ***RAPID*** gut repair programme page on any of my websites.

4. Case histories

1. A lady came to see me with a very large goiter due to Hashimoto's Thyroiditis. Food testing revealed an allergy to dairy products (cow's milk products) and to a lesser extent to wheat. When these foods were removed from her diet, her Hashimotos Thyroiditis had improved to the point that the goiter had disappeared and she only needed a minimal amount of Thyroxine. However, if she consumed any dairy product, her Thyroid would flare up, so for her it was best to leave dairy products out of her diet.

2. One of the children who came to see me had poor concentration and disruptive behaviour. Food testing showed sensitivities to wheat products. Within a week of removing wheat from his diet, the school Principal stopped his mother in the corridor and asked whether she had finally put him on Ritalin, because his concentration had improved so dramatically. She said: "No, all I have done is take wheat out of his diet."

On the next visit, his mother told me that his reading and writing had improved out of sight as well!

5. Conclusion

The journey from the shelves to the cells is a hazardous one and many things can go wrong. The good news is that most of these things can be fixed, but only if you know what went wrong, where and why. DNA and Functional Pathology testing can help with identifying any problems along this journey.

The main determinants of cellular nutrition are:

- **Diet**
- **Toxic load within the cell**
- **State of health of GIT**
- **Genetics**

Diet. The best diet is a diet that contains all of the nutrients and no toxicants, i.e. an organic well-balanced diet with a large variety of fruits and vegetables. The maximum benefit from these foods is obtained if we have an optimal functioning GIT that can digest the foods we eat and provide the body with all of the nutrients the cell needs and all of the building blocks that are necessary to make its own products.

Toxic load within the cell. Toxins and toxicants can interfere with the process of cellular nutrition and need to be identified and dealt with. This is especially relevant for Neuro-degenerative diseases Autism and Autism Spectrum Disorders (ASD). You can read more about this on the Autism Recovery Therapy (ART) page as well as the Targeted Individual Nutrition Therapy for the Recovery of Autism and ASD (TINTRA) page on the www.autismrecovery.com.au website.

State of health of GIT. Hippocrates reportedly stated in 400 BC, "All disease begins and ends in the gut (GIT)", so regardless of the name of the disease or condition, optimising gut health is almost always a priority.

A healthy gut flora makes many compounds for our body, e.g. they make over 70% of our neurotransmitters and therefore needs to be as diverse as possible. Processed foods, herbicides, pesticides, alcohol, sugar and antibiotics can change this flora to a very limited and non-beneficial flora. Aging also reduces the effectiveness of our GIT.

You can find information about how to restore and optimise your gut health on the ***RAPID*** gut repair programme page of both websites and in the e-Chapter: *Gut Revelations*, which is available for purchase from the Product page of both websites.

Genetics. Your genetics can help or hinder the process of cellular nutrition. Knowing how it hinders can help you in finding out what to do about it, e.g. taking digestive enzymes can help improve your digestion and taking the active form of a nutrient can help if your body cannot convert a nutrient into its active form.

Nutrition is the key to life. Happy cells mean a happy and healthy body and that is something very precious and worth striving for.

If you want to talk to me about how I could help improve your or your child's health and nutrition, please contact me for a ***free half hour introductory phone/online consultation.***
Phone: +61423763273 or email: akoelman@ozemail.com.au.

You can also make a booking for a free introductory phone/online consultation as well as any longer (paid) face-to-face/online consultations on the Consultations page of www.autismrecovery.com.au and www.optimumlearningandhealth.com.