Know Your Immune Defence

YOUR GUIDE TO OPTIMAL IMMUNE HEALTH ALL THROUGH LIFE

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YOUR HORMONE EXPERT

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Since 1998 she has worked independently with physical, hormonal, mental health & beauty - through treatments, consultations, course and educations where the starting point is all about the body's biochemistry - the fact that you will never be healthier than your healthiest cell.

Happy reading

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Introduction

Welcome to the eBook ' Know Your Immune Defence – Your guide to optimal immune health all through life'

At this moment in time many are focusing on the efficiency of their immune defence, how to strengthen it to protect against the virus COVID-19.
As with any infections (and disease) prevention is always the best course of action. Do everything you can to keep the microorganism out of your body. E.g. frequent hand washing with soap, frequent cleaning of surfaces, also with soap and 'social distancing, so you don't infect others or become infected yourself body contact.

Those of you that know me know that I believe 'knowledge is power' and this e-book will give you a short and precise overview of the immune system and how you best can look after it, not just related to COVID-19, but also against all micororganism all through life.

I have reviewed the different types of immune the body has at its disposal and how you best support them. And of course there will be a little bit about hormones underway as the immune system also is affected by / uses hormones.

Remember

- Hormones dictate, they tell the cells what to do.
- All hormones have a specific message
- You can't change the message but you can affect how much hormone is working at a given time

As always you are welcome to email me sw@sally-walker.com if you would like more personal guidance vejledning.

The body's immune defence can be compared with a military defence system, the job of which is to protect a country/area from attacks of foreign nationals, where the body's immune defence protects the body against the attacks of foreign microorganisms, such as bacteria, viruses, yeasts, fungi, parasites, etc.

Just like a military defence system the body's immune defence has many different tools and tactics available, to stop the entry of / or kill any microorganisms that has gain entrance.

1. The 'Stopping' Mechanisms

The skin, mucous membranes of the mouth, eyes, ears, lungs, gut, vagina and penis are all possible entry points to the body. All the above are covered with bacteria and immune cells ready to stop/ block a possible attack. And many of these areas have reflex mechanisms, such as coughing, sneezing, vomiting, and diarrhoea all making sure those microorganisms don't get in.
The protection of the entry points can be compared with the first line of a military defence manoeuvre.

It is said that 70% of immune defence is in the guts mucous membrane, which is composed of healthy gut bacteria and various immune cells / antibodies, especially s.IgA, together with the tightly knitted cells in the gut wall. A tight and strong gut is a very important part of a strong immune defence.

SUPPORT THE 'STOP' MECHANISMS

- Frequent hand washing of 20-30 seconds with soap. Also wash other things that touch the body, such as clothes, bed linen, etc., preferably at a minimum of 60 degrees. Soap will amongst other things breakdown the virus's fatty membrane, thereby killing the virus.
- Practise social distancing and thereby reduce physical contact with other people
- Careful when touching surfaces and things, good to wash or use surgical spirit to clean surfaces on a regular basis.
- Optimize gut health:
    1. Reduce sugar
    2. Reduce alcohol
    3. Reduce stress – the hormone cortisol reduces the number of s.IgA immune molecules that keep guard in the mucous membranes of the gut and airways.
    4. 7-8 hours of sleep preferably from 10pm
    5. Increase intake of healthy gut bacteria - buy yours here
    6. Increase the intake of fermented foods like kimchi, tempeh, sauerkraut, miso, kefir.
    7. Increase intake of healthy fats, such as coconut oil and olive oil
    8. Increase / support s.IgA immune molecules – buy yours here
    9. Increase the tight junctions of the gut wall – buy yours here

10. If you would like to know more about your gut health, how permeable it is, if you have good levels of s.IgA antibodies, if there is a balance in gut bacteria or a dysbiosis and much more then I can recommend this test

2. Killing mechanism

This part of the immune system is comprised of a relative complex joint venture between various cells, proteins and messaging molecules / hormones. All of which are produced different places in the body, which means there isn't just ONE immune organ or gland.

THE DIFFERENT TYPES OF IMMUNE CELLS

- In general this part of the immune system recruits various white blood cells called leucocytes to do its bidding, such as
- Lymphocytes – B- cells, T-cells and Natural Killer/NK-cells
- Neutrophils
- Monocytes - macrophages and phagocytes

THE DIFFERENT TYPES OF IMMUNE PROTEINS

- Messaging molecules / hormones called Cytokines
- Antibodies called IgA, IgD, IgE, IgG, IgM
- Complementary proteins, which is a group of 30 blood proteins produced by the liver

THE IMMUNE RESPONSE IS DIVIDED INTO 2 PARTS

1. The innate, which reacts immediately there is an attack or injury and is the system that already functions from birth.
This system is composed of:
- Phagocytes and macrophages, which 'eat' the microorganism and start an inflammatory reaction
- Killer cells, which kill the infected cells
- Neutrophils, which 'eat' the microorganisms
- Dendrite cells, which transfer the microorganism to the lymphatic system to be presented to T- and B-cells, which are part of the adaptive immune system.

2. The adaptive, which is composed of specialised cells, B- and T-cells, develops after birth, especially the first three years of life but development continues all through life.

- B-cells mature in Bone marrow and release antibodies, which attach to the microorganism called the antigen. Antibodies work as a type of signal for the devouring, killing, immune cells. In this way insuring that only the infected or foreign cells get killed.
  Antibodies are also able to activate other immune elements making the marked organisms and cells even more vulnerable too defence mechanisms.
  There are also Memory-B-cells, which remember the various microorganisms thereby

insuring any future attack is dealt with quickly and efficiently, possibly without you even noticing.

- T-cells mature in the Thymus gland, which sits behind the sternum / breast bone. There are 2 main T-cells which mature in the Thymus gland, CD8 / Natural Killer cells and CD4 / helper cells, and these cells are further developed to more specialised cells other places in the body. T-cells have many important jobs in controlling and forming the immune response. One-way is via its CD8 / natural killer cells which produce poisons to kill off cells invaded by viruses.
  Just like antibodies T-cells react to a specific virus/antigen. The amount of different T-cells found in the body is so extensive and it is believed that the body has enough T-cells to react against all viruses.
  Helper T-cells assist B-cells to produce antibodies.
  There are also Regulatory T-cells, which turn off or turn down white blood cell activity and thereby prevent an over active immune response.

How the immune system deals with bacteria and viruses is different

Bacteria are immediately covered with complimentary proteins so the neutrophils can quickly identify and kill them the second they enter the body.
If immune defence is weak / compromised or the attack extensive the battle will take a longer time with more symptoms resulting.

Viruses can only survive if they can enter the cells, where it can hide and replicate. This means the only way to get rid of / kill viruses is to kill the infected cells. A normal reaction is for cells produce cytokines/hormones, to warn other cells, which normally will prevent them from being infected. Unfortunately some viruses out-smart this protective mechanism and thereby get to replicate.

T-cells are responsible for killing the infected cells, which can be a very destructive, but never the less an effective way to get rid of the virus. But identification and production of the appropriate poison is required for the T-cell to be successful.
Regarding COVID-19 a problem for many is that the T-cells don't make the appropriate poison, and can't locate the infected cells, so the immune system kills as many cells as possible in the hope that the virus is annihilated. Unfortunately the consequential tissue damage is enormous. Because COVID-19 attacks cells of the airways and lungs there can be amongst other things many breathing complications.

As the T-cells are killing the 'infected' cells the B-cells are making antibodies and the Memory-B-cells are storing the recipe of the poison on the 'hard disc' for a possible next time.

Support the killing mechanisms

REDUCE

- Stress aka cortisol
- Alcohol
- Sugars and simple starches are said to reduce immune defence for several hours after their intake
- Eating windows – reduce you food and drink intake to max 10 hours in the day, e.g. 8am – 6pm. The immune system and gut are both big energy users, so when you reduce the number of hours the gut has to work more energy can be used for your immune defence

INCREASE

- Eat 'real' food, offering as many nutrients as possible.
- Eat enough protein approx. 1 g per kilo body weight, roughly 20-25g per meal. Most of immune molecules are made from proteins
- Add garlic, onion, ginger, turmeric, rosemary, oregano to your meals
- Eat minimum 300g of deep coloured fruit and veg, get 5-7 different colours each day, which give endless amounts of antioxidants, minerals, vitamins and other trace elements.
- Eat minimum 300g of leafy greens, such as broccoli, spinach, kale, etc., which contain many sulphur molecules called sulforophanes, which are excellent for immune defence and liver function.
- Make the body more alkaline, drink tea made from hot water and fresh lemon slices all through the day, let it cool for a refreshing drink.
- Drink plenty of water and herbal teas, but be careful with sodas and juices as they contain a great deal of sugar.
- 7-8 hours sleep, preferably from 10pm
- Regular exercise, but not excessive as this in itself will deplete immune defence

SUPPORTIVE SUPPLEMENTS

- Vitamin D modulates both the innate and adaptive immune systems and reduces the production of pro-inflammatory cytokines/hormones. Optimal levels around 60 ng/mL to 80 ng/mL. Buy yours and the test here
- Vitamin C helps in the production of white blood cells, and is a powerful antioxidant. Take minimum 1000mg per day, more if you are sick. Buy yours here
- Zinc supports and increases the production of several immune molecules. Take 30 to 50 mg daily. Buy yours here
- Fish oils – fish oil EPA is well known for its anti-inflammatory abilities and fish oil DHA can increase B-cell function and thereby improve immune defence. Buy Pure Artic Oil from Eqology.com – Login with 4265940 and create your account as premium

customer. Take 1 tbsp. twice a day for the first month.

- Quercetin, is known for its antioxidant abilities, is also antiviral, reduces histamine and many other pro-inflammatory molecules. Found in onion, leafy greens like broccoli, spinach, green and black tea. Supplement with 300-500mg twice a day for best affect. Buy yours here
- Estrogen, increase immune defence, which can be both good and bad. During the fertile years some women are exposed to an overactive immune system even autoimmune disorders, which often occurs during puberty or the turbulent years of peri-menopause. During both periods Estrogen can be uncontrolled and dominant, where after menopause when Estrogen is more deficient immune defence can be impaired. Though studies are suggesting that women who use Estrogen replacement therapy have stronger immune systems. Read more here
  You can find out more about Estrogen through my website and e-books
- Colloidal silver increases immune defence, though it is not clear how. American Indians boiled water with silver nuggets and drank the water to treat infections. Silver cutlery was used because it killed bacteria, it was noticed that people eating with silver cutlery became less sick. My personal experience is that colloidal silver has saved me from many an infection, though it seems to work best if taken immediately the first symptoms present themselves. Buy yours here
- Multi-Immune supplement, contains several immune supportive molecules. Buy yours here

ANTIBIOTICS

Are medicines that stop infections caused by bacteria, but unfortunately have no effect on viruses.

Antibiotics work by killing the bacteria or preventing them reproduce, but often take the 'good' bacteria with them, especially in the gut, which can create a dysbiosis and weaken immune defence even more.

ANTIBIOTIC- RESISTANT BACTERIA

However, inappropriate antibiotic treatment and overuse of antibiotics since the 50's have led to antibiotic-resistant bacteria.
Antibiotic-resistant bacteria create a serious health problem especially if the body's, own immune defence is already compromised due to other infections, such as virus (COVID-19).
In such as case the immune system will doubtfully be able to protect the host.

ANTIVIRAL MEDICATION

Does not destroy the microorganism but inhibit their development.
Designing safe and effective antiviral drugs is difficult because viruses use the host's cells to replicate, thus there is risk of harming/killing the host's cells in the attempt to kill the virus. Vaccines are used as a preventative measure i.e. preventing the virus reproducing as the immune system is ready with the 'poison' due to mild exposure to the virus through the vaccine.

But the area is still very young compared with antibiotics which had their birth in 1928 when Alexander Fleming discovered penicillin
Antivirals only really picked up in the 1980s, when full genetic sequencing of viruses was made possible and scientists began to learn how viruses worked in detail, including which chemicals could effectively block their reproductive cycles.

OTHER PARTS OF THE BODY, WHICH SUPPORT THE IMMUNE SYSTEM

Liver has phagocytes that 'devour' the bacteria found in the blood as it filtrates through the liver.

Tonsils are a collection of white blood cells

Lymph nodes are a collection of B- and T-cells, communicating with each other

Spleen is a collection area for B- and T-cells and monocytes, and as the blood filters through the microorganisms 'meet' the immune system.

Blood transports immune molecules and cells throughout the body and contains the 30 complimentary proteins that surround microorganisms.

Inflammation

Inflammation is also part of the immune response against foreign microorganisms and injuries and is also responsible for initiating the body's healing process. Various white blood cells in particular phagocytes are involved in initiating and maintaining inflammation.

THE PURPOSE OF INFLAMMATION

- To contain the injured / infected tissue
- Limit further tissue damage
- Kill or neutralise the cause
- Remove the cause from the tissue /body
- Clean up after the injury/infection, remove dead cells and foreign bodies, etc.
- Create a biochemical foundation for healing

This means that inflammation is both a protective and healing mechanism crucial for health.

Even though the cause of inflammation can be different, the procedure is the same. The cause is recognised, inflammatory biochemistry activated, which release the inflammatory molecules and hormones that create the 5 classic symptoms of inflammation.
1. Redness, which is due to an increase in local blood circulation.
2. Heat, is also due to the increase in blood flow, together with increased energy production in the involved cells.
3. Swelling called tumour in Latin is due to the increased dilation and permeability of blood vessel walls allowing plasma and cells to sieve out into the tissue.

4. Pain is a reaction to molecules that irritate the pain sensitive nerve endings in the area.
5. Reduced function and movement, think of a sprained ankle – how much can you move it or stand on it? A reduced function in the body will affect the working capacity of the affected area/organ. With COVID-19 lung function becomes compromised, which is partly a result of the unresolved inflammation.

Inflammation is undeniably vital, but creates problems if it is unresolved i.e. allowed to become chronic.

The difference between acute and chronic inflammation
With acute inflammation the possible cause is removed or fixed and all components of the immune response disarmed. In contrast to chronic inflammation, which is seen in some viral attacks, allergies, disease states and even obesity / high visceral fat where immune cells macrophages and T-cells continue there production of cytokines and enzymes causing more and more tissue destruction, which can end with tissue fibrosis. Tissue fibrosis forms when tissues are unable to follow regular healing and repair patterns due to excessive and infinite tissue breakdown, thus decreasing the function of the affected tissue/organ.

Lung fibrosis is presently seen with COVID-19, which is the result of the body's own immune defence attempting to kill the cells affected by the virus, in what is called a cytokine 'storm', all be it in vain.

A military attack would regard lung destruction as a necessary 'casualty of war'. Unfortunately the human body cannot survive without its lungs, which means the war will be lost.

THE MOLECULES RESPONSIBLE FOR THE SYMPTOMS OF INFLAMMATION

The fundamental reason for the production of these molecules is protection and healing, and as such the molecules are not dangerous. Only when their production becomes constant and never ending is chronic inflammation created with disease states closely behind. The body uses hormone like messaging molecules such as cytokines to initiate the production of these inflammatory molecules.

- Histamine- responsible for redness, swelling and itching
- Serotonin – responsible for redness and swelling
- Prostaglandin E2/PGE2 – responsible for pain, swelling and heat. Signalling molecule/ hormone Interleukin-1 is the major initiator of PGE2 production produced from Omega 6 fatty acids
- Leukotriene B4/LTB4 – create massive tissue destruction and increased free radical production are produced in white blood cells and are deeply involved in allergic reactions. LTB4 are also produced from Omega 6 fatty acids

THE BODY'S ANTI-INFLAMMATORY PROCESSES

- Inflammatory cells and molecules have a progammed cell death called apoptosis, which means they have a limited life span.
- The body produces several anti-inflammatory-hormones from Omega 3 fatty acid EPA.
- The body down regulates the production of pro-inflammatory molecules and upregulates the anti-inflammatory
- Increased release of Cortisol, which blocks the release of the hormones/ cytokines responsible for creating inflammation.

ANTI-INFLAMMATORY LIFESTYLE

How you reduce inflammation is a combination of reducing/removing the things that create inflammation and increase the things that reduce/remove inflammation. Both are equally important.

REDUCE /REMOVE

- Unresolved injuries, such as joint and muscle problems.
- Chronic infections, unresolved infections, gut dysbiosis etc.
- Chronic allergies, such as foods, pets, etc.
- Pro-inflammatory foods, such as sugar, gluten, dairy products
- Stress increases the production of the hormone cortisol, although it is the body's major anti-inflammatory, it also breaks down sIgA antibodies in the gut, which can impair immune defence even more.
- Obesity especially high visceral fat. Visceral fat produces inflammatory molecules, and is connected with an increase risk of CV problems, Type 2 diabetes, poor liver function and more. Important to make the necessary changes in diet and lifestyle to increase fat burning.

INCREASE

Intake of the following foods is shown to reduce inflammation.

GREEN VEGETABLES

Broccoli, kale, spinach, Brussels sprouts, cabbage, cauliflower, etc., eat minimum 300g per day, including breakfast – see my recipe for a green smoothie – the perfect breakfast

SEA VEGETABLES

Seaweeds
Kelp

FUNGI

Shiitake mushrooms

FRUIT AND VEG
with deep colours, such as berries, beetroot, carrots, peppers, etc. Juices and smoothies are a fantastic way to drink your colours.

HIGH FAT FRUITS
Avocado and olives

HEALTHY FATS
Olive oil and coconut oil

OILY FISH
Salmon, sardines, herring, mackerel and anchovies, though due to breeding and processing may contain less omega 3 fatty acids and more omega 6 and heavy metals, plastic, etc.

NUTS
Walnuts and other nuts, nut butters are also good (without added sugar)

SPICES
Ginger, turmeric, fenugreek, cinnamon, etc.

HERBS
Rosemary, Thyme, Sage

TEA
Green tea, with large amounts of catechins, buy yours here

ANTI-INFLAMMATORY SUPPLEMENTS

- Fish oil Pure Artic Oil Premium1 tbsp. twice a day the first month. Eqology.com – Login with 4265940 and create your account as a premium customer. This oil is good for its EPA levels to reduce inflammation but also for its levels of DHA, which support B-cell production. DHA is also essential for the brain and retina of the eyes
- Turmeric contains curcumin, which is anti-inflammatory though large amounts are needed which can irritate the gut. This spray from Betteryou contains large amounts, but as its absorbed directly in the mouth bypassing the gut. Buy yours here
- Broccolox: - broccoli sprouts have a powerful anti-inflammatory effect, add this powder to your smoothie – buy your product here
- Good Green Stuff contains many vital nutrients and probiotics, also good in your smoothie – buy yours here
- Neucleotides: a good product for inflammation and the gut wall. Buy yours here

ANTI-INFLAMMATORY MEDICATION

- NSAID – Non Steroid Anti Inflammatory Drugs known, as painkillers are popular over the counter drugs, such as naproxen, Ibuprofen.
  NSAID block the enzyme cyclooxygenase (COX) and thereby stop the conversion omega 6 fatty acid AA to prostaglandin E2, responsible for inflammation and

thromboxane responsible for blood clotting.
Clinically proven side effects, include stomach ulcers and bleeds, and decreased tissue healing/repair, etc. and the cause of many thousands of hospital admission each year.

- Steroids – Hydrocortisone, which is the medical name for the body's hormone Cortisol, is prescription only as creams, pills, injections and inhalants. This is well known for its ability to decrease inflammation but not without side effects, such as osteoporosis, high blood pressure, Type 2 Diabetes, increased fat storing, increased sensitivity to infections, glaucoma, thin skin, poor muscle tissue, frequent bruising/small bleeds, and more

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As you have read the immune system is essential and will do all in its power to protect its 'host'. In most cases it absolutely succeeds but unfortunately it sometimes becomes too destructive and must if possible be tamed.
With extreme inflammatory reactions Hydrocortisone is often the medicine of choice, which dampens the body's own attempt at killing an overwhelming micro-organism attack.

But, as I stated in the beginning, prevention is always the best call – so, do everything in your power to keep those microorganisms out.

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Happy hormones.
Happy life.